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GIG ECONOMY: A STRATEGIC PATH TO FINANCIAL GROWTH

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Editorial

Information Management and Business Review (IMBR) provides a digital forum for researchers to share their knowledge and publish research work in the fields of information management, business, management and related disciplines. The work submitted for publication consideration in IMBR should address empirical and theoretical developments in the subjects related to the scope of the journal in particular and allied theories and practices in general. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal and that all listed authors approve its submission to IMBR. It is IMBR policy to welcome submissions for consideration, which are original, and not under consideration for publication by another journal at the same time. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. The current issue of IMBR comprises papers of scholars from different universities of Malaysia, Indonesia, Ghana, Saudi Arabia, China and Taiwan. Mediating Role of Theory of Planned Behavior, Gig Economy Revolution, Unlocking the Power of Social Media, Service Monitoring System, Ethical Leadership and Islamic Work Ethics, Influence of Service Quality on Customer Satisfaction, Product Attributes, CEO Brand Image and Purchase Intention, Customer Acceptance and Challenges of Waqf-Takaful Death Compensation Products, Unleashing Workplace Culture, Impact of Liquidity and Leverage on Firm Value, Financial Planning for Retirement, Non-Muslim Characteristics Buying Halal Products, Enterprise Risk Management, Insurance Agencies Performance, Role of Digital Capabilities, Network Governance and Audit Pricing, Corporate Tax Aggressiveness, Investigating Financial Reporting Fraud Intentions, Environmental Strategy and Financial Performance, Flexible Work Revolution, Strengthening Financial Inclusion, Performance Measurement System, Accounting and Financial Management, Evolution of Technology in Accounting Education, Agriculture Economics and Understanding Autism Spectrum Disorder, Cloud ERP Implementation and Firm Performance, Financial Management & Bankability and Sustainability, Earnings Management, Positioning of Mosque Tourism Through Digitalization, Brand Awareness as a Determinant of Students' Choice, Perception of Event Quality, Marketing Mix Strategies, Whistleblowers in ASEAN Countries and Impact of Total Quality Management Practices on Operational Efficiency are some of the major practices and concepts examined in these studies. All the submitted papers were first assessed by the journal committee and then the external editorial team for relevance and originality of the work and then blindly peer-reviewed by external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. The special issue will, therefore be a unique proposition, where scholars will be able to appreciate the latest results in their field of expertise and to acquire additional knowledge in other relevant fields.

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PAPERS

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Exploring the Mediating Role of Theory of Planned Behavior (TPB) Components in Facilitating Health Behavior Change: A Comprehensive Conceptual Framework

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Abstract: Health behavior, specifically physical health, is the main factor contributing to absenteeism and presenteeism of workers that affect an organization's profitability. Based on the AIA Validity Survey report from 2017 until 2023, two main factors contributed to productivity loss: unhealthy diet and physical inactivity. As the banking sector strives to be sustainable and competitive, the employees need to improve their performance by increasing their commitment at work this situation has led to a more competitive environment for the banking sector, and the workers tend to experience fatigue as the work involves long working hours, inappropriate reward system, and lack of job autonomy; besides, the role conflict had increased tension, stress, and pressure due to the nature of heavy workload and the need of adaptation towards strict time limits. A study that is based on theory is more relevant to changing individual behavior. Thus, this study aims to identify the mediating role of the theory of planned behavior (TPB) component to understand the determinants related to HBCI among workers in the banking sector. This study will highlight the proposed framework that can be tested for future research in this study.

Keywords: *Theory of Planned Behavior, Health Behavior Change, Banking Sector, Conceptual Research.*

1. Introduction

Nowadays, the development of countries' economies basically is based on the banking sector that manages funds and financial investments (Ahmad, Naveed, Ahmad, & Butt, 2020). According to Mohd Hasan, Jie, and Bidin (2018), banks as financial institutions serve as the backbone of a nation's economy which will have a direct impact on the development of the country; particularly in the present time, the banking sector is involved in every segment of our daily life. The Malaysian banking system, which comprises commercial banks, investment banks (previously known as merchant banks), Islamic banks, and foreign banks, is the major institutional source of credit to the economic sector (Bank Negara Malaysia, 2019).

As the banking sector strives to be sustainable and competitive, employees need to improve their performance by increasing their commitment at work (Husin, Lukito, Amali, & Che Rusuli, 2019). This situation has led to a more competitive environment for the banking sector, and the workers tend to experience fatigue as the work involves long working hours, inappropriate reward system, and lack of job autonomy; besides, the role conflict has increased tension, stress, and pressure due to the nature of heavy workload and the need of adaptation towards strict time limits (Ravesangar & Muthuveloo, 2019). The nature of the bank work and working environment can have negative impacts on the health of the bankers. This scenario has led to the importance of work-life balance, and these WLB conditions have been identified as the key risk factors for poor health (Lunau, Bambra, Eikemo, Wel, & Dragano, 2014). Lunau et al. (2014) indicate that a poor work-life balance is associated with poor health behavior. The health of workers is rapidly becoming a key business factor from both cost and an asset perspective as workers with poor health take up to nine times more sick leave than their healthy colleagues, and healthy workers are almost three times more productive than workers with poor health (Turner & Lingard, 2016).

The inception and quick growth of the health behavior change area is a response to the urgent need to understand the complexity behind individuals' decisions and engagement in behaviors that affect their health and well-being (Teixeira & Marques, 2017). Numerous interventions to change health behavior have been reported in the literature, as outlined in the reviews of health behavior. The use of health behavior modification interventions in research and practices has risen over the last few decades worldwide to emphasize health promotion, preventative medicine, and the need for a reduction in health disparities (Dale, Brassington, & King,

2014). However, these interventions have produced only small effects and small positive effects; if maintained, they have the potential to impact long-term health outcomes (Conner & Norman, 2017).

Therefore, this study aims to identify the mediating role of the theory of planned behavior (TPB) component to understand the determinants related to HBCI among workers in the banking sector by using theories to help the organizations elaborate on intervention plans that promote and achieve health promotion, including minimizing absenteeism and presenteeism rate and productivity loss.

Health Behaviour Change Intention (HBCI): Health behavior, specifically physical health, is the main factor contributing to the absenteeism and presenteeism of workers that affect an organization's profitability. AIA Validity Survey report year 2017 until 2023, two main factors contributed to productivity loss which are unhealthy diet and physical inactivity. Thus, the health behavior in this study compromises eating habits and physical activities which are described further in the next subsection.

There has been a strong interest in understanding people's eating habits as diet plays an important role in people's health. Eating habits play a very important role in determining one's health status and the morbidity level of the disease occurring in a population because food will impact our well-being (Mohamad Kasim et al., 2018). Time constraints, unhealthy snacking, the convenience of high-calorie food, stress, high prices of healthy food, and easy access to junk food are common barriers to healthy eating (Sogari, Velez-Argumendo, Gomez, & Mora, 2018). In addition, higher income levels and busy lifestyles among the working population imply that Malaysians can afford to eat out and may have less time to prepare their meals, thus resorting to buying ready-made or instant food that is potentially harmful to health (Mohd-Any, Mahdzan, & Siang Cher, 2014). The lack of time and motivation and spending time with family and other social networks are influencing one's eating behaviors.

On the other hand, physical activity is a global term and an expression used to identify body movements using human energy (Yildizhan & Aggon, 2020). Previous studies found that a lack of physical activity (PA) is a major predictor of some chronic diseases, including obesity and cardiovascular disease. (Lau et al., 2019; Cheah & Poh, 2014). The advantages of regular PA include risk reduction of cardiovascular events, obesity, hypertension and diabetes mellitus, as well as improvement in blood lipid profile, risk of cancer, and many more (Yildizhan & Aggon, 2020). The number of people engaging in physical exercise has been decreasing, and this behavior is linked with non-communicable chronic diseases such as diabetes, hypertension, and many more (Rodrigues, Teixeira, Cid, & Monteiro, 2019). The findings of the Fourth National Health and Morbidity Survey revealed that 35.2% of the adults aged 18 years or older in Malaysia were not physically active, and the work setting is believed to be the best place for distributing information on physical activity because most adults spend their time in buildings and the sites around buildings (Huei Phing, Abu Saad, Nisak, & Mohd Nasir, 2017).

Relative Advantage (RA): Rogers (1962) defined relative advantage as the extent to which customers observe a new product or service as enhanced than its substitute. Meanwhile, the relative advantage is also known as the additional potential of the value or benefit anticipated from the innovation relative to the current practices, making it more rapidly diffused (Cain & Mittman, 2002). Besides that, the relative advantage is the perceived benefit and has been consistently identified as a predictor of attitude and intention (Abdul Aziz, 2020). Relative advantage is defined as the degree to which an innovation produces benefits that outperform those of its predecessor (Ajzen, 1991). Relative advantage may incorporate factors such as economic benefits, satisfaction, image enhancement, and convenience (Kianpour et al., 2017). There are also empirical studies that support this relationship. Taylor and Todd (1995) used relative advantage as a part of their research model to predict the attitude and the results indicated that relative advantage explained about 76% of the variance in attitude. Besides, relative advantage has significant effects on the intention to use Internet banking (Tan & Teo, 2000). Abdul Aziz (2020) found a significant influence of relative advantage towards the implementations of e-commerce among SMEs. Furthermore, the findings also revealed that relative advantage has a direct and significant effect on physicians' attitudes to using and accepting electronic medical records (Abdekhoda, Ahmadi, Dehnad, Noruzi, & Gohari, 2016). The empirical results confirmed that relative advantages influenced the attitude of consumers to return end-of-life (EOL) products for reuse, repair, and recycling to the producers

(Kianpour et al., 2017). In this study, the operational definition of relative advantage refers to advantages associated with HBCI.

Co-worker Influence (CWI): Co-worker is defined as employees with the people they interact with, and they can influence and be influenced by others regardless of whether they perform the same job or not (Quist, Christensen, Garneiro, Hansen, & Bjorner, 2014). Co-workers influence the working environment, and this influence will affect employees' attitudes at work, which is an important source of employee support in service organizations (Avci, 2017). Research also reveals that social links influence one's weight and the goal of losing weight, revealing that social norms may be the origin of behavioral clustering within groups (Quist et al., 2014). According to Allard, et.al (2011), there are relationship between work environment and health behavior that results from physical activity, weight change, and smoking behavior as colleagues may influence personal behavior and behavior change both directly and indirectly. The workplace is an ideal setting for the promotion of a healthy lifestyle because it provides easy access to large groups of people where workers interact with co-workers, clients, and customers; this setting can potentially influence the beliefs and behavior of workers (Quist et al., 2014). Sandu, Chereches, Baba, Revnic, and Mocean (2018) indicate that friends and colleagues are the most important influences for one's physical activity practice. Moreover, Berry, Blonquist, Pozzar, & Nayak (2018) reported that co-workers can influence one's health decision-making. The social support among participants was lower than anticipated, resulting in minimal co-workers' encouragement on behavior-changing diets and physical activities among nurses (Torquati, Kolbe-Alexander, Pavey, & Leveritt, 2018). In addition, subjective norms from co-workers moderated the effect of group-related attitudes on the intention to join alcohol-related social gatherings (Park & Lee, 2019). According to Amuneke-Nze, Bamgbade, and Barner (2018), participants stated that their co-workers opposed their healthy habits, specifically their eating habits in the workplace. Moreover, single women were more influenced by the subjective norm, including their mothers, siblings, friends, and co-workers who are experienced in breastfeeding than those with no breastfeeding experiences (Jang, Lee, & Mo, 2017). Burke, Dailey, & Zhu (2017) stated that the perceived social influence from co-workers had a direct effect on one's health behaviors through the social support of co-workers and their organizational socialization.

Facilitating Conditions (FC): Palau-Saumell et al. (2019) stated that higher facilitating conditions are expected to lead to higher intentions to use or do something. Facilitating conditions are largely determined by indicators such as PBC and compatibility (Onaolapo & Oyewole, 2018). Facilitating conditions refer to the degree to which an individual believes that an organizational or technical infrastructure supports the use of the systems (Venkatesh, Morris, Davis, & Davis, 2003). Facilitating conditions are factors in an environment that make it possible to use the resources (Ghalandari, 2012). Levac et al. (2016) revealed that facilitating conditions is related to virtual reality (VR) therapy in stroke rehabilitation. Furthermore, the facilitating condition was positively related to the behavioral intention to use fitness apps to become physically active (Yang & Koenigstorfer, 2021). However, Zahid and Din (2019) found that facilitating conditions have an insignificant influence on the PBC in the intention to adopt e-government services in Pakistan. In addition, Fauzi, Tan, Thurasamy, and Ojo (2019) indicated that the facilitating condition is significant but has a negative relationship with knowledge-sharing intentions. Wibowo and Sabari (2023) found that facilitating conditions is positively significant to behavioral intention and linkage with behavior.

2. Theory of Planned Behavior (TPB)

Azjen (1991) established the theory of planned behavior (TPB) to identify people's willingness to act. Three antecedents of TPB consist of attitude, subjective norm, and perceived behavioral control (PBC). TPB is an extension of TRA with the addition of perceived behavior control as a variable for predicting intentions and behavior. Perceived behavioral control (PBC) is the extent to which a person feels he or she can enact the behavior. PBC refers to one's perception of control over the behavior and is assumed to reflect the obstacles that one encountered in past behavioral performances. With the inclusion of this new factor, Ajzen's TPB proposes that PBC influences behavior directly (Ajzen, 1991). The intentions to perform different behaviors can be predicted from the attitudes towards the behavior, subjective norms, and PBC. These intentions, together with perceptions of behavioral control, account for the considerable variance in the actual behavior. The combination of strong empirical support and widespread applicability has contributed to the popularity of the TPB. The TPB proposes that a person's intention is the most proximal determinant of one's behavior.

Overall, the attitude towards a behavior, subjective norm, and perception of behavioral control can lead to the formation of a behavioral intention. Given a sufficient degree of actual control over the behavior, people are expected to carry out their intentions when the opportunity arises. Thus, the intention is assumed to be the immediate antecedent of behavior.

Mediating Role of TPB

Mediational design plays a vital role in social science and business research and is often referred to as 'vital to theory development', 'important to the scientific status of the field', and an 'indispensable tool' to develop a higher logical understanding of the components which meddled the relationship between the exogenous and endogenous factors (Memon, Cheah, Ramayah, Ting, & Chuah, 2018). Mediating analysis was used to validate the role of mediating variables as an intermediary between the relationships of the independent and dependent variables. This analysis considers the presence of an intermediate variable or mechanism that transmits the effect of an antecedent's variable to an outcome (Aguinis, Edwards & Bradley, 2017). Henseler et al. (2009) stated that intermediate analysis or mediating analysis is among the most important measurements in studying the direct and indirect relationships in the structural model. Both of these relationships can be checked by running intermediate or simplified analysis (Baron & Kenny, 1986; Preacher & Hayes, 2008). Thus, mediation analysis was performed in this study to test the mediating effect of TPB in the relationship between decomposed variables with (HBCI). This study used the mediating analysis by Hair et al. (2014) as it is believed that significant direct relationships may not be identified due to the small sample size or other extraneous factors. This statement is supported by Zhao, Lynch, and Chen (2010) that the direct effect does not have to be significant to analyze the mediating effect. Among the key requirements for testing the intermediary is ensuring that the effect of the indirect relationship is significant. When it is significant, there is a mediating variable within the relationship between the independent and dependent variables.

Attitude: The TPB defines an attitude towards behavior as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991). Generally, the more encouraging the attitude toward the behavior, the stronger the individual's intention to perform the behavior (Ajzen, 1991). Attitude is the first conscious impression formed from being exposed to a specific stimulus, and this attitude categorizes the stimulus and evaluates it as positive or negative (Saboia, Pisco Almeida, Sousa, & Pernencar, 2020). A person's belief about the probability or consequences of the behavior and his or her assessment of the consequences are suggested to form his or her attitude towards the behavior (Ajzen, 1991). In addition, Cassoff, Gruber, Sadikaj, Rushani, and Knauper (2014) revealed that few factors determine higher intentions to change behavior including positive attitude, social influence as well as self-efficacy. Attitude has been widely applied with other factors to predict health behavior change. Despite the direct effects of attitude, it has a mediating role between two relationships. Cognitive and affective dimensions have significant direct effects on attitude, suggesting a mediated relationship (Yuen, Chua, Wang, Ma, & Li, 2020).

Homer (1990) stated that the mediating role of attitude towards an advertisement provides the best fit of data. In terms of the intention and behavior to adopt e-learning, Altawallbeh, Soon, Thiam, and Alshourah (2015) revealed that attitude mediates the relationship between perceived usefulness and perceived ease of use. In addition, the mediating role of brand attitude has a larger impact on the purchase intention of small and medium enterprises (SMEs) than larger firms (Kang & Park, 2018). Furthermore, based on Wardana, et.al (2020), the relationship between entrepreneurship education and the self-efficacy of students' entrepreneurial mindset is mediated by entrepreneurial attitude. The results revealed that attitude significantly mediates the impact of perceived usefulness, perceived ease of use, social influence, peer influence, and self-esteem on the intention to adopt online learning (Singh & Tewari, 2021). To understand the preference for local food, Skallerud and Wien (2019) stated that local patriotism has a direct effect on consumer preferences, and it is not mediated by attitudes toward eating local food. Ates, Ozdenk, and Caliskan (2021) in their studies revealed that the mediating role of attitude and intention in understanding science teachers' healthy eating behavior is supported. A previous study by Alam and Rashid (2012) reported that relative advantage has a better relationship with the mediating variable, attitude when compared with intention use as the dependent variable. For information quality, the attitude variable mediated the relationship between the influence of consumer knowledge and the intention to purchase green products (Wulandari, Rahyuda, & Yasa, 2015). Similarly, the indirect effect of green knowledge was positive and significant for the green purchase intention for green purchase attitude, subjective norm, and PBC (Salimi, 2019).

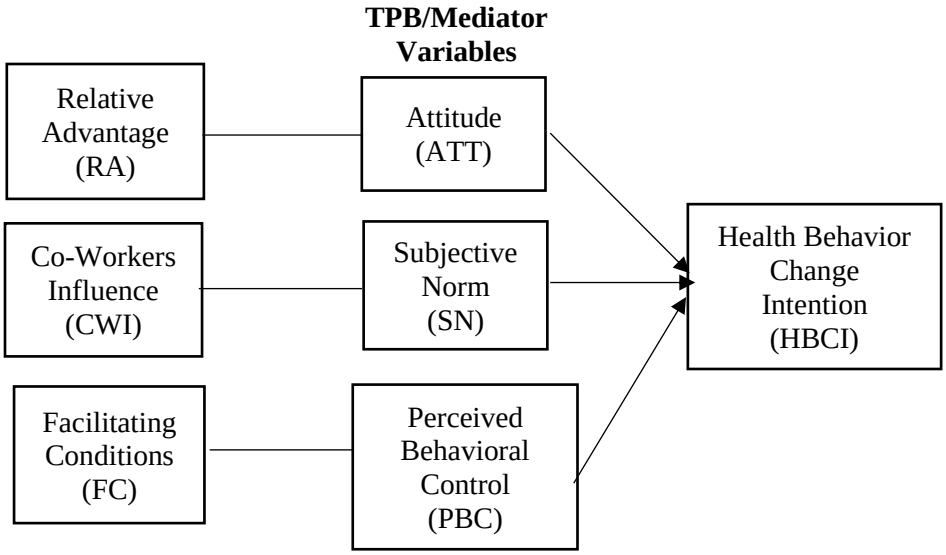
Subjective Norm: Subjective norm is the perception that significant others think that one should or should not perform the behavior in question (Albarracín et al., 2001; Fishbein & Ajzen, 1975). In other words, Gopi & Ramayah (2007) stated that subjective norms deal with the influence of social environment or social pressure on individuals and behavioral intention. Subjective norm is also the perceived social pressure on an individual to perform or not to perform certain behaviors (Al Mamun, Hayat, & Zainol, 2020). The role of social becomes more important when the motivation to comply with the pressure is greater (Mathieson, 1991). It has two components that work with interaction: beliefs about how someone important to the person would like them to behave. In addition, subjective norm specifies what the significant others expect the decision maker to perform and to what extent the decision maker wants to follow others' expectations (Penz & Hofmann, 2021). However, the predictive value of subjective norms on behavioral intention was significantly lower among those aged 60 years and above (Stehr, Lanfer, & Rossman, 2021). Despite the significant influence of subjective norm as a direct relationship, a few studies revealed that subjective norm plays a vital role as a mediator between behavior intention and behavior change. Sandve and Ogaard (2014) explored the relationship between perceived ethical obligation and subjective norm as well as their simultaneous influence on CSR-related choices and found the mediating effect of subjective norm on perceived ethical obligation. Moreover, Huang and Wang (2018) stated that subjective norm plays a mediating role in the relationship between conspicuous consumption and purchase intention. Hossain (2019) revealed that subjective norm plays a mediating role in the relationship between uses and gratification (UGT) and social networking sites (SNS) usage intention. The subjective norm mediates the relationship between travellers' mindsets and attitudes; however, the subjective norm does not mediate the relationship between travellers' mindsets and PBC (Japutra, Loureiro, Molinillo, & Ekinci, 2019). Additionally, there is a mediation effect of subjective norm and dependency intention in the relationship between parental phubbing and students' mobile phone dependency behaviors (Liu et al., 2019).

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Perceived Behavioral Control: Ajzen (1991) described perceived behavioral control as "the perceived ease or difficulty of performing the behavior" and "is assumed to reflect experience as well as anticipated impediments and consequences". Ajzen (2002) described perceived behavioral control as similar to the notion by Wood and Bandura (1989) on perceived self-efficacy, which is concerned with how well people's behavior is strongly influenced by their confidence in their ability to perform a particular behavior. The theory of planned behavior (TPB) was derived from the theory of reasoned action (TRA) which assumed that most humans' social behaviors are under volitional control and can be predicted from the intentions alone (Ajzen, 2002). Perceived behavioral control (PBC) is one's perceived self-efficacy in their belief in being able to act (Bae & Choi, 2021). In addition, PBC is also the belief that an individual has the capacities, faculties, abilities, and resources to engage in the target behavior (Chaba, d'Arripe-Longueville, Lentillon-Kaestner, & Scoffier-Meriaux, 2019). According to Al Mamun et al. (2020), PBC is an individual's understanding of the ease or difficulty associated with the performance of a behavior. PBC reflects the beliefs that an individual has and their ability to exercise control over behavior (Liou & Kulik, 2020). According to TPB, PBC is affected by the practical barriers of behavioral change, such as lack of available facilities, poor transportation, and challenges with attendance due to work-life demand (Turner, Rodriguez, Bobadilla, Hernandez & Yin, 2020). Besides the positive direct impact of PBC on intention behavior, a study revealed that PBC mediates the relationship between internet self-efficacy and perceived accessibility with the behavioral intention to adopt e-learning among university instructors in Jordan (Altawallbeh et al., 2015). The results indicated that entrepreneurial self-efficacy has significant direct effects on entrepreneurial intention through the PBC for the entrepreneurial variable (Seif & Fathi, 2015). According to Courneya, Bobick, and Schinke (1999), the relation between personality and exercise behavior was partially mediated by PBC. Furthermore, PBC has a mediation association between parental nurturance and healthy sleep intention (Lao, Tao, & Wu, 2016). PBC also partially mediated the influence of personality towards physical activities among postgraduate students studying at a large UK University (McEachan, Sutton, & Myers, 2010).

3. Conceptual Framework

Figure 1: Proposed Conceptual Framework



Based on the above conceptual framework for this study (refer to Figure 1), there are three independent variables which are relative advantage (RA), co-worker influence (CWI), and Facilitating Conditions (FC). There are also mediating variables that consist of TPB components which consist of Attitude (ATT), Subjective Norm (SN), and Perceived Behavioural Control (PBC). In this study, health behavior change intentions (HBCI) act as a dependent variable. For this study, there will be three hypotheses that can be tested for the indirect effect of the model. Table 1 shows the three hypotheses.

Table 1: Mediation Construct in the Model

Hypotheses		Hypotheses
H1	RA-ATT-HBCI	Relative advantage has a significant influence on attitudes towards HBCI among workers in the banking sector.
H2	CW-SN-HBCI	Co-worker has a significant influence on subjective norms towards HBCI among workers in the banking sector.
H3	FC-PBC-HBCI	Facilitating conditions has a significant influence on PBC towards the HBCI among workers in the banking sector.

4. Methodology

This study is expected to describe the factors that influence health behavior change intention (HBCI) among workers in the banking sector. To analyze the relationship between variables this study uses a quantitative approach through a survey using a questionnaire conducted on workers between 20 and 54 years old within the Malaysian banking sector (headquarters and branches) in Selangor with two specific conditions (physically inactive, and unhealthy food consumption. To be achieved, this study aims to use PLS-SEM for measurement and structural model evaluation following Hair et al. (2011) as a better means of exploratory study (Reinartz, Haenlein & Henseler, 2009) as recently gained increasing popularity in individual and service study areas (Hair et al., 2019).

5. Conclusion

The conceptual framework presented in this paper represents a comprehensive and holistic to addressing HBCI among workers in the banking sector. By using a well-known TPB component as a mediating factor between RA, CWI, and FC towards HBCI. The conceptual framework outlined in this study emphasizes the importance

of factors that can predict HBCI among workers in the banking sector. This study will be useful in providing guidelines to employers or organizations in identifying critical characteristics affecting workers' intentions toward health behavior change. A good understanding of these antecedents is essential to designing effective intervention programs. Then, organizations can provide suitable programs for the workers' health behavior change. Several approaches can be taken to help workplaces become healthier and improve the sustainability of work by adding health-promoting activities to improve health.

By promoting workers' health behavior change, this study provides the banking sector with the best insights and strategies to improve productivity and overall workers' well-being. Employers can understand the health of their workers as well as the effectiveness of their current health strategies. Organizations can develop, implement, and customize workplace interventions to meet their workers' needs. Workers feel more comfortable and valued when they know that the programs are designed with their needs in mind.

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The Gig Economy Revolution: Evaluating Income Streams and Economic Contributions in Malaysia

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Abstract: There has been scant research about the gig economy revolution in Malaysia. Evaluating the exponential growth of the Malaysian gig economy is difficult as there is a lack of dependable data on digital platform revenues. This study fills this gap by examining administrative data from the principal agency propelling Malaysia's digital economy. Between 2016 and 2021, the proliferation of gig workers and digital platforms markedly increased, offering stable incomes and augmenting Malaysia's economic revenue. Significantly, earnings from digital gig employment have surpassed conventional physical gig employment. The growth of local digital platforms during the pandemic of COVID-19 is driven by an increased demand for online services. Regulatory oversight is crucial for safeguarding gig workers and ensuring fair income distribution within this sector.

Keywords: *Digital platforms; gig economy; gig workforce, income growth; independent workers*

1. Introduction

The gig economy has become a worldwide phenomenon, expanding swiftly across numerous industries, driven by technological progress and innovative business approaches (Roy & Shrivastava, 2020; Schwellnus et al., 2019). While some studies use "sharing economy" and "gig economy" interchangeably, the two concepts are distinct. The gig economy mainly involves service-based activities like food delivery and digital freelancing, whereas the sharing economy centers on asset-sharing, such as renting out underutilized properties for short-term use (OECD, 2019) and they connect with clients through digital platforms on a job or gig basis (Freudenstein & Duane, 2020; Heeks, 2017a; Lepanjuuri et al., 2018). As a result, gig workers, clients, and digital platforms were able to communicate much more directly and instantly.

The inception of the gig economy dates back to 1915 when musicians commenced performing individual shows termed "gigs," though the contemporary gig economy is significantly more expansive and organized (Friedman, 2014). Progress in information and communication technology (ICT), particularly the internet and smartphones, has been instrumental in the swift expansion of gig work, with digital platforms serving a pivotal function(Collins et al., 2019; Malik et al., 2021; Migai et al., 2019; Vallas & Schor, 2020). Recent statistics indicate that 67.1% of the global population possesses a smartphone, while 62.5% has internet access, thereby enhancing the accessibility of online gig work (Kemp, 2023). According to Raja (2018), online talent platforms are projected to generate millions of full-time equivalent positions worldwide by 2025, significantly influencing labor markets affected by elevated unemployment rates. The limitations of traditional offline labor markets and the growing unemployment rate are the main causes of the gig economy's explosive growth. Due to these factors, there is a greater demand for online marketplaces than there is supply. Although it may also bring instability, the gig economy has given those who are unemployed or not fully employed the chance to switch from traditional full-time jobs to a new kind of flexible online work (Faisal et al., 2019; Oyer, 2020).

In Malaysia, interest in the gig economy has increased as more workers seek flexible alternatives to conventional employment. A 2018 study by Zurich-Oxford University indicated that 38% of employed Malaysians showed a desire to shift to gig work within one year (Zurich, 2020). Furthermore, the Employees Provident Fund (EPF) (2019) anticipated that freelancers would soon constitute 40% of Malaysia's workforce, surpassing the global average of 20%. According to the Department of Statistics Malaysia (DOSM), around 26% of Malaysia's workforce, or approximately four million people, were engaged in full-time gig employment in 2020 (DOSM, 2020).

Still, the COVID-19 epidemic has raised awareness of gig workers as vital employees who perform a necessary function in society (Friedland & Balkin, 2022). Movement restrictions and the closing of public venues and stores during the COVID-19 epidemic in Malaysia have greatly raised online sales and service transactions. This scenario involves utilizing online platforms for grocery and food delivery services. These digital channels depend on casual and temporary workers to operate, offering income opportunities to individuals who have lost their jobs due to the recession (Sazali & Gen, 2019). An increasing number of these workers are expected to remain in the gig economy to fulfil the need for temporary specialized skills and scalable operations, although some might opt to return to traditional employment as economic conditions improve (Mahato et al., 2021).

Research in Malaysia has delved into a range of topics, such as digital skills and accessibility (Tan & Gong, 2021), the effects of the gig economy on higher education (Kassim et al., 2020), sustainability of the gig economy (Abdul Rahim et al., 2021) and social protection and labor market inequalities (Uchiyama et al., 2022). There is currently an absence of comprehensive official data regarding the gig workforce in Malaysia, resulting in considerable uncertainty in accurately assessing this segment. The comprehensive labor force survey data from DOSM are available, but they are not precise measures of the current participants in the gig economy. In addition to the study by Harun et al. (2020), empirical research on the gig economy workforce in Malaysia remains insufficient. This paper seeks to 1) estimate the income generated by gig workers and digital platforms in Malaysia and 2) assess the contribution of the gig economy to the Malaysian economy.

2. Literature Review

Gig Economy and Its Classification

Many more people are participating in the gig economy now than in the past. The difficulty in precisely estimating the overall number of persons engaged in this sector is becoming an increasingly pressing issue as the gig economy continues to attract more and more participants. According to several sources (Freudenstein & Duane, 2020; Jeon et al., 2019; Lepanjuuri et al., 2018), this problem stems from the fact that the term "gig economy" is not both clear and consistently defined. Academics are having trouble defining the concept for no apparent reason due to the abundance of different terms used to describe it.

Generally speaking, the gig economy includes business ventures associated with people doing temporary, project-based, and outcome-driven labor. According to Lepanjuuri et al. (2018), the gig economy refers to the exchange of work for payment between individuals or organizations facilitated by online platforms that connect service providers with customers. Usually temporary, this arrangement is based on payment for predetermined tasks, such as the provision of services like food delivery (e.g. FoodPanda) and passenger transportation (e.g. Grab) that link consumers and workers via digital platforms (OECD, 2019).

Gig workers are typically identified as independent contractors (Nadler, 2018), and are commonly referred to as non-standard workers (Sazali & Gen, 2019). In addition, gig workers can be classified into four categories: (1) digital freelancers engaged in professional or specialized digital work, (2) gig workers performing tasks facilitated through digital platforms, (3) crowd-workers handling small-scale digital tasks or micro-jobs, and 4) gig workers engaged in home repair, food delivery, and care work (Deloitte, 2020; Manyika et al., 2016; Vallas & Schor, 2020). Platform professionals, entrepreneurial influencers, asset enablers, and taskers are the four new categories of gig workers that Ziegler et al. (2020) proposed. The degree to which gig workers are willing to use different types of capital, such as social, economic, and human capital, influenced the typologies.

Heeks (2017a, 2017b) and Schmidt (2017) categorize gig work into two main types: physical or location-based, where workers perform tasks that require being at a specific location through web-based applications, and digital or web-based, where workers complete tasks remotely via the internet from any location. The first type includes tasks like ride-sharing, food delivery, and logistics, which are location-specific and typically involve platform-based organization. These activities are widely recognized by the public and commonly adopted by individuals. On the other hand, digital or web-based labor, also known as online labor, refers to remote work done by individuals or groups through the Internet, often in the form of project-based work.

Table 1 presents a selection of global digital platforms categorized as previously outlined. There are six digital gig activities suggested by The Online Labour Indicator (OLI): administrative and data entry, creative and

multimedia, professional services, sales and marketing support, software development and technology, and writing and translation (Stephany et al., 2021). The classification of physical gig activities is contingent upon the economic activities present in the respective country (OECD, 2019).

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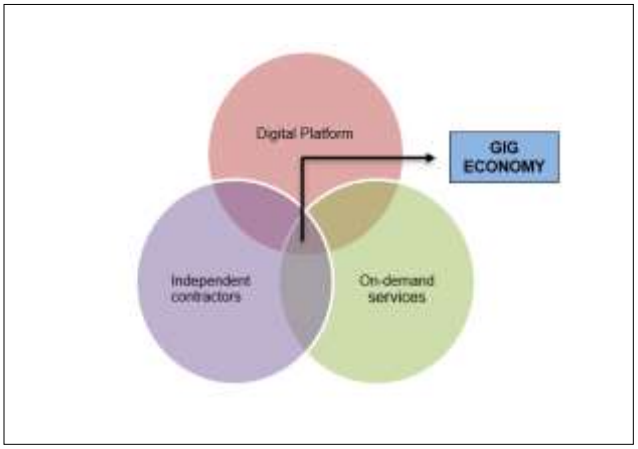
Table 1: Type of gig economy and examples

Classification	Digital platforms	Activities
Physical gig	Uber, Grab	e-hailing services
	Handy, TaskRabbit	Household services
	Deliveroo, Ubereats	Food delivery services
	LalaMove, Amazon Flex	Delivery and logistic services
Digital gig	AM Turk, CrowdFlower	Microtasking/crowd work
	Upwork, Fiverr	Content creation, digital marketing, professional works, programming

Source: Author's compilation

As an economic system characterized by three key elements: digital platforms, independent workers, and on-demand services, the key characteristic of the gig economy is the presence of digital platforms that act as intermediaries between employers and workers. (Freudenstein & Duane, 2020). For this paper, the definition will specifically exclude individuals using digital platforms for asset-sharing services, such as Airbnb, or online transactions facilitated by a business's digital platform, like Pizza Hut Delivery, as illustrated in Figure 1.

Figure 1: Gig economy definition



Source: Freudenstein and Duane (2020)

Gig Economy and Its Growth

While the gig economy offers flexible employment opportunities and the freedom to choose work, accurately measuring its rapid expansion remains challenging faced by many countries, especially the contribution to the national economy (Collins et al., 2019; Jackson et al., 2017; Jeon et al., 2019; Koustas, 2020). The gig economy's actual size is still unknown because of the wide range of characteristics and extent that result from different definitions used by each country, even though many studies have been done in developed nations to quantify the gig economy within their respective countries (Freudenstein & Duane, 2020; OECD, 2019). Moreover, because gig activities are constantly changing and marked by high turnover rates among workers, data collected from national or private surveys may be inaccurate and become outdated rapidly (Oei & Ring, 2020).

The BLS-funded Contingent Worker Survey (CWS) is the most comprehensive source of contingent and temporary workforce data in the US. The CWS reported in 2005 that 1.8% to 4.1% of employed people did contingent work (Donovan et al., 2016). CWS collection ended in 2005. The Bureau of Labour Statistics (BLS) began collecting data on mobile app and website users in 2017 to classify them as alternative workers. Thus, 1.6 million Americans work in non-traditional jobs using mobile apps and websites (BLS, 2018). Beyond the CS survey, administrative tax data showed a significant increase in gig workers and digital freelancer self-

employment (Jackson et al., 2017). Gig workers made up 11% of the US workforce in 2016 (Collins et al., 2019; Koustas, 2020). The household survey found little evidence that the gig economy has increased self-employment (Abraham et al., 2018).

In the United Kingdom (UK), the gig economy is expanding. Employment in the United Kingdom falls into three categories: 1) workers; 2) self-employed people or independent contractors; and 3) incorporated businesses, which are people who run and own their service businesses. Data from the LFS indicates that the increase in self-employment and sole proprietorships accounts for 40% of the employment growth since 2008. An interesting discovery from the LFS showed that individuals involved in gig work do so either as their primary income source or to supplement their earnings since the current LFS was not specifically designed to include many aspects of gig employment (Adam et al., 2017). Thus, Adam et al. (2017) suggested distinguishing independent contractors from managers and owners of businesses. Later, the government surveyed the citizens in the UK, through an agency (Department for Business, Energy, and Industrial Strategy (BEIS). The findings indicated that 4.4% of the UK workforce is involved in the gig economy, with Uber being the most widely used digital platform and courier services being the predominant form of gig economy employment (Lepanjuuri et al., 2018).

Notably, the gig economy is growing widely in Australia as well. New South Wales (NSW) saw a 68% increase in revenue from the collaborative economy between 2015 and 2016, according to a report. Also, during that time, half a percent of the state's GDP came from this economy, and the number of users who made money through it doubled (Black, 2020). The Actuaries Institute commissioned a study that found 250,000 gig workers in 2019 using big data analytics. The majority of these people found employment in the food delivery and e-hailing industries. Additionally, the Australian gig economy grew substantially, increasing by more than nine times between 2015 and 2019. Consequently, in 2019, consumers spent a substantial $6.3 billion on gig economy services. Compared to other major industries like information, media, and communication, the gig economy's contribution to consumer spending in Australia is relatively modest, despite its significant growth (Freudenstein & Duane, 2020). Many Canadians have lost their jobs to automation and are now working as freelancers. The percentage of Canadians who worked as gig workers increased from 5.5% in 2005 to 8.2% in 2016, according to research by Jeon et al. (2019) that used statistics from Statistics Canada.

The growth of the gig economy in many countries is closely linked to the rise of online platform companies. A report by the International Labour Organisation (ILO) shows a significant surge in digital labor platforms, growing from 50 to 707 between 2007 and 2021 across 98 countries. While gig work is often a side job in wealthy nations, in many developing countries, around half of the workforce is self-employed (ILO, 2020). According to the Online Labour Index (OLI) at Oxford University, the number of gig workers grew by 37.50% between August 2016 and November 2017. The expansion was primarily driven by five countries: Canada, the United States, the United Kingdom, Australia, and India (Kässi & Lehdonvirta, 2018). In 2021, despite being a developing country with a high unemployment rate, India surprisingly accounted for one-third of the global digital freelancer population (Kässi et al., 2021).

In Malaysia, gig workers are defined as self-employed people or part-timers (DOSM, 2020). In 2018, the Department of Statistics Malaysia (DOSM) estimated that 559,000 individuals were employed as gig workers. According to the latest LFS, there are about 3 million own-account workers and part-time employees, with gig workers making up 18.4% of this total. The estimate was based on the workers' job status and occupation (Harun et al, 2020). Likewise, the current nationwide survey didn't set out to quantify gig work in its exact form. About a quarter of respondents were self-employed or freelancers, and 38% ran their businesses, according to a survey (Zurich, 2020). According to a recent study (Ahamad Nawawi et al., 2023), the number of people who earn money through gigs increased from 29,200 in 2016 to 1,033,940 in 2021. Harun et al. (2020) highlighted that private surveys still demand considerable time and financial investment to enhance their inclusivity. This paper aims to contribute to the existing body of knowledge by offering a detailed analysis of Malaysia's gig economy.

3. Methodology

Using a descriptive methodology, this study examined the effects of digital platforms, gig workers, and their income generation on Malaysia's gross domestic product. The relevant Malaysian agency promoting the digital economy provided the secondary data sets used in the analysis. Using the available data, we were able to determine how digital platforms and gig workers have grown and how much money they have made. In addition, this paper used the GDP growth rate to explain how the gig economy has affected Malaysia's economy.

The data presented in this paper was obtained from the Malaysian Digital Economy Corporation (MDEC) database, specifically focusing on the e-Rezeki and GLOW programs over six years, from 2016 to 2021. These two databases were chosen due to the objectives of the e-Rezeki and GLOW programs, which aim to enhance employment and income opportunities for Malaysians participating in the gig economy. Additionally, the databases include data on the number of gig workers and digital platforms officially registered with MDEC, as well as the income generated by both gig workers and digital platforms. However, it should be noted that the revenue data for digital platforms does not account for entities without a business presence in Malaysia. It is also important to recognize that these databases may not fully represent the Malaysian labor force or the gig economy job market, as not all gig workers are registered with MDEC. Despite this, the databases remain the most comprehensive and reliable sources of information on digital platforms and gig workers within Malaysia's economy.

4. Results and Discussion

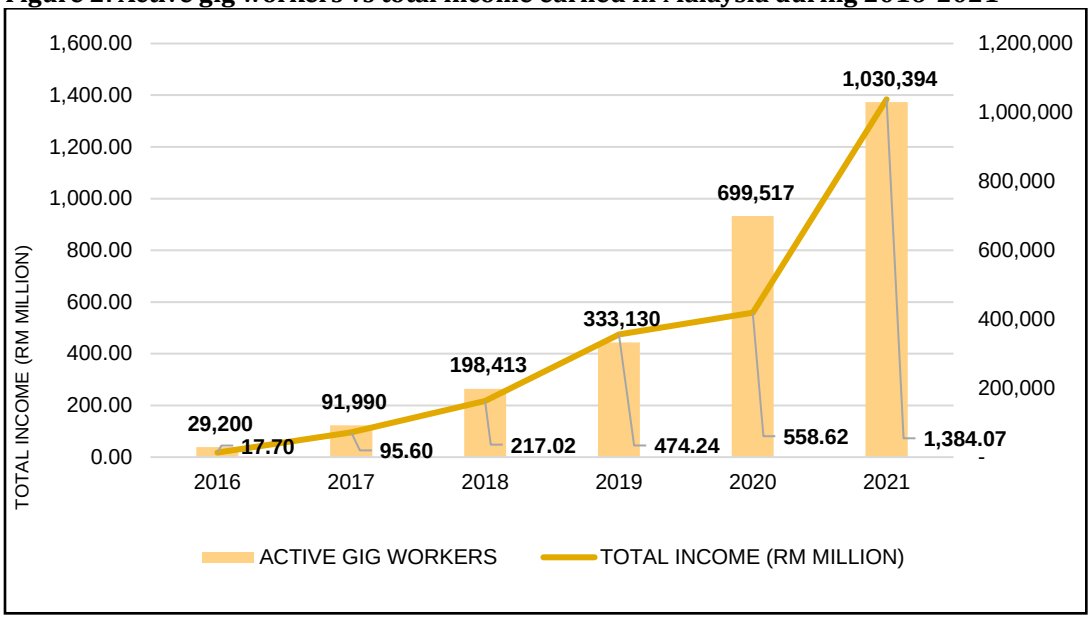
Income generated by gig workers through digital platforms in Malaysia

Figure 2 demonstrates a notable increase of 35 times in the number of active gig workers when compared to the year 2016. Active gig workers refer to individuals who are presently involved in gig employment and have earned income in the last year. The active gig worker population rose significantly from 29,200 in 2016 to 1,033,940 in 2021. The overall figure reflects the aggregate total of participants engaged in both the eRezeki and GLOW initiatives. Of the participants, 80 percent are active in the physical gig economy, whereas the remaining 20 percent participate in the digital gig economy. Gig workers are often referred to as independent contractors, freelancers, and digital freelancers.

The total earnings of gig workers currently engaged in work rose from RM17.7 million in 2016 to RM1.384 billion in 2021. The figure reflects considerable yearly growth, suggesting the ongoing expansion of the gig economy in Malaysia. The period from 2016 to 2019 saw considerable expansion, but the notable acceleration in income growth starting in 2018 is especially striking. The revenue experienced a significant increase from 2017 to 2018, nearly doubling, and has shown consistent growth in the subsequent years. The increase in gig work enabled by digital platforms, coupled with changes in labor market dynamics resulting from the COVID-19 pandemic, has led individuals to engage in gig work (Mahato et al., 2021; Rahul et al., 2020; Thayer, 2020; Webb et al., 2020).

Despite the doubling of gig workers in 2020, the income growth for active gig workers was limited to 85% relative to the previous year. The government's implementation of the movement control order (MCO) restricted in-person interactions (Tan & Gong, 2021) and resulted in a notable rise in online services (OECD, 2021). The GLOW-PENJANA program, implemented by MDEC through a government initiative, aims to support individuals affected by the financial instability and job insecurity caused by the COVID-19 pandemic. The initiative provides participants with the skills needed to thrive as digital freelancers, allowing them to deliver high-quality projects to global clients and create a stable primary income. Gig workers currently engaged in work have seen their earnings increase by more than 150% compared to 2020. This demonstrates a clear and positive correlation between the number of gig workers employed and the growth in their total income over time. The rise in the number of active gig workers is directly associated with an increase in the total income generated by these workers.

Figure 2: Active gig workers vs total income earned in Malaysia during 2016-2021



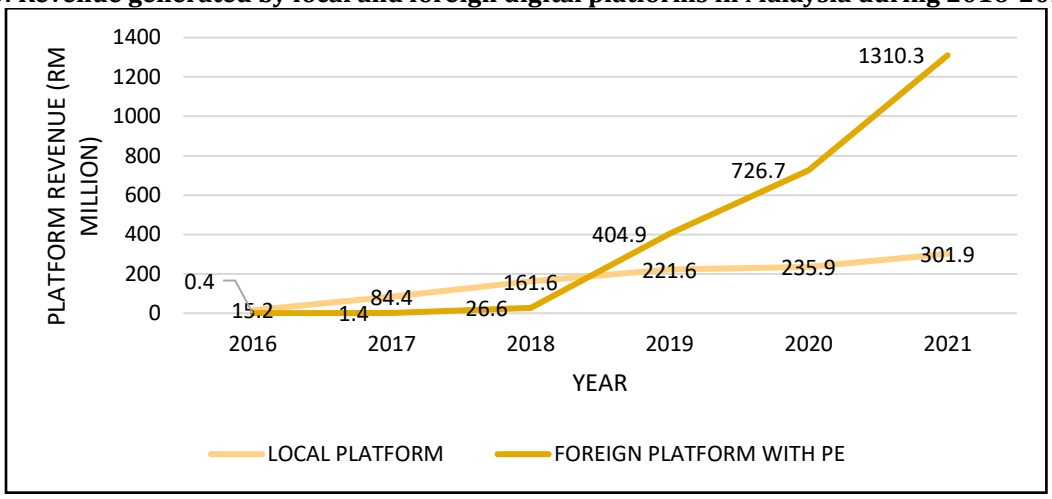
Source: MDEC (2022)

Figure 3 illustrates the revenue produced by digital platforms from 2016 to 2021. The data were classified according to the revenue generation of digital platforms, whether they are domestic or foreign while maintaining a local presence in Malaysia. It is important to note that Figure 2 excludes the revenue generated by GRAB, Airbnb, and various other foreign-owned digital platforms that do not have a local business entity (PE) in Malaysia. The digital platforms in Malaysia have shown a notable increase in total revenue over the years. The figure increased from RM15.6 million in 2016 to RM1,612.2 million in 2021. This figure represents a significant expansion of the digital platform involved in the gig economy in Malaysia.

Both local and foreign platforms contributed to the growth; however, foreign platforms with a permanent establishment (PE) demonstrated more substantial revenue growth over time. Between 2016 and 2018, domestic digital platforms consistently surpassed foreign digital platforms in revenue generation, accounting for more than 90 percent of the total revenue. Since 2019, foreign digital platforms have experienced a significant increase in revenue. The COVID-19 pandemic has resulted in increased internet usage, changes in consumer behaviors, and the expansion of e-commerce and digital services (Freudenstein & Duane, 2020; Friedland & Balkin, 2022; Sazali & Gen, 2019; Webb et al., 2020).

There was a 65% revenue gap in 2019 between local and foreign digital platforms. In 2020, the disparity widened to 75% and in 2021, it shot up to 81.1%. More foreign digital platforms registered with MDEC, and more digital freelancers participated in digital and professional work after the Malaysian government endorsed GLOW-PENJANA. These digital nomads do things like web development and translation from the comfort of their own homes.

Figure 3: Revenue generated by local and foreign digital platforms in Malaysia during 2016-2021



Source: MDEC (2022)

Gig Economy and its Contribution to Malaysia

This paper further examines the influence of the gig economy on the Malaysian economy by analyzing the growth rate of the Gross Domestic Product (GDP). Figure 4 presents an estimation of the gig economy's influence on the Malaysian economy, derived from the revenue reported by digital platforms to MDEC. The computation was based on the cumulative increase in the Gross Domestic Product (GDP) (refer to Table 2). The annual rise in gig workers and digital platforms suggests that the gig economy was anticipated to be recognized as a new avenue for economic growth in the 12th Malaysia Plan 2021-2025 (Lim, 2021). However, it is noteworthy that Malaysia's GDP growth rate for 2020 was recorded at -5.53 percent, marking a significant decline of 9.95 percent compared to 2019.

Table 2: GDP growth rate in Malaysia during 2016-2021

Year	GDP (in USD) (Million)	GDP (in RM) (Million)*	Growth rate (percentage)
2016	310,260.00	72,108.00	4.4 %
2017	319,110.00	76,380.48	5.8 %
2018	358,790.00	85,878.07	4.8 %
2019	365,180.00	87,407.55	4.4 %
2020	337,340.00	80,743.91	-5.5 %
2021	372,980.00	89,274.52	3.1 %

Note*: The GDP amount in Ringgit Malaysia (RM) was based on the exchange rate as of 16 September 2022.
Source: World Bank Open Data (World Bank, 2023)

The author estimates that the gig economy contributed a negligible 0.02% to GDP in 2016, rendering it largely irrelevant. On the other hand, the gig economy grew substantially between 2016 and 2017, contributing 0.11 percent more to GDP. In addition, the gig economy continued to expand in 2018, adding 0.22 percent to the GDP, a somewhat larger contribution than in 2017. Nevertheless, in 2019, the gig economy experienced significant growth, contributing a notable 0.72 percent to the GDP. Despite a decline in GDP, the gig economy maintained its impressive revenue growth in 2020, adding 1.12% to the GDP, an even more remarkable contribution. On the flip side, the gig economy continued to grow in 2021, contributing a far larger portion of the GDP (1.81 percent). According to Kolmar (2023), this proportion falls short of 5.7% of the US GDP. Unfortunately, the gig economy still only accounts for a small fraction of the world's workforce, around 1-3 percent, according to an OECD report (Schwellnus et al., 2019).

5. Conclusion and Recommendations

This study employs descriptive analysis to assess the exponential growth of the gig economy in Malaysia. It specifically examines the development of gig workers and digital platforms, their earnings, and their impact on the Malaysian economy. The data for this analysis was provided by MDEC, the government agency responsible for promoting Malaysia's digital economy. Information was collected from the eRezeki and GLOW databases, covering the period from 2016 to 2021. The growth of digital platforms has positioned them as key contributors in both the domestic and international labor markets (Vallas & Schor, 2020).

The number of gig workers has grown by a factor of 35 since 2016, resulting in a total income of RM1,384.07 billion in 2021. Empirical data demonstrates that Malaysia's gig economy has a substantial and diverse economic impact, boosting consumer spending, producing possible tax income, and creating jobs, all of which contribute to an increase in overall economic activity. The estimated revenue from digital platforms was 1.81 percent of GDP in 2021, a substantial increase of 116.6 percent from 2016. Therefore, globalization has made it easier for companies to grow internationally and for people to work and travel abroad (Batmunkh et al., 2022). To guarantee fair competition, consumer protection, and the taxation of digital platforms, lawmakers and regulators may need to examine and amend current laws. Additionally, the growth of the gig economy might force legislators to consider laws, worker rights, and taxes related to gig labor. It highlights how important it is to adapt to changing labor market conditions.

There are two limitations to this paper. Initially, because MDEC did not release this information, the data that was available did not include demographic information about the gig economy workers. Additionally, the administrative record only contained information about registered digital platforms that offer employment opportunities online. Self-employed individuals who work informally on the digital platform might therefore be under-represented. To compare the data from various sources for the same individual, future research should focus on developing methods to create assessments using labor force survey (LFS), household survey, and administrative data assembled at the individual level, such as tax and business data. There is a lot of promise in this integration for comprehending how work arrangements are evolving. It is feasible to obtain information about a worker's monthly earnings and demographic characteristics by combining tax data with the LFS.

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Unlocking the Power of Social Media: A Strategic Path to Financial Growth of Homestay in Malaysia

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Abstract: The Malaysian homestay industry faces challenges in improving financial performance due to limited marketing reach and underutilization of digital tools. This pilot study explores the role of social media adoption in enhancing the financial performance of homestays. Using the Technological, Organizational, and Environmental (TOE) framework, the research investigates key factors driving the adoption of social media and their impact on increasing the revenue for homestays. Despite the growing significance of social media, many homestay operators are slow to adopt platforms, hindering their ability to attract a broader audience. Data was collected from 30 respondents through a self-administered survey targeting homestay coordinators. Statistical analyses, including reliability and validity tests, were conducted using SPSS software to ensure robust data. This pilot study is essential as it demonstrates that social media adoption, framed within the TOE model, can significantly enhance the financial sustainability of rural homestays. To conclude, the study suggests that policymakers need to explore the long-term effects and create initiatives that facilitate the adoption of digital tools among homestay operators. This could lead to stronger competitiveness in Malaysia's homestay industry and boost rural tourism.

Keywords: *Social Media Adoption, Homestay, Financial Performance, TOE Framework, Tourism, Malaysia*

1. Introduction and Background

The tourism industry is a substantial contributor to Malaysia's GDP (Sharida, Shaliza and Syafiqah, 2023). Among the many areas of tourism, the homestay business has grown in popularity due to its ability to promote rural tourism and cultural exchange (Azman, 2020). Moreover, Bhuiyan (2019) claimed that homestay is a program that offers a unique experience by allowing guests to stay with local families, making their journey more engaging than typical hotels. However, despite the cultural and economic advantages, many Malaysian homestay operators struggle to maintain their financial stability (Nor, 2024).

One of the issues faced by small business owners, like homestay operators is a lack of marketing accessibility (Nor, 2024) and normally the traditional marketing strategy is not always accessible or effective for them (Kanel, Bhattarai and Gnawali,2024). As the world becomes increasingly dependent on digital platforms, social media has evolved as a critical tool for marketing and engagement (Bhuiyan,2019). Homestay operators can utilize social media platforms such as Facebook, Instagram, and Twitter to promote their services, attract international and domestic visitors and engage with potential customers (Azman, 2020). Considering the obvious benefits, social media use among homestay operators is inconsistent (Ramlan et al., 2023). This is in line with Osman and Zakaria (2020) revealed that many operators are either unaware of the potential benefits or have obstacles in effectively implementing these technologies.

The purpose of this pilot study is to investigate the factors that influence social media adoption towards the financial performance of homestays in Malaysia. Using the Technological, Organizational, and Environmental (TOE) framework, the study analyses the important elements that drive social media adoption. Moreover, this study fills a key gap in the existing literature on technology adoption in the homestay industry. It also provides practical recommendations for operators and governments to improve the financial sustainability of homestays through an effective social media strategy.

2. Literature Review

Social Media

Social Media Overview: Social media is defined as web-based platforms that allow users to generate and share content, as well as participate in social networking activities (Kaplan and Mazurek, 2018). In addition, Lin

(2021), claimed that platforms like Facebook, Instagram, and Twitter have become essential components of business marketing strategies, especially for SMEs. Businesses can use social media to communicate directly with their target audience, improve consumer engagement and promote exposure (Lin, 2021). Thus, the tourism sector, particularly the homestay business, should embrace social media as a tool for promoting places, services and experiences to a global audience.

Social Media Adoption: According to Kaplan and Mazurek (2018), social media adoption is influenced by a variety of factors. In the context of SMEs, especially homestays, social media offers a low-cost and accessible marketing tool (Mohamad, 2022). However, Gyamtsho (2022) claimed that the implementation of these platforms is frequently impeded by a lack of resources, technological expertise or organizational support. Furthermore, Mohamad (2022) also stated that homestay operators may be hesitant to use social media because they are concerned about privacy and return on investment.

Social Media in the Tourism Industry: The growth of social media platforms has had a significant impact on the tourism industry (Islam, 2021). Based on Akram and Shahid (2020) stated that normally tourists nowadays use platforms such as TripAdvisor, Instagram, and Facebook to plan vacations, read reviews and share their experiences. Moreover, Islam (2021), also explained in his study that tourism providers who actively engage in social media marketing experience considerable increases in customer engagement, brand awareness, and financial performance. This is in line with Kaplan and Mazurek (2018), who claimed that social media also enables businesses to communicate with customers, providing tailored services and more effectively responding to feedback.

Social Media in the Homestay Sector: Based on Ramlan et al., 2023 stated that social media offers a one-of-a-kind opportunity in the homestay market to promote individualized and authentic vacation experiences. However, homestay operators, unlike large hotels or resorts, frequently have limited marketing funds, making social media a viable tool for reaching a larger audience (Mohamad, 2022). In addition, Islam (2021), claimed that homestays that use social media platforms efficiently are more likely to attract local and foreign tourists. However, social media adoption in the homestay industry is often uneven, with many operators possessing the technological expertise to implement successful social media campaigns.

Homestay

Homestay is a type of accommodation in which visitors stay with a local family in their own home (Osman and Zakaria, 2020). This is in line with Ramlan et al., (2023) stated that visitors also will have their own foster family when staying in the homestay. Moreover, Mohamad (2022) said that this sort of lodging provides guests with a more authentic experience of local culture and lifestyle than a hotel. In addition, homestays are prevalent in rural areas and developed as a lodging option for travelers seeking cultural exchange. Homestays have evolved into an organized section of the tourism industry, with government initiatives and laws encouraging them as viable accommodation options (Osman and Zakaria, 2020). MOTAC has played a key role in promoting Malaysia's homestay sector, recognizing its potential to increase rural tourism and provide extra income for local communities (Islam, 2021).

Benefits of Homestay: There are lots of benefits provided to both hosts and guests from the homestay. According to Pasanchay and Schott, (2021), stated that the benefits given to the host where homestay will provide hosts with additional income, which contributes to the financial well-being of rural communities. Meanwhile, for the guests, this program may offer guests a unique and authentic travel experience in which they may immerse themselves in local culture, cuisine and traditions. In addition, homestays also help to preserve local cultures and legacy by encouraging tourists to participate in traditional activities (Osman and Zakaria, 2020).

Challenges Facing by Homestay Operators: Despite the benefits, homestay operators also encounter several problems. Many operators lack marketing abilities required to attract tourists (Osman and Zakaria, 2020). This is supported by Mohamad (2022) claimed that they just rely on word-of-mouth or local tourism boards for promotion. Furthermore, the informal character of many homestay businesses makes it difficult for operators to compete with larger hotels (Dawayana, et al., 2021; Islam, 2021). Moreover, Pasanchay and Schott, (2021) stated that financial sustainability is a major concern for homestay businesses, especially in rural locations

where visitor demand is seasonal or irregular (Nor, 2014). Therefore, the rapid expansion of online booking platforms has increased rivalry, necessitating the adoption of digital marketing methods such as social media by homestay operators to remain competitive (Osman and Zakaria, 2020).

Performance of the Homestay

The performance of an organization can be evaluated using both financial and nonfinancial parameters (Zulkefli et al., 2021). Based on Dawayana et al., 2021 stated that productivity, sales growth, cash flow, and profitability are examples of financial criteria measurements. On the other hand, non-financial goals contribute to alternative success measures, such as customer satisfaction, effective leadership, strong partnerships with public and private organizations and uniqueness of homestay attractions (Zulkefli et al., 2021).

This pilot study focuses specifically on the financial performance of homestay operators. Financial performance refers to the ability of a business to generate revenue and maintain profitability. In the context of homestays, financial performance is often influenced by factors such as occupancy rates, pricing strategies, and marketing efforts (Devadas and Jayasooriya, 2021). Previous studies have shown that businesses that adopt social media marketing strategies are more likely to see an increase in revenue due to improved customer engagement and visibility (Islam, 2021). Yet, financial performance in the homestay sector is also affected by external factors such as economic conditions, tourist demand, and competition from other forms of accommodation (Dawayana, et al., 2021).

TOE Framework

The Technological, Organizational, and Environmental (TOE) framework was developed in the early 1990s by Tornatzky and Fleischer. It has now become one of the most commonly accepted models used to guide research investigating determinants that drive organizations' decisions to adopt or reject technology (Kwabena et al., 2021). TOE covers the technological, organizational and environmental factors impacting adoption which provides a holistic view of how organizations choose technology presence (Zhong and Moon,2023).

Technological Factors: Wang et al., (2016) claimed that technological factors are the new efforts made by a company to obtain new technologies that can increase their performance (Wang et al., 2016). Additionally, Tornatzky et al. (1990) emphasized the technological part of the TOE framework to highlight the importance of company competencies in managing technology. In terms of putting technology components into practice, Yalcin and Daim (2021) suggested adopting technology as well as having the ability to properly manage, integrate and develop the component. Moreover, technology will continue to advance as long as internal reasons drive it, and performance will rise alongside it (Amini and Jahanbakhsh, 2023). Naturally, internal R&D alone is insufficient to boost an organization's performance. Some organizations with a lengthy R&D cycle and a high difficulty coefficient can achieve twice the results in half the time by implementing new technologies (Rosiello and Maleki,2021). Meanwhile, in the context of the homestay industry, operators may perceive technology as an attribute that has a high relative advantage because it is relatively low in cost and well-utilized by potential tourists (Kaplan, 2010). Thus, introducing new technology can help a company increase its innovation performance. Technological innovation is the primary driver of this improvement.

Organizational Factors: Organizational factors are defined as "internal resource bases and procedures that affect an organization's ability to respond to both the internal and external environment" (Stenberg and Nilsson,2020). It may have an impact on planning, overall performance and strategic goals. Furthermore, Ellstrom et al. (2022) noted that organizational competence and creativity are required for firms to increase their performance. Elements such as management support, availability of resources, and employee skills play crucial roles in this context. Organizations with strong managerial support are more likely to allocate both financial and human resources toward technology adoption (Alam and Islam, 2021). In smaller organizations, such as homestays, the size and structure of the business significantly impact whether new technologies can be integrated. For example, homestay operators with limited staff and budgets may struggle to adopt social media marketing strategies unless management acknowledges its value and actively supports the transition (Surana, 2022).

Environmental Factors: Environmental factors encompass external pressures that influence an organization's decision to adopt new technologies (Al Hadwer et al., 2021). This is in line with Amini et al.

(2023) whose research stated that environmental factors are those that influence and obstruct specific operational features. In addition, this factor encompasses market and customer expectations, trading partners, and government support (Zhong and Moon, 2023). Competitive pressures, customer demand, and regulatory requirements are central to environmental factors (Amini et al., 2023). For homestay operators, competition from other accommodations, both local and international, can drive the need to adopt digital marketing strategies to remain visible and competitive (Ramlan et al. 2023). Additionally, changes in customer behavior, such as an increasing reliance on social media for travel planning and decisions, create pressure for homestay operators to establish and maintain an active online presence. External pressures compel businesses to innovate and adapt to survive in competitive environments (Alshamaila et al., 2013).

Underpinning Theories

The TOE framework is supported by several theoretical models that explain how and why technologies are adopted in organizations.

Diffusion of Innovations (DOI) Theory: The Diffusion of Innovations (DOI) theory describes how new technologies spread over time within a social system (Amini et al.,2023). The pace of adoption is determined by a variety of elements, including the perceived characteristics of the innovation, the communication channels employed, the time required to adopt, and the social structure in which it operates. The DOI theory complements the TOE framework by concentrating on the technology's qualities as well as the social dynamics within organizations that influence its diffusion (Amini et al, 2023). In the homestay industry, the DOI theory explains how social media tools such as Facebook gradually gain acceptance among operators as more peers embrace and advocate for their marketing efficacy (Murniati et al., 2023).

Technology Acceptance Model (TAM): The Technology Acceptance Model (TAM) has been developed by Davis in 1989 (Al-Qaysi, Mohamad-Nordin and Al-Emran,2020). Additionally, this theory is one of the most influential models of technology acceptance which highlights two main aspects that drive new technology adoption: perceived usefulness and perceived ease of use (Al-Qaysi et al.,2020). Perceived usefulness refers to the extent to which a user believes that a new technology will boost job performance, whereas perceived ease of use represents how simple it is to learn and execute the technology. Moreover, based on Huong et al., (2023) reported in their research shows that TAM fits well within the technological dimension of the TOE framework, particularly in explaining why homestay operators may adopt or resist social media. If operators perceive social media as beneficial for improving visibility and revenue, and if it is user-friendly, they are more likely to integrate it into their business.

In conclusion, both DOI and TAM theories reinforce the TOE framework by providing additional insights into the social and individual dimensions of technology adoption. While TAM addresses the user's perception, DOI focuses on the broader social and communication channels that facilitate adoption. However, the TOE Framework is used for this study since it has all the elements to be covered for this research.

Application of TOE in the Homestay Sector

In the context of the homestay industry, the TOE framework is an effective tool for understanding the factors that influence social media adoption in the homestay business. Homestay operators confront significant obstacles in implementing new technologies due to their small size, limited resources, and the informal nature of their companies. This study's goal is to provide practical advice for increasing the financial performance of homestay businesses by investigating the technological, organizational, and environmental aspects that drive social media adoption.

Next, the methodology is then demonstrated followed by the data analysis in the next section, and finally, the main conclusions and results are presented. The context-specific information that follows should be especially helpful in pointing out potential areas for improvement.

3. Research Methodology

In this section, the researcher outlines the methodology strategy, which includes defining the target population, the survey's nature, sample size estimation and survey instruments.

This pilot study employs a quantitative research design to explore the determinants of social media adoption and its impact on the financial performance of homestay operators. A self-administered survey was used to collect data from homestay coordinators across Malaysia. The target population for this pilot study consisted of homestay coordinators. Homestay coordinators are selected as the sample since they play a crucial role in managing the day-to-day operations of homestays and are responsible for marketing, customer engagement activities and reporting the performance of each cluster homestay as a whole.

A purposive sampling method was used to select 50 homestay coordinators for this study. Purposive sampling is a non-probability sampling technique that allows researchers to select participants based on specific criteria relevant to the research objectives. Out of the 50 surveys distributed, 30 were completed and returned, yielding a response rate of 60%. The survey instrument consisted of 38 items distributed across five sections: demographic information, technological factors, organizational factors, environmental factors, and social media usage. Participants were asked to rate their agreement with various statements using a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The survey was distributed via Google form and participants were given two weeks to complete and return the survey.

4. Results of the Pilot Study

The data collected was analyzed using SPSS software. Descriptive statistics were used to summarize the demographic characteristics of the respondents. Reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the survey items. Validity was examined through the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests.

Descriptive Analysis

The total respondents for this study were 30 respondents which consisted of Homestay operators.

Table 1: Frequency analysis

Variables	Items	Frequencies	Percentage
Gender	MALE	19	63.3
	FEMALE	11	36.7
Age	21-40	3	10
	41-60	12	40
	ABOVE 61	15	50
Type of Social Media Use	Facebook	19	63.3
	Instagram	2	6.7
	Tiktok	0	0
	Other	9	30

Based on Table 1, the result of the frequency analysis shows the gender distribution of the respondents which is 63.3% male and 36.7% female. Next, the majority of respondents (50%) are above the age of 61, followed by those aged 41-60 (40%) and 21-40 (10%). Then the findings indicate that Facebook is the most commonly used social media platform, with 63.3% of respondents using it and 6.7% of respondents reporting using Instagram, while none reported using Twitter.

Reliability Analysis

Table 2: Reliability analysis

Variables	Cronbach's Alpha	N of Items
Technological	.823	10
Organizational	.732	8
Environmental	.685	9
Homestay Performance (DV)	.8.55	11
OVERALL	.872	38

The reliability analysis conducted for this pilot study is crucial for assessing the internal consistency of the survey items. Cronbach's Alpha values were calculated for each construct which are the Technological Factors, Organizational Factors, Environmental Factors, and Homestay Performance. The Cronbach's Alpha for Technological Factors is 0. 823. This indicates that respondents consistently viewed technological factors as important determinants of social media adoption. Next Cronbach's Alpha value for organizational factors is 0.732, which also falls within the acceptable range. This shows that the questions related to organizational to adopt social media were well understood by respondents, and their answers were consistent. Furthermore, the reliability score for environmental factors is 0.685, slightly below the desired threshold of 0.7, though still considered acceptable for exploratory research (Hair et al., 2010) lastly, the highest reliability value is observed for Homestay Performance, at 0.855. This indicates a strong level of internal consistency for the items measuring financial performance. This reliability score affirms that the survey items effectively captured the financial performance outcomes of homestay operators. To conclude, the overall Cronbach's Alpha for the entire survey is 0.872, which is excellent and confirms that the survey instrument is reliable for examining the constructs related to social media adoption and financial performance in the homestay sector.

Validity Analysis

Table 3: Validity analysis

	KMO values	Bartlett's Test of Sphericity (Sig.)
Technological Factors	.666	<.0001
Organizational Factors	.748	<.0001
Environmental Factors	.776	<.0001
Homestay Performance	.742	<.0001

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were conducted to assess the validity of the survey instrument. These tests are essential for determining whether the data is suitable for factor analysis. Firstly, the findings show the KMO value for technological factors is 0.666, which is above the minimum threshold of 0.6, indicating that the sample is adequate for conducting factor analysis on this construct. Bartlett's Test of Sphericity is highly significant ($p < 0.001$), confirming that the items within this construct are correlated and suitable for factor analysis. Next, the KMO value for organizational factors is 0.748, suggesting a high degree of sampling adequacy. Bartlett's Test of Sphericity is significant ($p < 0.001$), indicating that the items within this construct are sufficiently intercorrelated for factor analysis. In addition, the KMO value for environmental factors is 0.776, which is above the threshold, indicating strong sampling adequacy. The Bartlett's Test of Sphericity result is also significant ($p < 0.001$), supporting the validity of this construct. Lastly, the KMO value for homestay performance is 0.742, indicating good sampling adequacy for this construct. Bartlett's Test of Sphericity is significant ($p < 0.001$), confirming that the items are appropriate for factor analysis.

In a nutshell, these validity analyses demonstrate that the survey instrument is well-suited for examining the determinants of social media adoption and their impact on financial performance. The high KMO values and significant Bartlett's Test results provide confidence that the items within each construct are sufficiently related to one another, supporting the validity of the instrument.

Discussion

The findings of this pilot study confirm that the TOE framework is a useful model for understanding the determinants of social media adoption among homestay operators in Malaysia. It shows that all the factors play significant roles in influencing the decision to adopt social media platforms.

The positive relationship between social media adoption and financial performance aligns with previous studies in the tourism industry. Homestay operators who effectively use social media platforms can attract more tourists, increase occupancy rates, and ultimately improve their revenue. However, the uneven adoption of social media across different operators suggests that more support and training may be needed to help homestay businesses fully realize the potential benefits of these platforms.

5. Contribution and Conclusion

This pilot study contributes to the growing body of knowledge on social media adoption in the tourism industry, specifically in the context of homestays in Malaysia. It highlights the importance of the TOE framework in understanding the factors that influence technology adoption in homestays. Moreover, the study provides practical recommendations for homestay operators, emphasizing the need to invest in technological readiness and organizational support to enhance their social media presence and improve financial performance lastly the findings from this pilot study offer valuable insights for homestay operators, policymakers and MOTAC. Providing training and resources can encourage greater adoption of social media, ultimately boosting the competitiveness of the homestay sector.

Conclusion

Therefore, to conclude, this pilot study provides valuable insights into the determinants of social media adoption and its impact on the financial performance of homestay operators in Malaysia. By applying the TOE framework, the study identifies technological, organizational, and environmental factors as key influences on social media adoption. The findings suggest that greater adoption of social media platforms can significantly enhance the financial performance of homestay businesses, offering practical recommendations for homestay operators and MOTAC. Future research should expand the sample size and explore the long-term effects of social media adoption on homestay performance across different regions of Malaysia.

Limitations

Despite the significance of the findings, this research addressed a few limitations in examining the social media adoption to enhance homestay performance. The first limitation is all of the respondents were homestay coordinators. Examining the perspectives of other users in the homestay organization, such as the homestay operator and officer in MOTAC, may provide further insights and other viewpoints on homestay performance. Next, the issue of generalizability arises, as the findings are based primarily on data from the Homestay sector. To increase the implementation, future studies may try expanding the study to other sectors. As a result, it is important to recognize that various rules, cultural norms, and business practices may have an impact on the framework's usefulness. The other limitation is that the researcher would benefit from testing this model with data from the homestay business in various countries, as this allows for future model modifications and improvements.

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Government Website and Service Monitoring System Role in Enhancing Transparency and Accountability in Malaysian Government Agencies

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Abstract: This study examines the compliance of Malaysian government agencies' websites to the Malaysian Government Website and Service Monitoring System (SPLaSK), a governmental platform for enhancing transparency and accountability. Through an analysis of 899 agencies registered with SPLaSK as of January 2024, this research employs a qualitative research design utilizing semi-structured interviews and content analysis to evaluate the platform's effectiveness across six dimensions: accessibility, ease of use, quality of content, privacy/security, responsiveness, and reliability. The findings indicate a consistent increase in registered government agencies over the last three years, from 623 agencies in 2022 to 899 agencies in 2024. Among the 899 agencies in 2024, only 544 are active, with 282 (51.8%) achieving outstanding scores of at least 80%. Preliminary results suggest that SPLaSK has significantly contributed to improving governmental website standards, thereby fostering greater transparency and accountability. This paper underscores the potential of SPLaSK to enhance public administration and governance in the digital era.

Keywords: *Website quality, transparency, accountability, e-government*

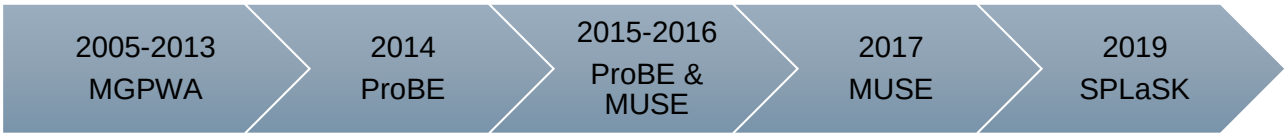
1. Introduction

The integration of digital technology into government operations has transformed how governments interact with their citizens. Numerous benefits are attributed to e-government portals such as fostering greater efficiency, transparency, and accessibility in public service delivery (Saengchaia et al., 2020). Developing an e-government portal that offers up-to-date public services on both web and mobile platforms will encourage the adoption and use of e-government services (Yıldırım & Bostancı, 2021). An important consideration in fostering effective digital disclosure by the government is the concept of website quality. Almaiah and Nasereddin (2020) and Alanezi et al. (2012) suggest that website quality such as functionality, content quality, ease of use, and security, positively influence the performance expectancy of e-government services.

In Malaysia, the Sistem Pemantauan Laman Web dan Servis Kerajaan (SPLaSK), or Government Website and Service Monitoring System, plays a critical role in this digital transformation. Administered by the Malaysian Administrative Modernization and Management Planning Unit (MAMPU), SPLaSK is designed to monitor and assess the quality of government websites and services, ensuring they adhere to standards across various dimensions, including accessibility, ease of use, content quality, security, responsiveness, and reliability (MAMPU, 2024). These dimensions are particularly relevant in the context of government disclosure practices. Government agencies are expected to provide timely, accurate, and comprehensive information to the public through their digital platforms.

SPLaSK was first introduced in 2019 after many efforts by MAMPU since 2005 to encourage and monitor the websites of government agencies. It functions as a platform to monitor the government agencies' websites based on criteria set by Provider-based Evaluation (PROBE) and Malaysian User Chronology of Government Website and Online Service Evaluation Assessment and online services provided by MAMPU.

Figure 1: Chronology of Government Website and Online Service Evaluation



Source: MAMPU (2024)

Initially, the Malaysia Government Portals and Website Assessment (MGPWA) was set up to observe the government agencies from 2005 to 2013. Then, in 2014, provider-based was introduced, with each government agency performing self-assessment on their websites. Later, from 2015 to 2016, in the transition period before MAMPU used another system called Malaysian User Satisfaction Evaluation (MUSE), the old system, ProBE, was used concurrently with MUSE. Only in 2017, MUSE is applied independently. Lastly, in 2019, MAMPU implemented the improvement project for the web and online service monitoring system (SPLaSK) V2.0, which is an initiative to enhance the existing SPLaSK system to measure the compliance level of government websites and online services for all set criteria automatically using a web crawler that is part of SPLaSK. This improved platform aims to monitor agency websites' compliance levels and performance in real-time and continuously. With the use of SPLaSK v2.0, agencies can monitor and implement improvements immediately based on compliance and performance reports to ensure websites can support and drive the country's digital government transformation agenda.

Additionally, the SPLaSK system will become the reference system for public sector website monitoring through the Malaysian Government Performance Index (MyGPI) assessment, replacing the SSR Index rating system for the year 2020 and subsequent years. SPLaSK has the features of auto-notification, self-assessment, application program notification (API), real-time monitoring, Google Analytics (GA), and report analysis. It is also assisted by modules for Administrator, Customer Access Control, Dashboard and Report, Government Online Services (GOS) and Web Profiling, Notifications, and GOS and Web Assessment.

However, despite the progress made through SPLaSK, the journey toward full transparency and accountability of e-government is far from complete. Various challenges still exist, including the digital divide, which leaves some citizens without adequate access to online services. Additionally, concerns about data privacy and security continue to rise, as do evolving public expectations regarding government responsiveness. These hurdles mean that while technology can facilitate better governance, it also requires continuous effort and adaptation to meet the diverse needs of the community. Therefore, this study addresses an important question: How effectively does the SPLaSK monitoring system enhance the quality of Malaysian government websites, and what obstacles remain in the pursuit of transparency and accountability? This study seeks to uncover not only the strengths of the SPLaSK initiative but also the areas where improvement is needed.

To tackle this research problem, the primary objective of this study is to evaluate the quality of Malaysian government websites through the lens of the SPLaSK monitoring system, focusing specifically on aspects such as accessibility, content quality, and responsiveness. By diving into these key areas, this study aims to provide actionable insights that can help refine SPLaSK and enhance the overall user experience on government platforms. This research aims to contribute to a broader understanding of how digital tools can promote public trust and active participation in governance, paving the way for a more inclusive and accountable government. By analyzing the government agencies' compliance with SPLaSK, this study will also provide valuable insights into how such initiatives can be optimized to foster greater trust and efficiency in public administration. This paper is structured as follows: Section 2 reviews relevant literature; Section 3 details the research methodology; Section 4 presents the findings and discussion; and Section 5 concludes with the study's implications and recommendations.

2. Literature Review

Accountability and Transparency in Information Technology

Information technology (IT) is pivotal in modern government operations which enhances service delivery, operational efficiency, and transparency. The implementation of IT systems, such as e-government, marks a transition towards modernizing traditional government processes. This shift aims to make government services more reliable, transparent, accountable, and efficient. Over the years, the Malaysian government has adopted IT as a way of improving accountability in its operations. IT development has enhanced the delivery of public services and released information through websites to increase accountability (Zainon, 2019). Zainon (2019), further explains Public Sector Open Data Portal, which was established by MAMPU is one of the initiatives that aims to promote accountability by fostering innovation and transparency in digital technology. According to Kandhro and Pathrannarakul (2013), the more access to available information, the higher the level of transparency. The usage of IT can lead to an increase in transparency, high accountability and enhanced public trust. This is due to the digital systems are naturally equipped with features like integrated audit trails and transparency policies (Sharon, 2023).

Electronic Government in Malaysia

E-government is defined as the use of innovative information and communication technology to provide easy access to citizens and organizations for government-related information and services (Fang, 2002). The objectives of e-government include improving service quality, enhancing public participation in institutions and democratic processes, empowering citizens, improving service quality, strengthening accountability, enhancing transparency and increasing government efficiency (Ndou, 2004). E-government websites have become one of the most effective ways of disseminating information and acting as the mirror of government activities (Elahi & Ahmed, 2023).

Malaysia introduced e-government in 1995 with the launch of eGOV1.0. Since then, e-government has evolved significantly. Initially, it began as a website aimed solely at informing people about available services. Today, under eGOV3.0 it leverages information and communication technologies (ICT) and advancements in scientific and technological fields to address societal issues, optimize resources, and enhance citizen well-being (Rahim et al., 2019).

The evolution from e-government to digital government reflects a broader global trend of integrating advanced technologies to enhance public sector efficiency and citizen engagement. This evolution is defined as the production and delivery of information and services inside the government and between the government and the public using a range of information and communication technologies (Rahim et al., 2019). In addition, according to Naswir et al. (2019), digital government is a way of digitizing government services to improve service delivery systems efficiently and effectively to maintain relations with the citizens. It leads to the improvement of government functions and services and works to provide comprehensive service delivery that will satisfy the citizens.

Dimensions in Enhancing Transparency and Accountability in Government Websites

Based on the literature and the standards issued by MAMPU, this study highlights six key dimensions that contribute to enhancing transparency and accountability in government websites. These dimensions consist of (1) accessibility; (2) ease of use; (3) quality of content; (4) privacy policy; (5) responsiveness; and (6) reliability, and are elaborated in the subsequent sections.

Accessibility is indeed a fundamental aspect of government websites that enhances user experience and engagement, particularly for individuals with disabilities. Raut and Singh (2024) highlight that government websites must adhere to accessibility standards to ensure usability for all citizens, which includes optimizing for mobile devices and different operating systems. Despite the progress in e-government, the research indicates that while there has been progress in the use of Malaysia's e-government platform, compliance with web accessibility standards remains inadequate (Ahmi & Mohamad, 2016). ***The ease of use*** of e-government refers to the websites must be accessible and user-friendly to ensure effective communication and service delivery to citizens. Research indicates that perceived ease of use is a critical determinant of citizen satisfaction, ranking alongside service quality and content quality as significant predictors of overall

satisfaction with e-government portals in Malaysia (Baharon et al., 2017). Furthermore, studies show that perceived ease of use, along with perceived usefulness, positively affects citizens' intentions to engage with these services (Zubir et al., 2023).

The ***quality of content*** includes the depth of the information, formatting and layout, readability, and engagement. Alanezi et al. (2012) highlighted that the content provided on the e-government website included format information, personalization and information available on the government website should be accurate, current, and easy to understand. The quality of content on Malaysian government websites is evaluated through various metrics and dimensions that significantly impact user satisfaction. Key metrics identified include security, performance, content structure, technology, and accessibility, which are essential for effective e-government services (Rakhani et al., 2023). The integration of ***privacy policy*** and security measures in government websites is crucial. A study by Wijaya et al. (2024) indicates that e-government policies significantly improve public service by facilitating faster service delivery and increasing citizen engagement, but challenges such as data security and uneven access remain. Furthermore, many governments' online services fail to meet international security standards, exposing sensitive data to potential threats (Silva et al., 2023). Research by Dayanand & Jeberson (2024) presents several key findings regarding the effectiveness of CAPTCHA in improving the security of government websites. The CAPTCHA test is designed to determine if an online user is a human and not a bot, and the test significantly reduces the risk of various cyber threats, including brute force attacks, credential stuffing, and unauthorized access.

The ***responsiveness*** of government websites to citizen inquiries significantly boosts public satisfaction and engagement. Shadu et al. (2024) stated by incorporating public feedback through consultations and surveys, governments can enhance the effectiveness of their services and build trust with the community. In addition to that, an analysis of the Chinese e-government system (Lyu & Zhao, 2021) highlights that the efficiency of government responsiveness directly correlates with citizen satisfaction, suggesting that complex or lengthy responses can diminish perceived accountability. ***The reliability*** of e-government emphasizes the consistency and dependability of the services. According to Taufiqurokhman et al. (2024), technology-enabled service processes can streamline time and cost, quick processing time, and prompt responses may contribute to a positive user experience. The study by Fisdian et al. (2024) identifies significant obstacles in implementing website-based digital public services including the lack of reliable internet connectivity in many areas which affects the accessibility of digital services to the public.

3. Methodology

For this study, a mixed-method design is adopted. First, a content analysis of the rates issued to the government agencies' websites by MAMPU through SPLaSK is explored. By December 2023, 899 agencies had registered with MAMPU for the SPLaSK application, but only 527 had established their websites. For this study, six (6) main dimensions outlined by MAMPU are summarized in Table 1. Later, interviews were conducted to gain better insight into the role of SPLaSK in promoting and ensuring compliance levels of government websites and online services. The interviews were conducted with the staff of MAMPU's IT Department headed by its Head of Department and five (5) other staff responsible for administering and monitoring SPLaSK. The compliance for SPLaSK is assessed using six (6) dimensions set by MAMPU as follows:

Table 1: Dimensions and criteria for SPLaSK assessment

Dimensions	Criteria
Accessibility	Active Link
	Device responsiveness
	Search Engine Optimization (SEO)
	Mobile App
	Multi-language Content
	Sitemap
	Find Website using Search Too
Ease of Use	Link to MyGov Portal
	Search Function
	W3C Disability Accessibility

	Advanced Search Option
Quality of content	Publication
	Updated Content
	Number of Online Services
	Electronic Archive
	Publicizing an agency CIO/CDO or equivalent
	Online procurement announcement
	Online E-Participation
Policy/Security	Privacy Policy
	HTTPS Availability
Responsiveness	Feedback form
Reliability	Loading Time
	Downtime

(Source: MAMPU, 2024)

SPLaSK users are assessed based on the grading scale below, with very low for grading less than 20% to very high for more than 80% marks. The diagrammatic flow of the grading scale is depicted in Figure 1. The formula for the grading is based on the below formula:

SPLaSK's grade = [(Accessibility dimensions/7)*100) + ((Ease of use dimension/4) * 100) + ((Quality of Content/9) * 100)) + ((Privacy/Security dimension/2)*100) + (Responsiveness dimension *100) + ((Reliability dimension)/2 * 100)

Figure 1: Grading scale



Source: (MAMPU, 2024)

For this study, MAMPU has provided data that, while valuable, is not entirely comprehensive due to confidentiality constraints. As a result, only the outcomes or grading scales for the total number of government agencies registered with MAMPU have been made available for analysis.

4. Findings and Discussion

Demographics of interviewees

For the study, an interview was set up with the MAMPU's IT department's staff discussing their role and duties in handling SPLaSK. Table 2 summarizes the interviewees' position within MAMPU.

Table 2: Demographics of interview participants

Respondents Denotation	Position
R1	Head of Department
R2	Assistant Manager
R3	IT Executive 1
R4	IT Executive 2
R5	IT Officer 1
R6	IT Officer 2

For the interview session, the study managed to secure views and information on SPLaSK's operation from six (6) respondents ranging from the Head of Department, Assistant Manager, two (2) IT Executives, and two (2) IT Officers.

Table 3: Registered Agencies Website Ratings using SPLaSK Scoring Scale for 2022-2024

	Number of Government Agencies		
Scale (in percentage, %)	2022*	2023	2024**
Very low (0 -20)	117	31	32
Low (20 – 40)	143	125	125
Moderate (40 – 60)	58	61	60
High (60 – 80)	13	26	28
Outstanding (80 – 100)	90	284	282
Total websites	421	527	544
Total government agencies registered for SPLaSK.	623	838	899
Percentage of websites established over registered agencies	67.58%	62.89%	60.5%

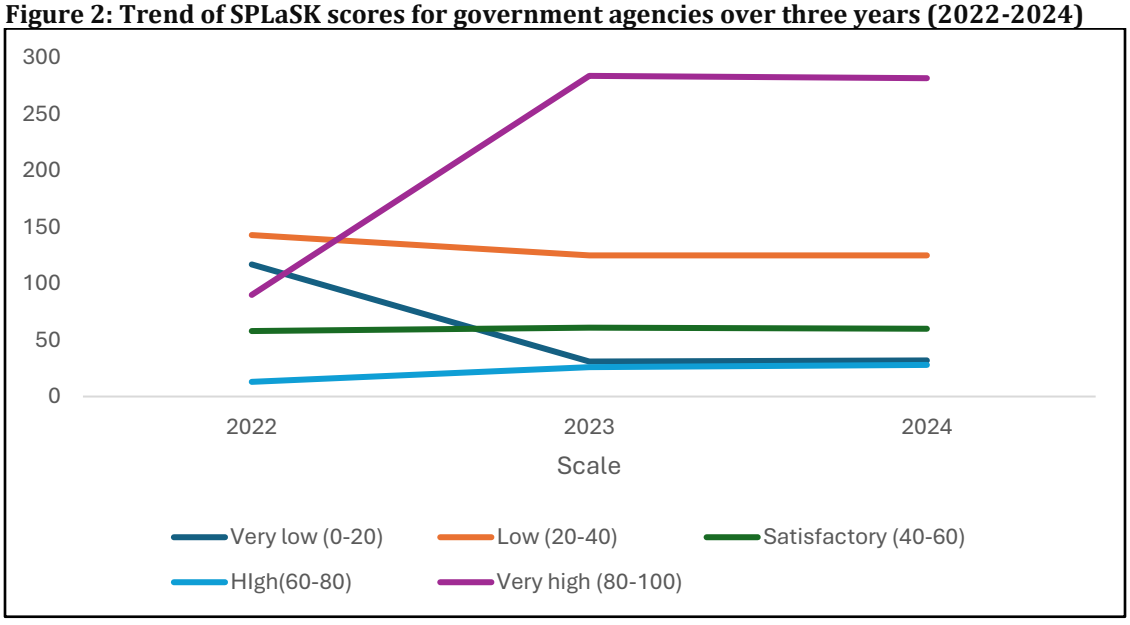
*Only from September 2022, **Only for up to 30 January 2024
(Source: MAMPU, 2024)

Data furnished by MAMPU in Table 3 revealed that a positive trend is shown over the three years spanned from 2022 for agencies registered for SPLaSK, a significant increase of 44.3% from the year 2022 to 2023 and a slight increase of 7.3% from the year 2023 to 2024. The trend over the last three (3) years up to September 2024 can be shown in Figure 2. Even though there has been an increase in the total of government agencies registered for SPLaSK, the total number of websites established fulfilling SPLaSK's requirement has surprisingly decreased over the three years. On the other hand, in terms of SPLaSK scoring, while most agencies (33.97%, 143/421) scored ranging from 20 to 40 in 2022, the pattern has changed in 2023 and 2024 with most of the agencies scoring outstandingly (score of 80 to 100) with 53.89% (284/527) and 51.83% (282/544) for 2023 and 2024 respectively.

With regards to the number of websites established in comparison to the number of agencies registered for SPLaSK, the respondents explained the possible reasons,

"Firstly, perhaps they are not ready to launch their website to comply with the SPLaSK requirement, so they want to make sure they are ready and get a good score. The cost factor could also play a role. The agency needs to engage a vendor to install the coding, as they have no experts to set up the website. They need an expert webmaster. Still, we have provided them with a manual and a WhatsApp group to assist them. We are more than willing to demonstrate the system whenever they inform us, we are more than willing to assist" (R1)

Figure 2: Trend of SPLaSK scores for government agencies over three years (2022-2024)



According to the respondents, the increase in scoring is due to the awareness and understanding of the agencies to maintain the SPLaSK system besides constant monitoring by MAMPU. The scoring system allows MAMPU to encourage the agencies better to maintain their websites for the benefit of their users. As reiterated by one of the respondents, R1,

"We are continuously asked about the performance of each agency. So SPLaSK makes it easy for us to monitor them. Assessment is performed. Hourly. The agency can amend its websites and may request an on-demand assessment"

While SPLaSK demonstrates positive trends in agency registration and website quality, some challenges persist. However, the potential for increased stakeholder engagement, enhanced public trust, and, greater government transparency and accountability is significant. With continued focus on addressing implementation hurdles and fostering collaborative engagement, SPLaSK can solidify its role as a powerful tool for a more open and accountable government. These findings are consistent with Bukhari (2023) which suggests that technology is playing an increasingly important role in the leadership and governance of organizations especially to facilitate better communication, increase transparency and improve decision-making.

Improvement in websites

SPLaSK acts as a cornerstone for accessible and user-friendly government websites in Malaysia. Government agencies leverage this system as a monitoring tool to identify website shortcomings. SPLaSK pinpoints issues like broken links and tracks website performance against key performance indicators (KPIs). This translates to improved service delivery by allowing agencies to identify areas for improvement. Ultimately, SPLaSK aims for a high bar of user satisfaction, targeting a 90% satisfaction rate for government online services. As explained by one of the respondents,

"*When we first started SPLaSK version 1, there were only 15 criteria, but with the second version, it has increased to 25 criteria based on ProBE. Each agency needs to have a webmaster and supervisor to run the module design except for the administrative function, which is only for MAMPU. For the assessment, we have set two methods: one is automatic in the morning, roughly at 1 a.m., and the other is on-demand. On-demand assessment is used whenever there is any improvement or change to the websites. No need for the webmaster to inform SPLaSK, the webmaster simply needs to press a button to see the compliance result*" (R2)

SPLaSK acts as a powerful driver for user-friendly government websites in Malaysia. By pinpointing website issues and monitoring performance, it empowers agencies to identify areas for improvement. Additions to the assessment criteria can be translated to MAMPU's effort for better service delivery and ultimately aims for a high bar of user satisfaction. With its automated and on-demand assessment features, SPLaSK ensures websites are constantly monitored and refined, paving the way for a more user-friendly online government experience.

Challenges in implementing SPLaSK

However, SPLaSK's effectiveness hinges on overcoming some challenges. One hurdle is the frequent turnover of staff responsible for the system within government agencies. This necessitates ongoing training sessions for new personnel to ensure they can effectively utilize SPLaSK. As elaborated by R1,

"*Employee turnover in the agency can be a challenging condition for us. The challenges are that work will be stalled and tasks will change. The solution is to provide training, or often when people change, they will ask to be shown again. Sometimes we will go there, or they will come here*"

Another challenge in handling SPLaSK highlighted by the IT Officer (R4) stressed that,

"The vast array of content management systems (CMS) used by different agencies creates a challenge. Providing specific training for each platform is difficult, and agencies may lack the in-house expertise to implement tagging, a crucial SPLaSK functionality, across all these diverse CMS systems. Furthermore, technical limitations can arise when agencies lack the skills to fix errors identified by SPLaSK. Finally, SPLaSK itself can be blocked by agency servers or the Public Sector Data Center (PDSA), hindering its ability to effectively crawl and monitor websites"

Despite the success of the monitoring practice, SPLaSK's long-term effectiveness hinges on addressing staff turnover and compatibility issues. Ongoing training for new personnel is crucial, but a more permanent solution might be sought. Additionally, the vast array of CMS systems and potential technical limitations across

agencies necessitate exploring ways to provide standardized tagging functionalities and troubleshooting support. These findings support the challenges identified in the literature. For example, the challenges include improving interoperability between the various public agencies, the security and protection of data, and the availability of specialized human talent. In the case of SPLaSK, addressing potential SPLaSK blocking by agency servers and the PDSA requires collaboration to ensure seamless crawling and website monitoring. By overcoming these challenges, SPLaSK can solidify its role as a valuable monitoring tool.

Monitoring SPLaSK

The SPLaSK platform can be monitored in real-time daily to ensure that agencies comply with the criteria set within the six (6) dimensions mentioned in Table 1 earlier. MAMPU's IT officer will also monitor if the related agency achieved 100% marks to ensure its correctness. At this junction, one of the respondents explained,
"Here, we do not explain everything in detail, but we want to make sure the functionality is there. We prioritize quality and use this system for automated checks only. For example, UiTM requested the scores for the Islamic religious councils. We downloaded the report and sorted the scores for each month from September 2022 to January 2024. There is not much data for September 2023 because version 2 was just completed. A score of 1 indicates compliance, while a score of 0 indicates non-compliance" (R3)

He also added to the agency's website content,
"Yes, we will check especially those with scores that consistently maintain 100%. We will issue a report twice a year and send it to the Chief Secretary to the government of each agency" (R3)
The monitoring practice has provided valuable insights into SPLaSK functions, allowing for a clear understanding of its effectiveness in assessing the progress or performance of the registered websites. By analyzing the data collected, respective agencies may determine the next steps based on future improvement.

5. Conclusion

This study has explored SPLaSK's role in enhancing transparency and accountability within Malaysian government agencies, analyzing the performance metrics of 899 agencies registered by January 2024. It highlights how SPLaSK has transformed governance through benchmarks in accessibility, ease of use, quality of content, privacy/security, responsiveness, and reliability, significantly boosting public sector website standards and fostering a culture of transparency. Despite these achievements, the path to full transparency and accountability continues. Challenges such as the digital divide, data privacy concerns, and evolving public expectations persist, underscoring the need for ongoing efforts to enhance SPLaSK's effectiveness. The research emphasizes the critical role of stakeholder engagement and the establishment of feedback loops for continuous platform improvement. SPLaSK represents a major step forward in Malaysia's effort to make governance more open and transparent. It shows how digital platforms can greatly improve government openness and accountability. Its success highlights the need for ongoing dedication, teamwork, and new ideas to deal with the challenges of digital governance. This provides important lessons on how to increase public trust and involvement in government activities.

Based on the analysis of SPLaSK's role and its impact on governance in Malaysia, some recommendations could be derived. To maximize the SPLaSK's impact, the government should enhance digital inclusion by bridging the digital divide such as expanding internet access in rural and underserved areas and providing digital literacy programs that will empower the government's staff to effectively use online platforms like SPLaSK. Robust cybersecurity protocols and data protection policies should be established to address concerns about the data security of the government website besides regularly auditing the platform to ensure compliance with privacy laws and international standards, such as the General Data Protection Regulation (GDPR). Stakeholders, for example, civil society, private sectors, and academic experts should actively be involved in the design and periodic review of SPLaSK to ensure accountability and effectiveness. Finally, SPLaSK must evolve with public expectations, incorporating innovative features like AI chatbots, predictive analytics, and participatory tools to enhance citizen engagement and governance outcomes.

To enhance digital governance, SPLaSK should be integrated into Malaysia's e-government strategy, aligning with national digital transformation goals. A robust legal framework is essential, including strengthened transparency laws, mandated public sector performance disclosures, and enforced accountability standards.

Dedicated funding and resources should be allocated for the platform's maintenance, upgrades, and staff training. Collaborative efforts with tech companies and NGOs can help expand SPLaSK's features and reach, while a dedicated task force should periodically review and refine digital governance policies based on SPLaSK's progress. Additionally, benchmarking against international best practices through collaboration and knowledge exchange will ensure continuous improvement and global competitiveness. These recommendations and policy implications offer a path forward for utilizing SPLaSK as a fundamental component of responsible and transparent governance in Malaysia. This offers valuable insights on how to boost public confidence and participation in governmental operations.

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A Meta-Analysis of the Impact of Ethical Leadership and Islamic Work Ethics on Ethical Work Behavior

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Abstract: Ethics plays a vital role across all fields. However, significant attention has been directed toward addressing citizen complaints about unethical behavior in public and private institutions. These complaints primarily concern corruption and unethical conduct in the execution of duties and service delivery. This article systematically reviews 11 theoretical and empirical journal articles focusing on ethical work behavior in public and private institutions. The selected studies were evaluated based on the following themes: (1) the impact of ethical leadership on ethical work behavior, (2) the role of Islamic work ethics in shaping ethical work behavior, and (3) the methodological approaches employed in studies of ethical leadership, Islamic work ethics and ethical work behavior. Relevant articles were identified using university electronic databases, such as Scopus and Emerald Insight and meta-analytical techniques were applied to systematically analyze and synthesize the literature. The findings indicate that both ethical leadership and Islamic work ethics have a significant positive effect on ethical work behavior. Furthermore, studies have utilized both quantitative and qualitative methods to explore workplace ethics. Future research directions are discussed in the subsequent section.

Keywords: *Ethical work behavior, ethical leadership, Islamic work ethics, meta-analysis*

1. Introduction

The ethical behavior of employees has become a significant global concern, as numerous organizational failures have been attributed to ethical issues among staff. To mitigate unethical practices in the workplace, organizational leaders play a crucial role. Leadership quality significantly influences organizational morale and ethical standards. Consistent emphasis on effective leadership models and adherence to high ethical values by leaders is essential. Research indicates that ethical leadership strongly impacts employees' ethical behavior (Hassan & Ha, 2022; Oe & Yamaoka, 2022; Wright et al., 2016). Key aspects of ethical leadership include empowering and motivating subordinates, fostering open communication, modeling appropriate behavior, treating employees fairly, and building trust Brown et al., (2005). Additionally, ethical leadership encompasses power sharing, role clarification, and moral integrity (Eisenbeiß & Brodbeck, 2014). Thus, ethical leadership is a critical determinant of ethical behavior within organizations.

Ethics are governed by a set of principles and rules that serve as benchmarsk to evaluate whether a particular behavior is good or bad. Research suggests that Islamic work ethics (IWE) positively influence employees' behavior in the workplace by promoting noble values such as honesty, flexibility, generosity and responsibility (Yousef, 2001). Similarly, Abeng (1997) highlighted that organizations could achieve high levels of productivity and competence by adopting an Islamic ethical framework to guide their operations. However, despite the advancement of IWE, most studies on work ethics focus on Western perspectives, particularly Protestant Work Ethics (PWE). The limited attention given to IWE has fueled ongoing debates about its impact on employee's ethical behavior in different contexts. Consequently, this paper aims to explore three key objectives: first, to assess the influence of ethical leadership on ethical work behavior; second, to examine the impact of Islamic work ethics on ethical work behavior; and third, to identify the methodological approaches used in studying ethical leadership, Islamic work ethics, and ethical work behavior.

Ethical Work Behavior

Ethical behavior, at its core, involves acting with integrity, openness, and equity in one's actions and interactions. The perception of what constitutes honest and fair conduct is deeply rooted in an individual's core principles and values (Driscoll et al., 2019). Studies consistently highlight that values significantly influence an individual's personal and professional character (Trevino et al., 2006), shaping their decisions and actions

across various settings, including the workplace (Wang & Hackett, 2015). Although ethics has long been a prominent focus in scholarly research (e.g. Ford & Richardson, 1994), recent emphasis has shifted toward understanding ethical workplace behavior, particularly how it relates to ethical leadership and personal factors such as religious beliefs.

2. The Influence of Ethical leadership on Employee Ethical Behavior

Growing public awareness of ethical scandals involving prominent leaders – such as politicians and executives in both public and private sectors – has placed increasing pressure on the organization and their leaders to uphold ethical behavior. Acting ethically is crucial for leaders to maintain credibility and effectively influence employees across all levels of an organization (Brown et al., 2005). Furthermore, research suggested that ethical leadership can significantly shape a leader's career trajectory. For instance, studies indicated that leaders who demonstrate ethical practices are more likely to be considered for senior roles, particularly in organizations with a strong ethical culture (Rubin et al., 2010).

Brown et al. (2005) describe ethical leadership as the display of morally appropriate behavior through personal actions and interpersonal relationships, coupled with fostering such behavior among followers via open communication, reinforcement, and sound decision-making. This definition underscores ethical leadership as the embodiment of ethical behavior by leaders, focusing on actions that aim to support and benefit employees. Various leader behaviors have been identified as key aspects of ethical leadership. For instance, Resick et al. (2011) highlighted attributes such as integrity, ethical awareness, a focus on community and individuals, inspiring and empowering others, and maintaining accountability for ethical standards. Similarly, other research points to behaviors like fairness, honesty, consistency, integrity, encouraging ethical behavior in others, showing concern for employees, enabling participation and sharing authority as hallmarks of ethical leadership (Eisenbei & Brodbeck, 2014; Kalshoven et al., 2011).

Islamic Work Ethics and Ethical Work Behavior

Islamic Work Ethics (IWE) is rooted in the teachings of the Qur'an and Sunnah, guiding interpersonal relationships and workplace behavior according to Islamic principles. IWE emphasizes two key elements: performing tasks to the best of one's ability and doing so to please Almighty Allah while meeting socio-economic needs. The philosophy of IWE also upholds the principle of prioritizing public interest over self-interest when conflict arises (Beekun, 2006).

The core components of IWE include individual effort, dedication, social relationships, creativity, and a sense of responsibility (Usman Khurram & Shahzad Khurram Khan, 2015). Research has shown that IWE significantly influences employees' attitudes, enhancing job satisfaction, organizational commitment, and job involvement, and fostering positive workplace behaviors (Hayati & Caniago, 2012; Khan et al., 2015; Murtaza et al., 2016; Rokhman, 2010). Supporting this, a quantitative study by Khadijah et al. (2015) involving Malaysian employees found that dimensions of IWE – such as effort, teamwork, honesty and accountability – strongly predict ethical work behavior among employees.

Scholars have long debated the comparison between Islamic Work Ethics (IWE) and the Protestant Work Ethic (PWE) as proposed by Max Weber in 1985. PWE emphasizes values such as frugality, individualism, discipline and hard work. Controversy arises from Weber's assertion that Muslim societies lack the capacity to develop their economies. He argued that concepts like Sufism in Islam, which discourages materialism, might hinder the development of a capitalist mindset akin to PWE (Rokhman, 2010).

However, Weber's claim has been contested, as Islamic teachings view work as an integral part of life and a potential contributor to economic progress. Supporting this rebuttal, a study by Arslan (2000) compared British and Turkish managers using PWE traits. The findings revealed that Turkish managers outperformed their British counterparts in all PWE characteristics. This evidence undermines criticisms of IWE regarding economic behavior and highlights its compatibility with economic development (Arslan, 2001).

Additionally, numerous scholars argue that Islamic values, beliefs, and perspectives shape the work attitudes and management practices of Muslim employees (Ali, 2009; Ali & Al-Owaihan, 2008; Randeree & Faramawy,

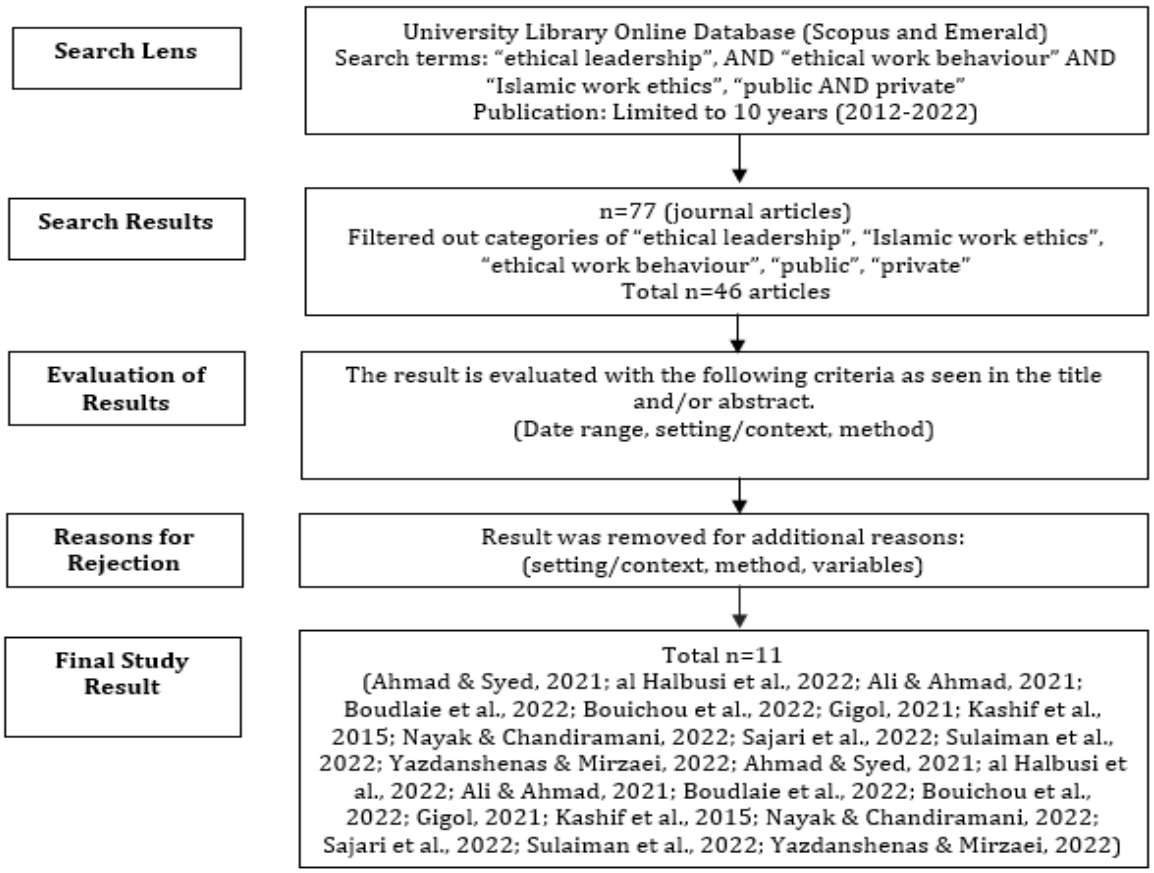
2011). Rokham (2010) describes Islamic Work Ethics (IWE) as a set of moral principles and values related to work that distinguish between right and wrong from an Islamic perspective. These principles emphasize ethical behavior in the workplace, grounded in Islamic law and teachings rather than cultural influences.

3. Methodology

This review utilized a meta-analytic approach to assess the impact of ethical leadership and Islamic Work Ethics (IWE) on employee's ethical work behavior. This method has been widely applied across various disciplines, including medicine, ecology, social sciences, business and more. Meta-analysis helps to consolidate findings from previous research, offering valuable insights for designing future studies by summarizing existing knowledge and identifying areas for further investigation.

This study examines published research articles from 2012 until 2022 related to the influence of ethical leadership and IWE on ethical work behavior. Firstly, using online database library services, a computer-based search was undertaken for published studies with the keywords of "ethical leadership", "ethical work behavior", "Islamic work ethics", "public" and "private" institutions. The search process used Scopus and Emerald Insight databases provided via the university's online library. The search was limited to the title, year of publication, and article type (journal article). The result of the first steps was the creation of 77 articles. This result included only relevant published articles to maintain the reputation of the findings. Then, for the second stage, the articles were downloaded to enable the researcher to determine a full-access paper. However, out of 77 articles, only 46 articles can be accessed. The last step is a filtering process to ensure the article does meet the context of employees in a public or private institution. Any irrelevant context such as non-employed individuals and students is eliminated in the final stage. Then the articles were filtered again to match specific content criteria. At the end of this stage, there were a total of 11 articles. All those 11 articles were thoroughly read and reviewed.

Figure 1: Meta-Analysis Step



4. Results

The Influence of Ethical Leadership and Islamic Work Ethics on Ethical Work Behavior

Table 1 is a selection of publications that describe the influence of ethical leadership and Islamic work ethics on the ethical work behavior of employees.

Table 1: Selected articles on ethical leadership, Islamic work ethics, and ethical work behavior

No	Author/years	Title	Findings
1.	Kashif et al., (2015)	Bringing Islamic tradition back to management: A new Islamic Dawah-based framework to foster workplace ethics	Findings from this study stated that the older and younger generations of workers put different emphases on Islamic work ethics and ethical behavior. The older generation stimulates the practice of Islamic work ethics meanwhile the younger generation is more likely to establish their understanding of Islamic values.
2.	Boudlaie et al., (2022)	Investigating the effect of humility of Muslim leaders on the moral behaviors of followers and spirituality at work in Islamic Society	The results indicated that leader humility has a strong and positive influence on moral conduct in the workplace and has been shown to positively impact employee's work ethics.
3.	al Halbusi et al., (2022)	Do ethical leaders enhance employee ethical behaviors? Organizational justice and ethical climate as dual mediators and leader moral attentiveness as a moderator: Evidence from Iraq's emerging market	The findings of this article align with a Western theoretical framework while introducing a new perspective tailored to Muslims in the emerging Arabic Market. Subordinates are likely to adopt the values of ethical leadership as a way to enhance their focus on organizational justice and moral awareness, aiming to achieve greater peace and happiness. At the same time, ethical leadership will impact ethical behavior and offer practical insights for fostering a more ethical environment, strengthening corporate social responsibility (CSR), improving leader-member exchanges (LMX) advancing business ethics, and boosting economic potential in a globally competitive market.
4.	Yazdanshenas & Mirzaei, (2022)	Leadership integrity and employee's success: role of ethical leadership, psychological capital and psychological empowerment	This study was conducted to explore the impact of ethical leadership on employees' psychological empowerment and psychological capital. The results reveal that leader integrity and ethical leadership positively influence employee success, with psychological capital and psychological empowerment acting as moderating factors. Additionally, leader integrity indirectly affects employee success by shaping employees' perceptions of ethical leadership.
5.	Nayak & Chandiramani, 2022	A crisis that changed the banking scenario in India: Exploring the role of ethics in business	This case study was carried out to examine the role of business ethics and transparency in a remote working setting within the banking sector. The results indicated that fostering ethical behavior requires organizations to

			provide consistent, predefined frameworks embedded with moral considerations.
6.	Sulaiman et al., (2022)	The role of religiosity in ethical decision making: A study on Islam and the Malaysian Workplace	The research was carried out among Malaysian employees from both the public and private sectors. It examined five factors influencing the connection between Islamic religiosity and ethical intention: perceived importance of ethical issues, moral judgment, ego strength, spiritual intention and conscience. The findings revealed that conscience was the only factor mediating the relationship between religiosity and ethical intention.
7.	Ahmad & Syed, (2021)	Meta-characteristic of Islamic ethics and moral consistency in Islamic Banking	This study emphasized that consuming Islamic products can encourage consistent moral behavior over time. The findings revealed that the lack of key meta-characteristics in Islamic ethics – such as *ubudiyah* (devotion), *akhirah* (afterlife accountability) and *tawado* (humility) – leads to moral inconsistency, manifesting as unethical behavior. In conclusion, the Islamic ethical framework fosters ethical behavior while deterring unethical practices.
8.	M. F. M. Ali & Ahmad, 2021	Relationship between leader integrity, religiosity and Islamic work ethics: A conceptual model	This study explores the connection between leader integrity, religiosity, and Islamic work ethics within a business organization. The findings suggest that leader integrity plays a significant role in enhancing the Islamic work ethics of subordinates.
9.	Sajari et al., (2022)	Factors influencing the level of ethics and integrity in the Malaysian public sector	The study focused on Chief Integrity Officers (CIOs) to examine the factors affecting ethics and integrity in the Malaysian public sector. The findings reveal that the competencies, work performance, and ethical climate fostered by CIOs significantly influence the overall level of ethics and integrity. CIOs are vital in cultivating and sustaining a transparent ethical environment to uphold high moral standards.
10.	Gigol, (2021)	Leadership, religiousness, state ownership of an enterprise and unethical pro-organizational behavior: The mediating role of organizational identification	This study aims to determine whether organizational identification mediates the relationships between state-owned enterprises, authentic leadership, religiosity and unethical pro-organizational behavior. The findings indicate that state ownership of enterprises, authentic leadership and religiosity are associated with higher levels of organizational identification.
11.	Bouichou et al., (2022)	How Corporate Social Responsibility Boosts Corporate Financial and non-financial Performance: The Moderating Role of Ethical Leadership	This research was carried out among private companies in Morocco. The results indicate a strong positive relationship between corporate social responsibility (CSR) and organizational performance. Additionally, ethical leadership contributes to enhancing both the financial and non-financial performance of the organization.

Various studies conducted by researchers on the topic of ethics. Table 1 above presented previous studies on ethical work behavior and/or ethical behavior that have been studied in many countries within the context of public and private institutions. The result has presented the strong influence of ethical leadership and Islamic work ethics on the ethical behavior of employees. The similarities of all findings view that ethics is an important aspect of the success of individuals and organizations. However, as far as the researcher is concerned, no studies in the Western context undertake the concept of religiosity from the Islamic work ethics perspective. As a result, there is potential utility of the Islamic work ethics concept being developed in a non-Muslim context as Islamic work ethics can be adopted as it prioritizes noble values such as preserving human dignity and emphasizing obedience and diligence at work.

Discussion

This review intends to assess the influence of ethical leadership and IWE on ethical work behavior in the context of public and private institutions. Results from a literature search within the year 2012-2022 identified 11 studies. Out of the 11 studies selected, the majority of studies on ethical behavior employed a quantitative approach (n=9) and only two studies from Kashif et al., (2015) and Nayak & Chandiramani, (2022) employed a qualitative study. The findings of the literature search are presented in Table 2.

Table 2: Findings of literature search (2012-2022)

Method	Frequency	Author (s)
Qualitative	2	Kashif et al., (2015); Nayak & Chandiramani, (2022)
Quantitative	9	Ahmad & Syed, (2021); al Halbusi et al., (2022); Ali & Ahmad,(2021); Boudlaie et al., (2022); Bouichou et al., (2022); Gigol, (2021); Sajari et al., (2022); Sulaiman et al., (2022); Yazdanshenas & Mirzaei, (2022)

All of the selected studies show similarities in that ethical work behavior leads to positive long-term effects for employees such as job satisfaction, job performance, good human relations, and a high level of accountability. Moreover, past research has identified the influence of ethical leadership also may contribute to the ethical work behavior of employees. Ethical leaders will view ethics as an important aspect of their work. They believe that ethical behavior is important to ensure the overall success of the organization. It has been discovered through the findings of previous research that ethical leaders have a significant impact on their employees' trust. Because trust is the quality that ethical leaders must possess, ethical workers will not exist in an environment where there is an untrustworthy leader. Thus, employees regard ethical leaders as individuals who consistently put moral concerns and prioritize ethics. Consequently, the employee will constantly look for ways to ensure moral principles introduced by ethical leaders are accepted and followed.

This review identifies two studies conducted in qualitative research. There is a scarcity of qualitative research about ethical behavior issues. In summary, Kashif et al., (2015) used a qualitative approach to study Islamic tradition in management development based on the Islamic Dawah framework. Given the absence of literature to propose a framework based on Islamic tradition, an interpretative approach opted for this study as the concept has not been grounded by theory, and a details analysis of the phenomenon is needed. An interview was conducted with 40 leaders. To draw a relevant conclusion, participants from a varied range of backgrounds were chosen for the study sample. The respondents are a mix of young and old leaders, individuals acquainted with Islamic practices, and members of the general public who may not be well-versed in practicing Islam.

Meanwhile, a study by Nayak & Chandiramani (2022) employed a qualitative case-study approach as a method. Case studies are good for describing, comparing, evaluating, and understanding different aspects of a research problem. The author of this research aims to explore the importance of business ethics, information sharing, and transparency by scouting the case of the banking industry in India. Researchers expose several fraud mismanagement cases in the Indian banking sector and draw a finding that ethical conduct is required as a mechanism to prevent the incident.

Looking at the past studies on IWE, there is a utility to embarking on the concept of IWE in organizations that will result in consistent performance of ethical behavior in employees. Apart from that, findings reveal that IWE

emphasizes justice and generosity in the workplace, and views engagement in economic activities as an obligation. Therefore, as a comparison, unlike PWE, the IWE places more emphasize on intention than the result. To conclude, the IWE promotes ethical conduct and prevents unethical conduct.

5. Agenda for Future Research and Conclusion

Theoretically, the role of ethics has been examined in diverse situations and contexts. However, based on this meta-analytic review, a few suggestions for future research direction have been identified. First, for methodological approach, future studies could employ mixed-method studies and multi-level studies. Mixed-method studies combining qualitative and quantitative approaches are good to execute as ethics involve behavior that portrays the values upheld by the individual. Most questions in the quantitative approach are self-reported questionnaires resulting in response bias. Even though the qualitative approach does have some weaknesses, especially discrepancies in interpreting the data, mixed-method studies might balance out the limitations of each method.

Secondly, a multi-level study should be carried out to allow the effects of variables at different levels of analysis. Ethics has been researched at individual and organizational levels. Variables at the organizational level can be a strong predictor to influence the individual level. The result of this meta-analytical review signifies the strong influence of ethical leadership on the ethical work behavior of employees. This shows that a multi-level study can be a good methodology for future research to assess the effects of other constructs at a different level of organizational hierarchy.

Conclusion

This study aimed to achieve three main objectives. First, it reviewed existing theoretical and empirical research on the impact of ethical leadership on employees' ethical work behavior. The findings highlight that leaders significantly shape employees' attitudes, with ethical leaders serving as role models and inspiring ethical actions among their team members. The second objective was to assess the influence of Islamic work ethics on employees' ethical work behavior. Empirical evidence shows that Islamic work ethics contribute to positive organizational outcomes and foster ethical behavior in the workplace. Finally, the third objective was to analyze the methodological approaches used in previous studies on ethical leadership, Islamic work ethics and ethical work behavior. A methodological gap was identified, prompting future researchers to provide recommendations and explore new avenues for advancing research on ethical work behavior.

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Understanding Tourist Experiences in Kuala Lumpur: An Evaluation Using the HOLSAT Model

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Abstract: This study explores tourist satisfaction in Kuala Lumpur by assessing how well visitor expectations align with their experiences of the city's tourism services and products. The research focuses on 22 key holiday attributes, along with 8 attributes related to overall satisfaction, which are grouped into five main categories: attractions, accessibility, amenities, lodging, and food and beverages. To gather data, a survey was conducted with 389 domestic and international tourists who visited Kuala Lumpur, using face-to-face interviews, printed questionnaires, and online surveys. The data was analyzed quantitatively using SPSS and Excel, with Pearson correlation applied to assess the relationship between the five categories and overall tourist satisfaction. The results revealed a strong, positive correlation between these categories and tourist satisfaction, with scores above 0.05, highlighting their significant influence on shaping the visitor experience. These findings provide valuable insights for tourism stakeholders in Kuala Lumpur, offering guidance on improving services and enhancing the city's appeal as a preferred travel destination.

Keywords: *Tourist satisfaction, visitor expectations, visitor experience, urban destination, Kuala Lumpur*

1. Introduction

Kuala Lumpur, the vibrant capital of Malaysia, has long been a popular destination for tourists, offering a unique blend of cultural richness, modern infrastructure, and diverse attractions (Yusoff et al., 2019). However, as the city continues to evolve and attract visitors from around the world, it is essential to understand the experiences and perceptions of these tourists. It is important to understand tourist experiences traveling to Kuala Lumpur to maintain the city as a tourist-friendly destination (Ying et al., 2015).

The HOLSAT model provides a comprehensive framework for evaluating tourist experiences, focusing on various dimensions such as the quality of the destination, its uniqueness, and the value travellers perceive (Abukhalifeh et al., 2017). This research paper aims to apply the HOLSAT model to investigate the factors influencing travel decisions and experiences of international tourists visiting Kuala Lumpur.

The findings of this study provided valuable insights to tourism stakeholders, including the government, private sector, and non-profit organizations, to enhance the overall tourist experience and maintain Kuala Lumpur's position as a premier tourist destination (Farinda et al., 2008; Nejati & Mohamed, 2014; Anuar et al., 2013; Sukiman et al., 2013).

This study uses the Holiday Satisfaction model to evaluate tourist satisfaction with Kuala Lumpur's tourism offerings and their overall experience during their visit. By examining travellers' satisfaction, this research contributes to the literature on tourism and travel behavior. The target population consists of tourists who visit Kuala Lumpur, Malaysia, for leisure or travel purposes. This study provides a more comprehensive understanding of tourists' expectations and experiences while navigating urban tourism environments.

Besides, there is a strong need for researchers in tourism to gain a better understanding of travel behavior among them to create trends for market segmentation and products in the tourism industry for future reference. Tourists' behavior that is associated with the use of the information would be examined to create a better platform for information searched according to their preferences (Yin & Zhu, 2017). In the field of tourism, there is a significant need for researchers to gain a better understanding of travel behavior. This understanding helps in creating market segmentation trends and developing tourism products for future reference. Furthermore, researchers examined tourists' behavior related to information usage to create a more tailored platform for information based on their preferences (Feng, 2022). It helped them to identify

accommodations, attractions, amenities, accessibility, and meals in urban areas. On the other hand, this research is beneficial for tourism operators, which can improve the tourism products according to the tourists' perceptions of hands-on experience. Comprehension of the tourists' satisfaction helped marketers predict customer needs and wanted to provide better services.

2. Literature Review

Tourist Satisfaction

Satisfaction is influenced by the difference between what customers expect before making a purchase and what they experience afterward in terms of product or service quality (Zeinali & Jarpour, 2015). This indicates that satisfaction is closely tied to how people view their expectations and experiences, which is particularly important in tourism for assessing and improving tourist satisfaction.

Measuring tourist satisfaction is vital for effective tourism planning, enhancing the destination's image, and encouraging repeat visits and recommendations (Yoon & Uysal, 2005, as cited in Basendwah et al., 2022). Yoon and Uysal (2005) emphasized that visitor satisfaction is a key factor in evaluating the success of tourism products and services.

HOLSAT Model

The Holiday Satisfaction Model (HOLSAT) measures tourist satisfaction by comparing their expectations before travel with their experiences afterward. Developed by Tribe and Snaith (1998), it was first applied at a resort in Cuba. HOLSAT builds on the SERVQUAL model and focuses on the gap between what tourists expect what they think is important, and how they rate service quality. Unlike other models like SERVQUAL and SERVPERF, HOLSAT looks at both sides, positive and negative aspects of a holiday. It divides satisfaction into two components: the holiday experience (aspects of the trip) and the factors that lead to satisfaction or dissatisfaction.

The model has been widely used in research to evaluate tourist satisfaction in different destinations. For example, Ceylan and Ozcelik (2016) examined factors such as transportation, accommodation, and cultural life, while Truong and Foster (2006) defined the "Five A's" of hotels: accessibility, amenities, accommodation, activities, and attractions. Omar et al. (2015) used it to measure satisfaction on an island, dividing attributes into accessibility, accommodation, amenities, and food. Research by Malodia & Singla (2017) focused on religious tourism in the Himalayas, using seven key categories like infrastructure and spiritual experience.

Independent Variables

Accommodation: Accommodation is a vital part of the tourism sector, as it is essential for providing overnight services like hotels, guesthouses, and campgrounds (Poudel, 2013). Tourists can feel disappointed if these options are lacking during their travels (Poudel, 2013; Biswas et al., 2020). Key factors influencing their satisfaction include cleanliness, price, service quality, and location (Nisco et al., 2015). Tourists are often willing to pay more based on the destination and service quality (Ngoc & Trinh, 2015). Many accommodations also offer entertainment and sports, helping visitors engage with local culture (Poudel, 2013). Other important aspects include employee hospitality, available facilities like laundry and dining, and the accommodation's location (Niem et al., 2021; Suanmali, 2014). Typically, luxury options are found in city centers, while budget-friendly choices are located on the outskirts (Yang et al., 2015). Therefore, accommodation providers in Kuala Lumpur need to consider these factors to create high-quality services that meet tourists' needs.

Accessibility: Accessibility was defined as the ability to offer acceptable visitor access to and travel throughout a destination (Suanmali, 2014), and it was not only focused on transportation and geographic location (Biswas et al., 2020). According to Zorková (2016), regardless of age or physical condition, accessibility is essential to travel, and the dimensions of tourism service accessibility are as follows:
Physical accessibility
Information accessibility
Communication accessibility
Economic accessibility

According to several studies, accessibility consists of the availability of parking, public or private transportation, the flow of traffic, access to the destination, and the state of the roads (Rajesh, 2013; Nisco et al., 2015). The diverse aspects of accessibility include geography, disability studies, the economy, marketing, and many other fields (Zorková, 2016). Accessibility for tourists is important while organizing a vacation, and as a result, it is seen as critical and significant (Castro et al., 2017; Ngoc & Trinh, 2015; Rajesh, 2013). For instance, accessibility is related to tourism development as it depends on the development of appropriate infrastructure, such as road access (Suanmali et al., 2014).

Amenities: Amenities are described as the physical infrastructure that enables to support of the destination and the facilities that have been provided in that tourism destination. These were useful tools to measure the satisfaction level of tourists at the destination (Suanmali et al., 2014). The aspects are included in the infrastructure for tourism, including signposting, parking, transportation, and tourist-specific services. (Kozak & Rimmington, 2000; as cited by Zeinali & Jarpour, 2015).

According to Middleton and Clarke (2001), they had listed for the amenities and services at tourist destinations:
Accommodation type: hotels, vacation homes, condominiums, apartments, villas, campgrounds, caravan parks, farms, and guesthouses.
Restaurant establishments: fast food joints and fine dining places.
Transportation: taxis, buses, rented cars and bicycle rentals.
Arts and crafts and natural studies; golf clubs, sailing schools, ski resorts, and sailing clubs.
Retail establishments: stores, tour operators, souvenir shops, and camping supply stores.
Additional services: rental equipment, information services, and tourism police.

Amenities in tourism emphasize cleanliness, hospitality, and facilities such as dining, entertainment, and retail stores, enhancing tourists' excitement. They are essential for helping travellers enjoy and engage with local attractions (Middleton & Clarke, 2001) and provide comfort to visitors (Sukiman et al., 2013).

Food and Beverages: Food and meals are significantly associated with tourist satisfaction at any tourist destination. Local foods have been described as a vital component of tourism products, contributing to tourists' memorable travel experiences (Rahman, 2018). It is one of the most important industries for Malaysia's economy, given that its contribution to revenue in the food market will amount to US$57.55 billion in 2023. According to Statista Market Insights, by May 2023, the food market is expected to grow annually by 7.11% (CAGR 2023-2028) in Malaysia. These figures show that the money spent on food in tourist destinations generates a sizable amount of revenue for food and beverage businesses.

Food and meals are also closely related to hygiene, prices, facilities, and services. All these components will affect tourist experiences and satisfaction when visiting any destination. The food and beverages will create an image, either positive or negative, based on tourist experiences and satisfaction. Numerous studies have found that local foods are used as a competitive criterion to improve a destination's image for tourist revisit intention (Rahman, 2018). Since Malaysia is home to various ethnic groups (i.e., Malay, Chinese, and Indian), each with its own distinct and unique foods that are marketed to tourists, making Malaysia a unique destination. The variety of flavors in local foods ranges from mild to spicy too sweet to sour, reflecting the country's status as one of the best places for food tourism experiences (Yusoff et al., 2013). The uniqueness of foods can draw great attention from tourists. Hence, it is vital to evaluate tourist satisfaction with food and beverage services to shift tourist tourism experiences.

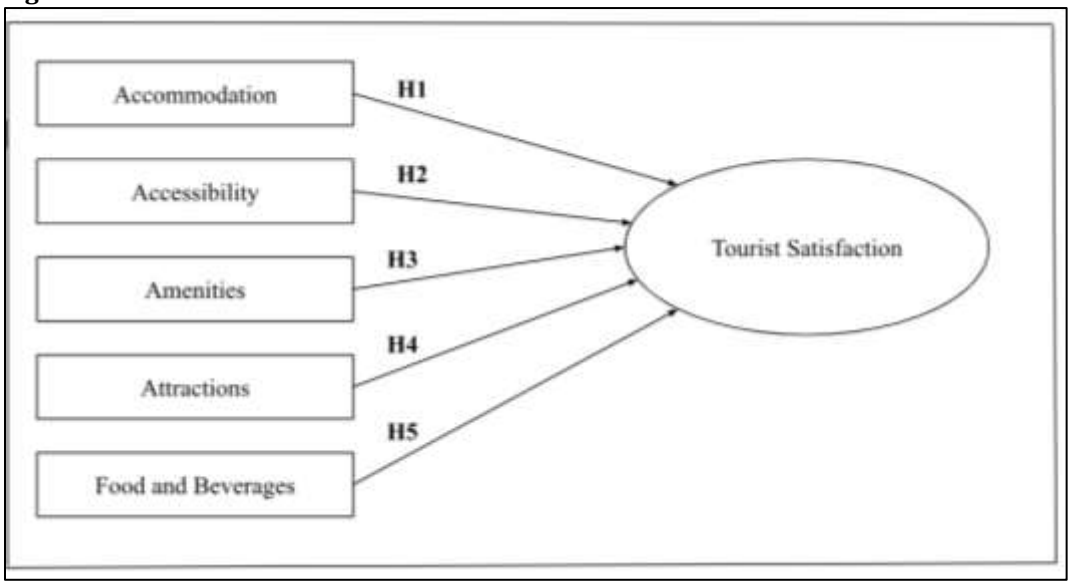
Attractions: An attraction refers to a place or anything that attracts tourists to visit any destination (Suanmali, 2014). It plays an important and remarkable role in the tourism industry. Tourist attractions can consist of many parts, like natural attractions, cultural attractions, and recreation and activities. The attraction is derived from the tourist's preferences or desires. It depends on what the tourist needs and wants. According to Alper et al. (2011 as cited in Baygloo, 2021), a tourism attraction is "a place of interest where tourists visit, typically for its inherent or exhibited cultural value, historical significance, natural or built beauty, or amusement opportunities". Different tourists have a different fondness, which affects tourist satisfaction with the attractions that some destinations offer. Attractions can have a significant impact on a destination's value by attracting a wide range of visitors or tourists. Leiper (1990) produced the term "nuclear mix" to refer to tourist

attractions. He developed a hierarchical classification of attractions for individual tourists: "primary," "secondary," and "tertiary." He classified tourist attractions based on the importance that visitors placed on them in their schedules. A "primary" attraction relates to the primary objective of the trip and is therefore crucial in determining the destination. Tourists are aware of some characteristics of a "secondary" attraction before they travel there, but they do not give it the attention it deserves when making travel plans. Tourists are frequently unaware of a "tertiary" attraction until they visit the location. In other words, primary attraction refers to the main reason or intention of a tourist visiting a destination, whereas secondary attractions are the side plans, which are not as important as primary. Tertiary refers to unplanned attractions that are newly discovered by tourists at a destination. These hierarchical classifications represent the terms of attractions in different exposures which helps tourism suppliers to acknowledge tourist attractions based on their enthusiasm.

The tourism industry needs to be promoted, with attractions being the primary driver of tourism and visitor satisfaction being the industry's goal. Referring to the definition and previous research, it is revealed that the quality and uniqueness of attractions encourage tourists to choose a destination and revisit it in the future. A case study by Bagri and Devkant (2015) on a sample of 200 tourists who had visited Triyuginarayan, located in Garhwal Himalaya in Uttarakhand state of India, found the uniqueness of the destination is a key factor that influences tourists' satisfaction. Tourism attraction contributes to the economic growth of value for tourism destinations.

Research Framework (Conceptual/Theoretical)

Figure 1: Research Framework



Hypotheses (H)

H1: Accommodation will significantly affect tourist satisfaction.
H2: Accessibility will significantly affect tourist satisfaction.
H3: Amenities will significantly affect tourist satisfaction.
H4: Attractions will significantly affect tourist satisfaction.
H5: Foods and beverages will significantly affect tourist satisfaction

3. Methodology

The research focused on urban areas to assess tourist satisfaction levels using the HOLSAT model, employing a descriptive correlational design. Fundamentally, descriptive research aims to describe relationships among variables without establishing causal connections, while correlational research measures two variables to

evaluate their statistical relationship with minimal control over inessential factors. This study examined tourist satisfaction in urban areas, specifically in Kuala Lumpur, by focusing on five attributes which are accommodation, accessibility, amenities, attractions, and food and beverages. Additionally, a quantitative research method was utilized, with questionnaires designed to evaluate tourist satisfaction based on the HOLSAT model and structured in five stages consisting preliminary stage, literature review, data collection, analysis and findings, and concluding with recommendations.

Convenience sampling, as defined by Omar et al. (2015), was employed to select a sample from the population to ensure all members had an equal chance of selection. Hence, the survey targeted both international and domestic tourists aged 18 and older who visited Kuala Lumpur between 2023 and 2024 with a sample size of 384 respondents determined through careful statistical criteria. Moreover, Data collection occurred in two cycles during December 2023 and January 2024 at popular tourist locations in Kuala Lumpur's Golden Triangle, such as Bukit Bintang, Suria KLCC, and Central Market, where crowds of domestic and international tourists were expected.

Besides, a pilot test involving 30 respondents was conducted to assess the reliability of the questionnaire, and guidance was sought from Mr. Zamzuri bin Ahmad Nazari for data analysis using the Statistical Package for Social Sciences (SPSS). Reliability analysis indicated that all attributes exceeded the acceptable threshold of 0.5, with Cronbach's Alpha values of 0.856 for accommodation, 0.817 for accessibility, 0.898 for amenities, 0.854 for attractions, and 0.881 for food and beverages.

In a nutshell, the research questionnaire comprised three parts. Part A collected demographic information about respondents, including gender, age, marital status, place of origin, number of visits, trip purpose, and length of stay, adapted from Omar et al. (2015). Where Part B assessed the relationship between HOLSAT attributes and tourist satisfaction, focusing on five key areas: accommodation, accessibility, amenities, attractions, and food and beverages (Niem et al., 2021), using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Finally, Part C evaluated overall tourist satisfaction with Kuala Lumpur's tourism services and products, also using the HOLSAT model and a similar 5-point Likert scale.

4. Research Findings

The Cronbach's Alpha coefficient for all variables in this study is greater than 0.6. The dependent variable, with a value of 0.85, significantly influences accommodation. Accessibility has a rating of 0.77, facilities have a value of 0.84, attractions have a value of 0.88, and food and beverages are worth 0.77. All parts have Cronbach's alpha coefficients exceeding the 0.6 threshold, indicating acceptable reliability. According to Sekaran and Bougie (2013), a sufficient level of dependability is defined as Cronbach's alpha coefficients for all sections exceeding the 0.6 threshold.

Table 1: Reliability Analysis

Variable	No of Item	Cronbach's Alpha
Accommodation	5	0.85
Accessibility	4	0.77
Amenities	5	0.84
Attractions	4	0.88
Food and Beverages	4	0.77

Demographic Analysis

Table 2 shows the respondents' demographic data. This study included 389 respondents. The gender distribution reveals that 41.1% of participants identified as male and 58.9% as female. 59.6% of the participants were aged 18 to 25, with the majority being undergraduate students. The second largest age group, 26-35, comprised 25.2% of the sample. The age categories of 36-49 years and over 50 years represented 10.5% and 4.6% of the respondents, respectively. The bulk of respondents were Malaysians, which represents 80.5%. Most respondents who visited Kuala Lumpur were single, accounting for 74%. Repeat visitors outnumbered first-time visitors, constituting 57.1% of the sample. Tourists visiting Kuala Lumpur mostly travelled by group,

representing 69.4%, compared to solo, which only represented 30.6%. Most of the tourists seek leisure, which is only 69.2%. Also, some proposed a combination of business and leisure, which is 26%. Additionally, 60.2% of tourists stayed in Kuala Lumpur for about two to five days. Furthermore, 27.2% of the most significant respondents travelled from Johor. Table 2 shows the respondents' demographic data. This study included 389 respondents. The gender distribution reveals that 41.1% of participants identified as male and 58.9% as female. 59.6% of the participants were aged 18 to 25, with the majority being undergraduate students. The second largest age group, 26-35, comprised 25.2% of the sample. The age categories of 36-49 years and over 50 years represented 10.5% and 4.6% of the respondents, respectively. The bulk of respondents were Malaysians, which represents 80.5%. Most respondents who visited Kuala Lumpur were single, accounting for 74%. Repeat visitors outnumbered first-time visitors, constituting 57.1% of the sample. Tourists visiting Kuala Lumpur mostly travelled by group, representing 69.4%, compared to solo, which only represented 30.6%. Most of the tourists seek leisure, which is only 69.2%. Also, some proposed a combination of business and leisure, which is 26%. Additionally, 60.2% of tourists stayed in Kuala Lumpur for about two to five days. Furthermore, 27.2% of the most significant respondents travelled from Johor.

Table 2: Demographic Analysis

Category	Demographic	Frequency	Percentage
Gender	Male	160	41.1
	Female	229	58.9
Age	18-25	232	59.6
	26-35	98	25.2
	36-49	41	10.5
	Above 50	18	4.60
Marital Status	Single	288	74.0
	Married	84	21.6
	Divorced	17	4.40
Number of Visits	First-time	167	42.9
	Repeat	222	57.1
Travel Style	Solo	119	30.6
	Group	270	69.4
Purpose of the Trip	Business	19	4.90
	Leisure	269	69.2
	Combination of Business and Leisure	101	26.0
Length of Stay	Less than two days	103	26.5
	Two to five days	234	60.2
	More than five days	52	13.4
Nationality	Malaysian	313	80.5
	Non- Malaysian	76	19.5
Place of Origin	Johor	106	27.2
	Melaka	67	17.2
	Pahang	15	3.90
	Negeri Sembilan	22	5.70
	Selangor	25	6.40
	Perak	11	2.80
	Terengganu	6	1.50
	Kelantan	7	1.80
	Pulau Pinang	4	1.00
	Kedah	8	2.10
	Perlis	5	1.30

	Sabah	14	3.60
	Sarawak	1	0.30
	Wilayah Persekutuan	23	5.90
	Overseas	75	19.3

Descriptive Analysis

Table 3 provides a detailed analysis of the quality aspects of products and services in the Golden Triangle of Kuala Lumpur. Starting with the "Accommodation" attribute, the aspect of being strategically located near major tourist attractions received the highest average rating of 4.32, while the affordability of room rates was seen as less satisfactory, with the lowest average rating of 3.70 for this category. Moving on to "Accessibility," the ease of access to public transportation was highly rated with an average of 4.26, making it the top attribute in this category, whereas the availability of parking was identified as needing improvement, evidenced by its lowest average score of 3.50. In the "Amenities" category, services such as internet connectivity, including WIFI and telephone services, were well-regarded, scoring an average of 4.25. On the other hand, the availability of charging ports was seen as an area for enhancement, with a lower satisfaction score of 3.63. Regarding "Attractions," the diversity of tourist attractions was highly valued, with the top average score of 4.30, while the enjoyment derived from activities in recreational parks or theme parks was slightly lower, at an average of 4.10. Finally, within the "Food and Beverages" category, the affordability of food and beverages was deemed less satisfactory with a mean score of 3.50. However, the variety of service types, including dine-in, takeaway, delivery, and drive-thru options, received the highest commendation with an average score of 4.32, indicating a positive reception in this area.

Table 3: Results of descriptive analysis

Survey Statement/ Questionnaire	Frequency (%)					Mean	Std Dev
Accommodation	**1**	**2**	**3**	**4**	**5**		
1. Availability of accommodation	10 (2.6)	4 (1.0)	35 (9.0)	169 (43.4)	171 (44.0)	4.43	0.86
2. Quality of accommodation	11 (1.3)	8 (1.3)	30 (13.4)	177 (33.2)	163 (49.6)	4.22	0.89
3. The staff shows great hospitality	10 (2.6)	11 (2.8)	55 (14.1)	164 (42.2)	149 (38.3)	4.22	0.93
4. Reasonable price room rates	12 (3.1)	43 (11.0)	95 (24.4)	140 (36.0)	99 (25.4)	3.70	1.06
5. Strategic location (near major tourist attractions)	6 (1.5)	5 (1.3)	32 (8.23)	163 (41.1)	183 (47.0)	4.32	0.80
Accessibility							
1. The place is reachable	10 (2.6)	7 (1.8)	42 (10.8)	154 (39.6)	176 (45.2)	4.23	0.90
2. Availability of parking space	23 (5.9)	59 (15.2)	97 (24.9)	121 (31.1)	89 (22.9)	3.50	1.17
3. Accessibility of public transport	5 (1.3)	14 (3.6)	40 (10.3)	145 (37.3)	185 (47.6)	4.26	0.88
4. Pedestrian-friendly streets	11 (2.8)	27 (6.9)	63 (16.2)	142 (36.5)	146 (37.5)	3.99	1.04
Amenities							
1. Internet connectivity/ WIFI/ telephone services	7 (2.6)	9 (1.0)	42 (9.0)	153 (43.4)	178 (44.0)	4.25	0.87

2. Money changer/ automatic teller machine (ATM)	8 (1.3)	9 (1.3)	57 (13.4)	174 (33.2)	141 (49.6)	4.11	0.88
3. Signage at attractions	8 (2.6)	11 (2.8)	45 (14.1)	176 (42.2)	149 (38.3)	4.15	0.88
4. Designated charging port	16 (3.1)	45 (11.0)	96 (24.4)	140 (36.0)	92 (25.4)	3.63	1.09
5. Amenities in public toilets (soap dispensers, tissues, and hand sanitizer)	6 (1.5)	25 (6.4)	71 (18.3)	143 (36.8)	144 (37.0)	4.01	0.98
Attractions							
1. Variety of tourist attractions	10 (2.6)	4 (1.0)	36 (9.3)	150 (38.6)	189 (48.6)	4.30	0.88
2. Attractive art and crafts in souvenir shops	7 (1.8)	13 (3.3)	47 (12.1)	156 (40.1)	166 (42.7)	4.19	0.90
3. Interesting activities in recreational park/ theme park	11 (2.8)	15 (3.9)	58 (14.9)	146 (37.5)	159 (40.9)	4.10	0.98
4. Nightlife entertainment	11 (2.8)	15 (3.9)	58 (14.9)	146 (37.5)	159 (40.9)	4.23	0.90
Food & Beverages							
1. Reasonable prices of food and beverages	27 (6.9)	58 (14.9)	90 (23.1)	120 (30.8)	94 (24.2)	3.50	1.21
2. Varieties of eating places	7 (1.8)	10 (2.6)	33 (8.5)	143 (36.8)	196 (50.4)	4.31	0.87
3. Cleanliness of eating places	8 (2.1)	22 (5.7)	60 (15.4)	151 (38.8)	148 (38.0)	4.05	0.97
4. Types of service (dine-in, takeaway, delivery & drive-thru)	8 (2.1)	6 (1.5)	30 (7.7)	155 (37.5)	190 (48.8)	4.23	0.90

Correlation Analysis

The study framework's variables were analyzed using Pearson's correlation coefficient, a statistical measure that evaluates the linear relationship between two continuous variables. The correlation matrix presents these coefficients and their significance levels for tourist satisfaction, accommodation, accessibility, amenities, attractions, food and beverages, based on data from 389 respondents. Each cell above the diagonal illustrates the strength and direction of the relationship between two variables. Tourist satisfaction exhibits a positive correlation with accommodation ($r = 0.490$, $p < 0.000$), indicating that tourist satisfaction also tends to increase as accommodation increases. Similarly, this suggests that higher accessibility is associated with higher tourist satisfaction. The correlation between intention and amenities ($r = 0.460$, $p < 0.000$) is also positive, meaning that as amenities increase, tourist satisfaction tends to increase as well. Next, tourist satisfaction exhibits a positive correlation with attractions ($r = 0.485$, $p < 0.000$). Lastly, the correlation between tourist satisfaction and food and beverages ($r = 0.455$, $p < 0.000$) is also solid. All correlations are statistically significant, with p-values less than <0.000, strongly suggesting that the null hypothesis stating no correlation should be rejected. Hence, these factors are strongly correlated with one another. In summary, the evidence suggests a positive correlation between accommodation, accessibility, amenities, attractions, food and beverages. Additionally, all five factors show a positive correlation with the tourist satisfaction variable. These findings offer valuable insights into the connections among these important variables, setting the stage for additional exploration and interpretation within the study's dataset.

Table 3: Correlations Analysis

		Tourist Satisfaction	Accommodation	Accessibility	Amenities	Attractions	Food & Beverages
Tourist Satisfaction	Pearson Correlation	1	0.490	0.499	0.460	0.485	0.455
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	N	389	389	389	389	389	389
Accommodation	Pearson Correlation	0.490	1	0.741	0.716	0.705	0.698
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
	N	389	389	389	389	389	389
Accessibility	Pearson Correlation	0.499	0.741	1	0.744	0.704	0.678
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	N	389	389	389	389	389	389
Amenities	Pearson Correlation	0.460	0.716	0.744	1	0.721	0.720
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	389	389	389	389	389	389
Attractions	Pearson Correlation	0.485	0.705	0.704	0.721	1	0.720
	Sig. (2-tailed)	0.00	0.000	0.000	0.000		0.000
	N	389	389	389	389	389	389
Amenities	Pearson Correlation	0.445	0.698	0.678	0.668	0.720	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	389	389	389	389	389	389

In summary, the evidence suggests a positive correlation between improved attitude, subjective norms, and perceived control. Additionally, all three factors show a positive correlation with the Intention variable. These findings offer valuable insights into the connections among these important variables, setting the stage for additional exploration and interpretation within the study's dataset.

Discussion

This study aims to evaluate tourist satisfaction levels in Kuala Lumpur, specifically focusing on their experiences with the city's tourism services and products. The results indicate several key points. Firstly, the study concludes that the quality of services and products—including accommodation, accessibility, amenities, attractions, and food and beverages—positively correlates with tourist satisfaction. The strong link between accommodation options and tourist contentment suggests that most visitors are pleased with the lodging choices available in Kuala Lumpur, as suitable accommodation greatly enhances their overall experience. Similarly, good accessibility is reflected in the positive condition of Kuala Lumpur's pedestrian walkways and streets, which facilitates easier navigation for tourists and boosts their satisfaction.

Moreover, Kuala Lumpur offers comfortable amenities that contribute to tourists' enjoyment, while the variety and appeal of its attractions enhance their sense of fulfilment. The quality of food and beverages also plays a significant role in shaping tourists' experiences, with satisfaction linked to affordable prices, diverse dining

options, and clean establishments. The city's reputation for delicious food, featuring a wide range of culinary choices from various cultures, suggests that improving these aspects can further enhance visitor satisfaction.

However, some important issues negatively impact tourist satisfaction in Kuala Lumpur. One major concern is the lack of available parking, as tourists often struggle to find parking spaces. To address this, increasing parking capacity in popular areas by constructing new facilities or converting vacant lots into parking spaces could be beneficial. Another issue is the insufficient number of charging stations for electronic devices; ensuring that more charging ports are accessible in tourist areas would improve convenience. Additionally, the high prices of food and beverages—driven by demand—can deter satisfaction. Service providers might consider offering special promotions or affordable meal deals to enhance perceived value and attract tourists.

5. Conclusion and Recommendations

In conclusion, ensuring a satisfying experience for tourists is essential. By utilizing the HOLSAT model to assess tourist satisfaction with their visits to Kuala Lumpur and the city's tourism services and products, the findings support the goal of enhancing these services and promoting a positive image of the city to attract more visitors. The research objectives were successfully met, and the results can serve as a valuable resource for future academic studies. Researchers could build upon this work by incorporating additional factors such as hygiene, security, or technology to align with current travel trends and needs. Moreover, the data can be applied to evaluate tourist satisfaction in other urban areas like Johor Bahru. As Kuala Lumpur prepares for the 2025 "Visit Malaysia Year," this information can help improve various aspects of tourism services and products. Stakeholders in the tourism sector must ensure that visitors have a fulfilling experience, as positive feedback can encourage repeat visits and enhance the city's reputation.

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The Influence of Service Quality on Customer Satisfaction: An Empirical Study in the Fast-Food Industry

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Abstract: Service quality (SERVQUAL) is crucial in knowing whether customers receive the level of services they expect and whether such services affect their satisfaction. This study examines the relationship between customer satisfaction and SERVQUAL dimensions of the A&W outlet at Aeon Bandaraya Melaka. 300 respondents were involved in this study, and the data were collected from the distribution of questionnaires. It was found that there was a significant relationship between customer satisfaction and SERVQUAL dimensions of A&W outlet Aeon Bandaraya Melaka, and SERVQUAL remains a critical factor for A&W. Thus, this study suggests that future research could be carried out in diverse cultural or regional settings to evaluate the relationship between service quality and customer satisfaction across international marketplaces. This will assist the other fast-food industry to overcome the SERVQUAL issues and maintain the sustainability of the fast-food economy.

Keywords: *Customer Satisfaction, Service Quality (SERVQUAL), A&W outlet, Assurance, Empathy*

1. Introduction

Malaysians are known to be enthusiastic and selective when choosing places to eat, particularly in fast-food restaurants. With the increasing number of fast-food chains in the market and high preference for fast food and convenience, people have more options to choose from any of these restaurants to fulfil their needs and wants (Ganatra, et al., 2021; Md Ismail, et al., 2019). Statistically, Malaysians eat fast food one to three times a week, and at least 6.7% of Malaysians eat fast food every month (Man, et al., 2021; Shamsudin et al., 2020). Furthermore, various fast-food restaurants provide outstanding service to establish a competitive advantage because they want to retain their customers and also increase their profits (Kocabulu & Albayrak, 2019; Kumolu-Johnson, 2024; Manani et. al., 2013). The restaurant owners themselves always maintain and keep attracting customers with good service quality who keep coming to their eateries to ensure the sustainability of their businesses. Hence, winning customer loyalty is vital to refrain customers from switching to other restaurants.

Service quality (SERVQUAL) and customer satisfaction are the important elements to acquire and maintain customer loyalty (Slack & Singh, 2020). Excellent service quality will help to satisfy the customers, and they will stay loyal to the preferred restaurants (Saravanan & Rao, 2007; Rane, et al., 2023). Nowadays, most restaurants concentrate on delivering outstanding customer service as well as improving their SERVQUAL to satisfy their customers. This will prevent any negative feedback, bad reviews and complaints among the customers who always visit fast-food restaurants. As Sanchez-Hernandez et. al., (2010) mentioned, a customer who is unhappy with the service received will tend to spread negative feedback and bad experience to others, while a happy customer spreads the good about the service received.

A&W Malaysia Sdn. Bhd. is one of the first well-established fast-food industries in Malaysia since 1963. A&W has a wide variety of fast food such as supreme coney, zesty burgers, chicken sandwiches, and waffles and the most famous one is root beer float with ice cream. A&W possesses a few franchises throughout Malaysia and is well-known among its customers in every age (A&W Malaysia, 2020). Nonetheless, today, A&W has to compete with other fast-food restaurants such as Mcdonald's and KFC to sustain itself in the industry. A&W at Aeon Bandaraya Melaka is one of the branches that is an outlet available in the shopping mall. However, customers have been complaining about the service received in this A&W outlet. According to the restaurant manager,

they receive customer complaints almost every day regarding their poor SERVQUAL (Mohamad Zamzamil, 2015). Even though the complaints have never been formally compiled, this outlet ascertains that the complaints will influence the satisfaction level of the customers and directly affect its image in the fast-food industry. Hence, the negative feedback on SERVQUAL could cause customer satisfaction to decrease. This could cause loyal customers to stay away and switch to another fast-food restaurant (Uslu & Eren, 2020).

Today, the fast-food industry is having a big impact on the economy's growth. The fast-food industry's performance is now becoming crucial to lead the economy's sustainability (León-Bravo et. al., 2019). In Malaysia, the growth of Malaysia fast-food outlets is increasing and is expected to increase to 9,720 outlets by the year 2026 (Siddharta, 2024). It is proven that restaurants and the fast-food industry are the main sectors that are significantly contributing to Malaysia's economic growth (Mohd Nazri et al., 2022; Zubir, et al., 2023). Therefore, this study aims to determine the relationship between customer satisfaction and SERVQUAL dimensions of the A&W outlet at Aeon Bandaraya Melaka. There is a need to comprehend whether customers are receiving the expected services and whether such services influence their satisfaction. The findings will contribute to and assist the A&W outlet at Aeon Bandaraya Melaka to improve its SERVQUAL and reduce the number of customer complaints. Not only that, the findings could also help other fast-food restaurants in overcoming customer dissatisfaction issues in the fast-food industry and indirectly help Malaysia's fast-food industry economy to be sustained.

2. Literature Review

Customer Satisfaction

Satisfaction is defined as the feeling that arises when outcomes align with expectations, fulfilling the needs and wants associated with a purchase decision (Kotler & Armstrong, 2013). In essence, products must meet customers' needs, wants, and expectations to achieve satisfaction. Hunjra et al. (2011) stated that customer satisfaction reflects a customer's attitude or feelings toward a product or service. Satisfied customers are likely to make repeat purchases and continue using the product, whereas dissatisfied customers will switch to other brands or services to fulfil their needs and wants. Sridhar et al. (2009) noted that customers evaluate their satisfaction with a service provider based on the company's grievance management process, and their perception of fairness during this process can enhance their repurchase intentions.

Recent studies continue to emphasize the importance of customer satisfaction in today's competitive market. For instance, Amat et al. (2023) discovered that achieving customer satisfaction leads to customers repeatedly using the service and becoming valuable communicators for the company at no additional cost. The key factors influencing customer satisfaction include perceived quality and overall perceived price. Similarly, Liu and Tse (2018) highlighted that one of the key criteria for customer satisfaction is prompt service. They found that timely responses and swift service delivery significantly enhance customer satisfaction by meeting their expectations for efficiency and reliability. This promptness not only improves the overall customer experience but also strengthens the likelihood of repeat business and positive word-of-mouth.

Service Quality

SERVQUAL, an acronym for service quality, is a multi-dimensional survey tool designed to assess consumers' expectations and perceptions across five dimensions: tangibility, reliability, assurance, responsiveness, and empathy. This instrument is based on the expectancy-disconfirmation paradigm, which posits that service quality is determined by comparing customers' pre-use expectations with their actual perceptions post-use. Since its development by Parasuraman in 1988, the SERVQUAL survey has been widely employed to measure service quality across various industries, contexts, and cultural settings (Galeeva, 2016).

As exerted by Yap and Kew (2007), service quality is all about the consumer's feelings toward the organisation's adequacy, supremacy and services. Besides, service quality has been recognised as the driver to achieve strategic benefits in an organisation to increase customer retention rates, thus gaining more competitive advantage and increasing customer satisfaction toward the product and services (Hunjra et al., 2011). Tazreen (2012) mentioned that service quality is the difference between customer expectations and perception of service received. This can be seen when the customers always have high expectations of the service to be received and high perceptions of the service being received. If the service quality does not meet expectations,

this means that the perceived quality is unsatisfactory, hence leading to customer dissatisfaction (Parasuraman et al., 1985). On the other hand, if the service quality meets customer satisfaction, the perception will change and customer satisfaction will increase (Seetharaman et al., 2013).

Moreover, the link between service quality and business outcomes remains strong. Mittal and Sridhar (2020) demonstrated that high service quality directly correlates with increased customer retention, positive word-of-mouth, and higher profitability. Additionally, the COVID-19 pandemic has reshaped many aspects of service delivery. Research by Villanueva et al. (2023) indicates that the pandemic has heightened customer expectations for cleanliness, safety, and flexibility.

The SERVQUAL model, which consists of five dimensions (tangibles, reliability, responsiveness, assurance, and empathy), is commonly employed to assess service quality in many industries (Akdere et al., 2018; Alzoubi et al., 2021; Jusufbasic & Stevic, 2023; Maulida, 2020; Rahmawati et al., 2023; Sularto, 2021). The model has been utilised in various studies to assess data provider services in Indonesia (Sularto, 2021), tourism travel agencies (Maulida, 2020), logistics services (Jusufbasic & Stevic, 2023), hospitality (Alzoubi et al., 2021), healthcare (Akdere et al., 2018; Alomari., 2021), banking industry (Sugiarto & Octaviana., 2021), and university learning processes (Rahmawati et al., 2023). The model facilitates the identification of discrepancies between customer expectations and perceptions, frequently uncovering opportunities for enhancement.

For example, data provider services (Sularto, 2021) and logistics services (Jusufbasic & Stevic, 2023) exhibited negative gap values, which suggests that customers were dissatisfied. Within the university setting, the assurance dimension obtained the highest score, whereas tangibles received the lowest score (Rahmawati et al., 2023). Moreover, Chatterjee et al. (2023) proposed an innovative approach using text mining and machine learning techniques to measure SERVQUAL dimensions from online customer reviews, bridging the gap between traditional survey-based methods and user-generated content analysis. These findings illustrate the adaptability of the SERVQUAL model in identifying specific areas for improving service quality in various industries.

Tangibles

Tangible aspects are something that an organisation can improve to satisfy its customers (Jonkisz et al., 2022). Tangibles relate to visible substances like the equipment used, the building structure and the physical appearance of the personnel (Alomari, 2021; Tazreen, 2012). As stated by Sugiarto and Octaviana (2021), Jusufbasic and Stevic (2023), and Goumairi et al. (2020), physical evidence such as excellent interior arrangement, neatness, cleanliness of the place, technical installations, and advanced technology would lead to greater user satisfaction and loyalty. Furthermore, Bitner and Hubert (1990) and Goula et al. (2021) believed that the personnel's physical appearance might influence customer satisfaction. If all personnel look appealing in their appearance, it will indirectly attract more customers and create a pleasant environment.

According to Wainwright (2012), tangibles are also related to the organisation's environment and it is a crucial aspect to convey to the customers. Therefore, in this study, it is imperative for A&W as a company to not only showcase its products and services but also provide customers with a glimpse inside their restaurant environment. Furthermore, their meal presentation is visually pleasing and captivating to customers. Therefore, based on the relevant literature, the following hypothesis was developed:

H_1: Tangibles positively affect customer satisfaction at A&W Outlet.

Reliability

Reliability is defined as the possibility of any object that will be functioning according to its specific functions smoothly without failure under given conditions for a specified period. Reliability also relates to the personnel's ability to execute the service meticulously and consistently in an organisation (Kincaid et al., 2010). Reliability entails setting rational expectations and, at that point, meeting or exceeding them. Furthermore, it implies that employees will consistently strive to perform their tasks to the best of their abilities (Wainwright, 2012). Customers will prefer very reliable services, depending on their level of satisfaction with the goods and services they use (Mrabet et al., 2022).

Reliability is critical in evaluating the provided services. Garvin (1988), Alomari (2021), and Goula et al. (2021) demonstrate that reliability is an element that tends to show up in service evaluation. Alomari (2021) found that the widest negative gap in healthcare services was associated with hospital staff's listening skills and their ability to spend adequate time with patients. Similarly, Parasuraman et al. (1988) asserted that the conversion of the word from a negative to a positive one determines the importance of this element for customers. Negative wording consistency leads to customers misinterpreting the situation. Furthermore, it is believed that excellent reliability will indirectly lead to high customer satisfaction with the services provided by the employees (Walker, 1995). Therefore, in this study, A&W workers must understand that the reliability of their services will determine whether they achieve customer satisfaction. Based on the relevant literature, the following hypothesis was developed:
H_2: Reliability positively affects customer satisfaction at A&W Outlet.

Responsiveness
Responsiveness is the preparedness of the staff to assist and give fast responses to customers' needs and wants (Hunjra et al., 2011). In addition, it can also mean the readiness of the staff or employees to provide timely service to the customers (Kincaid et al., 2010). Based on past studies, it was found that responsiveness was more significant in contributing to user satisfaction in the areas of healthcare (Alomari, 2021; Jonkisz et al., 2022; Mrabet et al., 2022), higher education (Alam & Mezbah, 2021; Sibai et al., 2021), and hospitality (Alzoubi et al., 2021). For instance, responsiveness can be seen when the employees confidently inform the promised time to perform the service and quickly respond to any further request by the customers (Parasuraman et al., 1985).

On the other hand, responsiveness also means that the company accepts negotiation and can provide fast feedback, but also in a reasonable amount of time by communicating with the customer through the process (Wainwright, 2012). In addition, the expectations set by the customer will be compared to the services they receive when the company can respond to the customer immediately. As a result, A&W outlets must demonstrate responsiveness when giving feedback to customers to meet their needs and wants. Therefore, based on the relevant literature, the following hypothesis was developed:
H_3: Responsiveness positively affects customer satisfaction at A&W Outlet.

Assurance
Assurance is defined as the ability of the employees to encourage confidence and build trust in themselves and the customers (Hunjra et al., 2011). This is evident in the employee's ability to exude confidence and establish trust with their customers. According to Kincaid et al. (2010) and Goula et al. (2021), they agreed that assurance is also a courtesy of employees, as in their abilities to build trust and confidence in customers' minds. Assurance can be possessed when employees are knowledgeable and always well-mannered to attract and retain customers. Parasuraman et al. (1985) supported this by stating that being courteous is the primary element of assurance, as it not only instils confidence in employees but also enhances their knowledge.

Extending this, Wainwright (2012) added that assurance occurs when an employee is capable of performing their tasks. Hence, assurance can also be defined as the act of expressing confidence, the state of being certain, or the process of making certain. As mentioned Alzoubi et al. (2021), suggested that service performance through hiring qualified and competent staff as well as further educating and training them can help to meet customer satisfaction and loyalty. Moreover, the staff must be courteous and professional when dealing with their customers to gain their trust. Hence, A&W should ensure that the products and services that they offer are exactly what the customers expect. With that, customers will have trust in A&W's goods and services. Thus, based on the relevant literature, the following hypothesis was developed:
H_4: Assurance positively affects customer satisfaction at A&W Outlet.

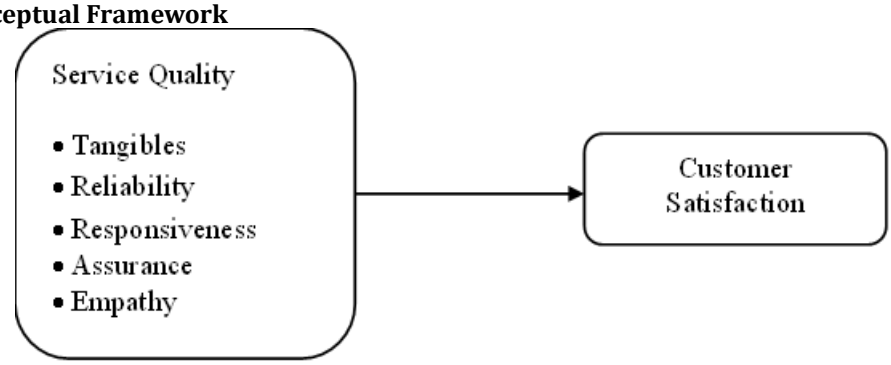
Empathy
Empathy is generally defined as the ability to accept another's perspective, to understand feelings and to respond to the experience given. Hunjra et al. (2011) mentioned that empathy is the extent to which employees understand and give kind individualised service to the customers. In simple words, empathy is the attention given to individual customers (Kincaid et al., 2010) during and after they have experienced the services given.

Besides that, Tazreen (2012) defined empathy as an extension or rejection decision by customers on the service given. Thus, empathy is important and could prolong customer satisfaction.

In a study conducted by Alzoubi et al. (2021) in UAE five-star hotels, it was revealed that the personal contact of employees significantly enhances guest satisfaction and loyalty. Additionally, empathy is also parallel with reassurance. According to Wainwright (2012), empathy could also help the organisation to apprehend the customers' derivation. Empathy will occur when an organisation can relate their organisation experiences to customers feeling. As a result, the organisation can understand the customers very well. Therefore, A&W staff must possess empathy to effectively entertain customers and achieve customer satisfaction. Thus, based on the relevant literature, the following hypothesis was developed:
H_5: Empathy positively affects customer satisfaction at A&W Outlet.

Conceptual Framework

Figure 1*:* Conceptual Framework



Source: "Relationship between Service Quality and Customer Satisfaction in the case of Customer-Centric Group CO" [Parasuraman et. al., (1985) in Dehghan (2012)].

3. Methodology

The research design for this study is a descriptive study, aimed at describing the characteristics of variables related to A&W customer satisfaction using the SERVQUAL model. Conducted in a natural setting at A&W Aeon Bandaraya Melaka, the study focused on individual customers' responses to the services provided. Data was collected cross-sectionally, within a specified period. The population targeted was A&W customers, including families, mall staff, and students who were willing to answer the questionnaires. The sampling design used was non-probability sampling, specifically convenience sampling through mall intercepts due to the absence of a sampling frame. Therefore, researchers distributed 300 questionnaires, in line with the recommendation for a sample size greater than 30 but less than 500 which is suitable for most behavioural studies (Memon, et al., 2020; Roscoe,1975).

4. Findings

Table 1: Demographic Profile

Items		Frequency	%
Gender	Male	130	43
	Female	170	57
Race	Malays	247	82
	Chinese	39	13
	Indians	14	5
Age	18 years and below	16	5
	19 to 36 years	209	70
	37 to 47 years	48	16
	48 years and above	27	9

Occupation	Student	59	20
	Working / Self-employed	224	74
	Unemployed	10	3
	Retired	7	2
Individual Income per Month (RM)	1500 and below	100	33
	1501 to 2000	37	12
	2001 to 3000	53	18
	3001 to 4000	58	19
	4001 to 5000	30	10
	5000 and above	22	7
Last visit to A&W Aeon Bandaraya Melaka	Less than 1 week ago	24	8
	1 to 2 weeks ago	43	14
	3 to 4 weeks ago	39	13
	More than 4 weeks ago	139	46
	This is my first visit	55	18

Source: Authors' Compilation

Table 1 outlines six demographic variables of the 300 respondents: gender, race, age, occupation, monthly income, and their last visit to A&W Aeon Bandaraya Melaka. Among the respondents, 57% were female and 43% were male. The racial composition was predominantly Malays (82%), followed by Chinese (13%) and Indians (5%). The age distribution showed that 70% were aged 19-36, 16% were aged 37-47, 9% were 48 and above, and 5% were 18 and below. In terms of occupation, 74% of them were working or self-employed, 20% were students, 3% were unemployed, and 2% were retired. Income levels varied, with 33% earning RM1500 or less per month, 19% earning RM3001-RM4000, 18% earning RM2001-RM3000, 12% earning RM1501-RM2000, 10% earning RM4001-RM5000, and 7% earning RM5001 or more. Regarding the frequency of visits, 46% of respondents last visited A&W more than four weeks ago, 18% were first-time visitors, 14% visited one to two weeks ago, 13% visited three to four weeks ago, and 8% visited less than one week ago. These findings suggested a significant proportion of repeat visitors, indicating a likely level of satisfaction with the services provided at A&W Aeon Bandaraya Melaka.

Table 2: Descriptive Statistic

No.	Items for Customer Satisfaction	N	Means	Standard Deviation
1	I am happy with the service provided by this A&W outlet.	300	3.62	0.7198
2	I plan to come to this A&W outlet again in the future.	300	3.57	0.73922
3	Every time I visit this A&W outlet, I feel that I am appreciated.	300	3.28	0.80325
4	If I were completely free to choose, I would prefer to choose this A&W over another fast-food outlet.	300	3.13	0.86541
5	If there are other restaurants nearby, I may still choose A&W.	300	2.99	0.87696
	Total		3.32	

Table 2 indicates that the average mean for the variable customer satisfaction is 3.32. It was positively skewed even though just a little above the neutral scale. The highest mean was for the statement, "I am happy with the service provided by this A&W outlet" which indicated certain measures of satisfaction.

Table 3: Level of Customer Satisfaction

Dimension	Mean Perception
Tangibles	3.42
Reliability	3.34
Responsiveness	3.40
Assurance	3.41
Empathy	3.33
Total	3.38

The highest mean (Table 3) for service quality was tangibles with a mean of 3.42. With a 5-point scale, the mean was still skewed to the positive scale which means that customers appeared to have a positive perception of this A&W outlet as the physical appearance of A&W at Aeon Bandaraya Melaka is generally pleasing and relatively clean. Overall, the total mean for service quality perception was 3.38, which was still skewed to the positive scale.

Table 4: Reliability Analysis - Cronbach Alpha's Value

Dimension	Cronbach's Alpha
Customer Satisfaction	0.855
Tangibles	0.810
Reliability	0.860
Responsiveness	0.845
Assurance	0.874
Empathy	0.814

The value of Cronbach's Alpha in Table 4 for customer satisfaction at A&W Aeon Bandaraya Melaka was 0.855. This means that the constancy of each item in the variable is measured as good. Additionally, for service quality dimension, had relatively high reliability values of 0.8 and above. For customers' perceptions, the dimension 'assurance' was found to be the most reliable (.874), followed by 'reliability' (.860), 'responsiveness' (.845), 'empathy' (.814), and the dimension 'tangibles' (.810) was the least reliable among the five dimensions. Conclusively, these values indicated that all five dimensions had relatively high reliability thus making all of them reliable.

Table 5: Correlation Matrix

	1	2	3	4	5	6
Customer Satisfaction	1					
Tangibles	.230**	1				
Reliability	.490**	.439**	1			
Responsiveness	.485**	.344**	.738**	1		
Assurance	.544**	.364**	.755**	.769**	1	
Empathy	.485**	.440**	.663**	.703**	.789**	1

**. Correlation is significant at the 0.01 level (2-tailed).

From Table 5, the result of the correlation test showed that the relationship between customer satisfaction and tangibles was 0.230 and the P value was 0.000 at the level of <0.01 (2-tailed). The result demonstrated a positive but very low significant correlation. Tangibility for a fast-food outlet like A&W appeared to be important but only to a lower extent. The second dimension of service quality was reliability. It had a significant positive relationship result of the correlation test that was 0.490 and the P value was 0.000 at the level of <0.01 (2-tailed). This showed that the relationship between customer satisfaction and reliability was moderate even though it was still positive and significant.

In addition, the correlation result between customer satisfaction and responsiveness was 0.485 and the P value was 0.000 at the level of < 0.01 (2-tailed). This result showed a positive and weak significant correlation. Even though it is an important element in the service quality dimension, it had a moderate positive correlation with satisfaction. Table 5 also depicted that customer satisfaction had a significant positive and moderate relationship with assurance at 0.544. Meanwhile, for empathy, the result of the correlation test showed that the correlation between customer satisfaction was 0.485. Both elements had having significant P value of 0.000 at the level of < 0.01 (2-tailed) which also indicated a positive and moderate relationship.

Table 6: Hypotheses testing

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.324	.193		6.849	.000
Tangibles	-.013	.049	-.015	-.270	.787
Reliability	.138	.080	.142	1.731	.085
Responsiveness	.079	.076	.086	1.035	.302
Assurance	.290	.095	.292	3.051	.002
Empathy	.097	.076	.107	1.276	.203

Table 7: Coefficient of determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.564[a]	.318	.306	.53239

Table 6 shows the result of the hypotheses testing for the service quality dimension affecting customer satisfaction. It revealed that tangibles (H_1), Responsiveness (H_3), and Empathy (H_5) were not supported, as their coefficients (-0.013, 0.079, and 0.097, respectively) were not statistically significant ($p > 0.05$). The only significant for service quality dimensions was assurance with a positive coefficient of 0.290 ($p = 0.002$), thus supporting H_4. These findings suggested that enhancing assurance should be prioritised to improve customer satisfaction, while the other dimensions may have less direct impact or require further investigation. For the model, the adjusted R-squared value of 0.306 indicated that approximately 30.6% of the variance in customer satisfaction can be explained by the independent variables of SERVQUAL dimensions (Tangibles, Reliability, Responsiveness, Assurance, and Empathy). This value is considered a moderate relationship between the independent variables and the dependent variable.

5. Conclusion and Recommendations

The findings indicated that the correlation for all independent variables related to service quality dimensions had a positive relationship with customer satisfaction at A&W Aeon Bandaraya Melaka. Although the correlation ranges from weak to moderate, service quality remains a critical factor for an outlet like A&W. While for hypotheses testing, only assurance had a significant effect on customer satisfaction. Thus, a good service provider promptly delivers quality service to customers, and it is the manager's responsibility to ensure that service quality meets customer expectations. Providing immediate and appropriate service is also essential for customer satisfaction. Besides that, assurance plays a significant role as it enhances employees' ability to gain customers' trust and confidence. Service providers and employees must demonstrate courtesy in their interactions to foster trust and confidence among customers. In many service organisations, empathy is crucial for service staff, enabling them to better engage with customers. Through empathy, managers can assess whether customers are accepting or rejecting the provided service, allowing for continuous improvement in service quality. Additionally, regular training and feedback mechanisms should be implemented to maintain and enhance service standards, ultimately leading to higher customer satisfaction and loyalty.

Recommendations

This study significantly contributes to the understanding of the relationship between service quality and customer satisfaction in the fast-food industry. Despite the correlation ranges from weak to moderate and moderate coefficient of determination, service quality remains a critical factor for an outlet like A&W. Concentrating on these factors, might offer sophisticated perspectives on how to optimise methods for service quality that are specific to various industries and regions, thereby improving overall customer satisfaction. The findings of this study have significant policy implications for fast-food chains and government agencies in charge of food industry services. Future research could be carried out in diverse cultural or regional settings to evaluate the relationship between service quality and customer satisfaction across international marketplaces. Incorporating longitudinal research may also provide a dynamic perspective on customer expectations and industry advancements by shedding light on how customer satisfaction varies over time in response to shifts in food service quality.

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Exploring the Interplay of Product Attributes, CEO Brand Image and Purchase Intention in the Cosmetic Industry: A Comprehensive Review

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Abstract: The cosmetics industry is highly competitive, with consumer purchase intentions influenced by both tangible attributes, such as product quality, and intangible factors, such as CEO branding. This study explores the interplay between product attributes and CEO brand image, emphasizing the role of mediating factors such as perceived quality, brand image, and information search behavior. By utilizing the Social Cognitive Theory (SCT) and Cue Utilization Theory (CUT), the research provides insights into how intrinsic (e.g., product features) and extrinsic (e.g., branding) cues shape consumer decisions. Case studies of successful Malaysian CEOs, including Naeemah Abdul Rahman of Nurraysa, highlight how personal branding aligned with ethical and cultural values drives loyalty and trust. The findings offer a comprehensive framework for understanding consumer behavior and provide actionable strategies for marketers to enhance engagement and differentiation in a saturated market. Practical implications include leveraging emerging technologies, such as augmented reality, to complement branding strategies and improve consumer experience. Future research should address regional and cultural nuances and explore the long-term impacts of CEO branding on customer loyalty and brand equity.

Keywords: *Cosmetics Industry, CEO Branding, Product Attributes, Consumer Behavior*

1. Introduction and Background

The global cosmetic industry is a highly competitive and rapidly evolving domain, where consumer purchase intentions are influenced by a complex interplay of tangible factors, such as product attributes, and intangible elements, like branding and perceived quality. As consumer preferences shift towards personalized and innovative offerings, brands face mounting pressure to remain relevant in this dynamic market. In Malaysia, the makeup segment has experienced significant growth, buoyed by the influx of both international powerhouses and emerging local brands striving to capture consumer attention (Hassim, Rahmah & Ahmad, 2019). This growth is fuelled by changing consumer demographics, increasing disposable incomes, and the expanding influence of social media platforms, which have amplified the visibility of both global and homegrown brands. However, the homogeneity of many cosmetic products, characterized by minimal differentiation in attributes such as formulation, packaging, and functionality, presents unique challenges for marketers attempting to position their offerings in a saturated market (Landwehr, Wentzel & Herrmann, 2012).

To navigate this competitive landscape, recent trends underscore the strategic importance of CEO branding as a critical differentiator. Unlike traditional branding approaches that rely solely on product features or corporate identity, CEO branding leverages the personal attributes, credibility, and influence of brand founders or leaders to enhance brand appeal. Figures such as Kylie Jenner, the founder of Kylie Cosmetics, and Naeemah Abdul Rahman, the founder of Nurraysa, exemplify this approach by combining her branding with the promotion of halal and affordable cosmetics. Kylie Jenner has successfully capitalized on her massive social media following to transform her identity into a billion-dollar cosmetics empire, illustrating the profound impact of leveraging a CEO's image to establish trust and emotional connection with consumers (Eyada & Abdel Rahman, 2020). Similarly, Naeemah Abdul Rahman's integration of her dedication to halal principles and entrepreneurial journey into Nurraysa's brand narrative has cultivated a loyal customer base in Malaysia. This highlights how a strong CEO brand image, aligned with ethical values and consumer needs, can significantly drive purchase intentions (Hossain, 2020; Hassim, Rahmah & Ahmad, 2019).

This paper aims to explore the nuanced interactions between product attributes and CEO brand image, focusing on how these factors are mediated by consumer perceptions of quality, brand image, and information search

behavior. By utilizing the frameworks of Social Cognitive Theory (SCT) and Cue Utilization Theory (CUT), the study delves into the mechanisms through which tangible and intangible cues influence consumer decision-making. SCT provides insights into the reciprocal dynamics between individual, behavioral and environmental factors, emphasizing the role of CEO branding as an environmental influence shaping consumer perception (Bandura, 1986). Meanwhile, CUT highlights the significance of both intrinsic and extrinsic cues, such as product features and branding, in guiding consumer evaluations of quality and purchase intent (Olson & Jacoby, 1972; Symmank, 2018). Together, these frameworks offer a comprehensive lens to examine the strategies that brands can adopt to thrive in the competitive global cosmetics market.

2. Theoretical Framework

Social Cognitive Theory (SCT)

Bandura's Social Cognitive Theory (SCT) is a foundational framework for understanding the dynamic interplay between individual behavior, environmental factors, and personal cognition in decision-making (Bandura, 1986). In recent applications, SCT has been widely used to explore consumer behavior, particularly in industries like cosmetics. The theory offers valuable insights into how external cues, such as CEO branding and promotional strategies, shape consumer perceptions and beliefs. Studies have shown that consumers actively process these external stimuli, interpreting them through the lens of their personal experiences and social influences, rather than passively absorbing information (Han & Kim, 2022; Wang et al., 2020). For example, a CEO's perceived trustworthiness and credibility act as environmental factors that significantly influence consumer attitudes and intentions (Andreini, Fetscherin & Zarantonello, 2020). Kylie Jenner's role in promoting Kylie Cosmetics illustrates how a strong personal brand can effectively bridge the gap between consumer cognition and behavior, making her products more relatable and trustworthy. Furthermore, SCT emphasizes the role of observational learning, suggesting that consumers who see CEOs endorsing their products may perceive these endorsements as authentic, thereby increasing the likelihood of purchase. This active engagement underscores SCT's relevance in analyzing how promotional strategies affect decision-making within the cosmetics industry.

Cue Utilization Theory (CUT)

Cue Utilization Theory (CUT) posits that consumers rely on both intrinsic and extrinsic cues to assess product quality and make purchasing decisions (Olson & Jacoby, 1972). Intrinsic cues, such as product features and formulation, relate to the inherent qualities of the product, while extrinsic cues, including branding, endorsements, and packaging, provide additional information that consumers use when direct evaluation of product quality is not feasible (Symmank, 2018). Recent studies have highlighted that extrinsic cues like celebrity endorsements and packaging aesthetics significantly influence consumer behavior, especially in competitive markets like cosmetics (Chen et al., 2021; Lee & Choi, 2020). This reliance on cues is particularly relevant in the cosmetics industry, where sensory attributes like texture and scent are often not directly assessable until after purchase.

Branding, as an extrinsic cue, plays a pivotal role in shaping consumer perceptions. For instance, Naeemah Abdul Rahman's active involvement in Nurraysa's marketing campaigns demonstrates how a CEO's image can serve as a powerful signal of quality and authenticity, effectively reinforcing consumer trust (Hassim, Rahmah & Ahmad, 2019). Additionally, digital marketing efforts, such as influencer collaborations and social media presence, have become increasingly effective in enhancing brand credibility and reaching younger demographics (Kwon & Kim, 2022). Similarly, attractive and unique packaging designs are often perceived as indicators of premium quality, influencing consumer preferences and willingness to pay (Landwehr, Wentzel & Herrmann, 2012).

Key Constructs and Relationships

Product Attributes

Product attributes, encompassing both intrinsic and extrinsic characteristics, are critical drivers of purchase decisions in the cosmetics industry. Intrinsic attributes, such as design and features, directly relate to the functional and aesthetic value of the product. Design/style, for instance, appeals to visual and emotional aspects

of consumer preferences, while features such as long-lasting effects and skin compatibility address usability and functionality (Koschate-Fischer, Diamantopoulos & Oldenkotte, 2012).

In addition to traditional attributes, modern consumers increasingly value products that align with their lifestyle and ethical considerations. Attributes such as sustainability, cruelty-free formulations, and inclusivity in product shades have become key differentiators in a highly competitive market (Alhedhaif, Lele & Kaifi, 2016). For example, Fenty Beauty's focus on diversity and inclusivity has redefined consumer expectations, proving that product attributes tailored to underrepresented demographics can significantly impact market success.

CEO Brand Image

CEO branding has emerged as a strategic component of corporate identity, especially in industries like cosmetics, where personal connection and authenticity are crucial. A CEO's brand image, defined by traits such as leadership, personality, and performance, can directly influence consumer trust, loyalty, and purchase intentions (Andreini, Fetscherin & Zarantonello, 2020).

Take Naeemah Abdul Rahman of Nurraysa as an example. By integrating her commitment to halal values and entrepreneurial journey into the brand narrative, she has created an emotional connection with her audience, fostering loyalty and enhancing brand perception (Hassim, Rahmah & Ahmad, 2019). Similarly, Huda Kattan's active engagement on social media has not only bolstered Huda Beauty's brand equity but also positioned her as a relatable figure, reinforcing consumer trust through her direct involvement in product endorsements (Eyada & Abdel Rahman, 2020).

Mediating Factors

The relationship between product attributes, CEO branding, and purchase intentions is often mediated by several key factors:

Perceived Brand Image: A brand's perceived reliability, attractiveness, and reputation significantly influence consumer trust and purchase decisions. Research shows that brands associated with a positive CEO image often enjoy higher consumer confidence and loyalty (Lien et al., 2015).

Perceived Quality: Consumer judgments about a product's overall excellence and reliability are central to purchase intentions. High perceived quality not only enhances consumer satisfaction but also reduces perceived risks, making consumers more likely to repurchase and recommend the product (Washburn & Plank, 2002).

Information Search Behavior: Consumers often engage in deliberate efforts to gather information about products and brands before making a purchase. This behavior reduces uncertainty and enhances decision-making by allowing consumers to compare alternatives and validate claims (Jacoby et al., 1994). In the digital age, platforms like Instagram and YouTube have become critical sources for consumers to explore reviews, tutorials, and endorsements, further emphasizing the role of CEO branding in influencing information search behavior.

Progressions in Literature

Extant literature has consistently highlighted the significant impact of product attributes and CEO branding on consumer behavior and purchase intentions. Product attributes, both intrinsic (e.g., design, features) and extrinsic (e.g., packaging, branding), are key determinants in shaping consumer preferences and decisions. Intrinsic attributes such as functionality, quality, and aesthetic appeal are critical in industries like cosmetics, where consumers value both performance and visual representation (Koschate-Fischer, Diamantopoulos & Oldenkotte, 2012). Similarly, extrinsic attributes, particularly branding, play an influential role in providing consumers with cues about product reliability and status (Olson & Jacoby, 1972).

CEO branding has emerged as a particularly effective strategy in fostering consumer trust and brand loyalty. Studies show that endorsements by CEOs can enhance the perceived credibility of a brand, leading to stronger consumer engagement and higher purchase intentions (Andreini, Fetscherin & Zarantonello, 2020). For

instance, Kylie Jenner's success with Kylie Cosmetics and Huda Kattan's Huda Beauty demonstrates how personal branding by CEOs can transform brands into global phenomena. By leveraging their personal images and extensive social media followings, both CEOs have effectively built trust and emotional connections with their consumers, thereby driving brand equity and consumer loyalty (Eyada & Abdel Rahman, 2020; Hossain, 2020).

Furthermore, the literature highlights that consumer reliance on CEO branding is often intertwined with product cues, as these cues collectively form the basis for trust and perceived value. For example, a strong CEO presence combined with premium product attributes significantly increases the likelihood of purchase, especially in markets where direct product evaluation is limited (Symmank, 2018). Despite these findings, a holistic understanding of how product attributes and CEO branding interact to influence consumer behavior remains underexplored.

Identified Gaps

Limited Integration
While existing studies emphasize the importance of both intrinsic and extrinsic product attributes, they often do so in isolation. For instance, research frequently focuses on single attributes, such as packaging or design, rather than examining their combined effects on consumer perceptions and behavior (Symmank, 2018). This fragmented approach fails to capture the synergistic impact of multiple cues, which is particularly relevant in the cosmetics industry where consumers rely on a combination of product features and external branding to assess quality and value (Koschate-Fischer, Diamantopoulos & Oldenkotte, 2012). Future studies should adopt a more integrative framework that considers how intrinsic and extrinsic attributes interact to shape consumer decision-making.

Regional Context
The majority of research on CEO branding has been conducted in Western markets, where cultural norms, consumer behavior, and market dynamics differ significantly from those in regions like Southeast Asia. In Malaysia, for example, cultural factors such as collectivism, trust in local entrepreneurs, and reliance on social proof play a unique role in shaping consumer responses to CEO branding (Hassim, Rahmah & Ahmad, 2019). While international examples like Kylie Jenner and Huda Kattan dominate the discourse, there is limited empirical evidence on how local CEOs, Such as Naeemah Abdul Rahman of Nurraysa, influence consumer behavior within the Malaysian context. Addressing this gap would provide valuable insights into the interplay of cultural and market-specific factors in CEO branding.

3. Methodological Challenges

The methodological approaches employed in existing studies on product attributes and CEO branding often lack the sophistication needed to capture the complexity of these relationships. While qualitative methods provide valuable exploratory insights, few studies employ advanced quantitative techniques, such as structural equation modelling (SEM), to validate complex theoretical frameworks and test mediating effects (Osorio, Centeno & Cambra-Fierro, 2020). SEM, in particular, allows for the simultaneous examination of multiple variables and relationships, making it an ideal tool for understanding how product attributes, CEO branding, and mediating factors like perceived quality and brand image interact to influence purchase intentions. Future research should leverage these advanced methodologies to provide more robust and generalizable findings.

4. Theoretical Contributions

This review bridges the gaps in understanding consumer behavior in the cosmetics industry by integrating two prominent frameworks: Social Cognitive Theory (SCT) and Cue Utilization Theory (CUT). SCT, which emphasizes the interplay between individual, environmental, and behavioral factors (Bandura, 1986), provides a dynamic perspective on how external influences such as CEO branding interact with personal cognition to shape purchase intentions. By incorporating mediating variables such as perceived brand image, perceived quality, and information search behavior, this review extends SCT's applicability in the domain of consumer

behavior. These mediators illuminate the pathways through which product attributes and CEO branding influence consumer decisions, offering deeper insights into the underlying mechanisms.

Similarly, CUT's emphasis on intrinsic (e.g., product features) and extrinsic (e.g., branding) cues highlights the importance of multi-dimensional product evaluations in shaping consumer perceptions (Olson & Jacoby, 1972). By applying CUT in this context, the review advances the understanding of how tangible and intangible attributes collectively influence purchase intentions. This integration of SCT and CUT not only enriches the theoretical discourse in marketing but also provides a robust framework for future empirical studies to validate these interactions in various cultural and market-specific settings (Symmank, 2018).

Practical Implications

From a practical perspective, the findings underscore the importance of a cohesive marketing strategy that integrates product attributes and CEO branding to influence consumer behavior effectively. Marketers should prioritize enhancing intrinsic product attributes such as design, functionality, and sustainability to align with modern consumer values, including inclusivity and ethical consumption (Alhedhaif, Lele & Kaifi, 2016). Concurrently, leveraging extrinsic cues, particularly CEO branding, can help differentiate products in a saturated market.

CEO endorsements, especially on social media platforms, serve as powerful tools for building consumer trust and engagement. Platforms like Instagram, TikTok, and YouTube enable CEOs to directly interact with audiences, fostering emotional connections and enhancing brand credibility (Lawal, 2020). For example, CEOs like Kylie Jenner and Huda Kattan have successfully utilized their branding to amplify product appeal and drive consumer loyalty (Eyada & Abdel Rahman, 2020). Brands should consider adopting similar strategies, ensuring that CEO branding aligns with the core values and identity of the product to create a consistent and compelling narrative.

Moreover, investing in digital tools such as augmented reality (AR) for virtual try-ons can further enhance consumer experience. These technologies allow consumers to assess product attributes like shade and texture virtually, reducing uncertainty and improving purchase confidence. By integrating these elements into a unified strategy, brands can effectively engage modern consumers and build lasting relationships.

Recommendation on Future Research

The role of emerging technologies, such as virtual try-ons and AI-driven personalized recommendations, presents an exciting avenue for future research. These innovations can significantly reshape consumer perceptions by providing interactive and tailored shopping experiences. Studies should explore how these technologies influence perceived quality, brand image, and purchase intentions, particularly in the context of the cosmetics industry (Roggeveen & Sethuraman, 2020).

Given the predominance of Western-centric studies in CEO branding, future research should conduct cross-cultural analyses to understand how cultural nuances affect the impact of CEO branding on consumer behavior. For instance, collectivist cultures like Malaysia may place greater emphasis on trust and community alignment, altering the effectiveness of CEO branding strategies compared to individualistic cultures (Hassim, Rahmah & Ahmad, 2019). Exploring these variations can provide valuable insights for global brands seeking to tailor their strategies to diverse markets.

The long-term effects of CEO branding on consumer loyalty and brand equity remain underexplored. Research should investigate how consistent CEO involvement over time impacts brand perceptions, customer retention, and financial performance. Additionally, studies could examine the risks associated with CEO branding, such as reputational damage resulting from personal controversies, and how brands can mitigate these challenges while maintaining their competitive edge (Andreini, Fetscherin & Zarantonello, 2020).

5. Conclusion

The interplay between product attributes, CEO brand image, and mediating factors such as perceived quality, perceived brand image, and information search behavior is central to shaping consumer purchase intentions

in the makeup industry. Product attributes, encompassing both intrinsic characteristics (e.g., design and features) and extrinsic cues (e.g., branding and packaging), influence consumer perceptions and decision-making processes. Similarly, CEO brand image acts as a powerful extrinsic cue, enhancing trust, emotional connection, and brand credibility when leveraged effectively. Together, these factors create a comprehensive framework that can explain consumer preferences and behaviors in a highly competitive and dynamic market.

This review highlights the importance of addressing existing research gaps, particularly the limited integration of intrinsic and extrinsic cues, the lack of regional studies focusing on cultural contexts like Malaysia, and methodological challenges in studying complex relationships. By synthesizing insights from Social Cognitive Theory (SCT) and Cue Utilization Theory (CUT), this review provides a holistic understanding of how external and internal factors influence purchase intentions. The integration of these theories not only extends their applicability to the cosmetics industry but also offers a robust framework for future empirical research.

Practical recommendations for industry practitioners emphasize the need for cohesive strategies that enhance both product attributes and CEO branding. Marketers should focus on aligning intrinsic qualities such as sustainability and functionality with the extrinsic appeal of CEO endorsements to create compelling narratives. Furthermore, leveraging emerging technologies like virtual try-ons and AI-driven personalization can further enhance consumer engagement and decision-making confidence.

For academia, this review contributes to the theoretical discourse by identifying underexplored areas such as the long-term effects of CEO branding on consumer loyalty and the role of cultural factors in shaping branding strategies. The findings provide actionable insights for future research, including cross-cultural comparisons and advanced quantitative methodologies like structural equation modelling to validate complex constructs.

Ultimately, the insights drawn from this review contribute to a deeper understanding of consumer behavior in the cosmetics sector, offering valuable guidance for both scholars and practitioners. By leveraging these theoretical and practical insights, stakeholders can navigate the evolving landscape of the makeup industry more effectively, driving innovation, consumer satisfaction, and market success.

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Breaking Barriers: Customer Acceptance and Challenges of Waqf-Takaful Death Compensation Products in Malaysia

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Abstract: This study aims to analyze the acceptance and challenges of waqf-takaful death compensation products in Malaysia, focusing on factors such as product knowledge, education, marketing, customer attitude, and long-term benefits. A quantitative approach using a descriptive cross-sectional survey method was employed, with data collected via a structured questionnaire. The findings revealed that product knowledge, customer attitude, and marketing strategies significantly influence acceptance. However, challenges such as limited awareness, inadequate promotion, and accessibility issues were also identified. The study highlights the importance of improving customer education and refining marketing strategies to enhance the adoption of waqf-takaful products.

Keywords: *Waqf-Takaful, Death Compensation Products, Takaful Products, Customer Acceptance, Challenges*

1. Introduction

In recent years, the takaful industry in Malaysia has grown significantly, offering Sharia-compliant alternatives to conventional insurance. Takaful, based on mutual assistance and shared responsibility principles, provides financial protection and risk-sharing among participants, avoiding elements like uncertainty, usury, and gambling (Abu Bakar et al., 2023a). Among the various takaful products available, death compensation products play a crucial role in ensuring financial security for the beneficiaries of the deceased, aligning with the Islamic principles of social welfare and community support (Rahman & Ahmad, 2011). Waqf, another essential Islamic financial instrument, involves the donation of assets or funds for religious or charitable purposes. Traditionally, waqf has been used to fund mosques, schools, and other community services. In modern financial systems, waqf has been integrated into takaful products, adding a philanthropic dimension that enhances their social impact (Ahmad et al., 2022). This integration is particularly relevant in Malaysia, where the Muslim population seeks financial products that align with their religious beliefs while contributing to the greater good (Che Mohd Salleh et al., 2020).

Despite the growth of takaful products, the integration of waqf in takaful death compensation remains underdeveloped due to challenges such as lack of customer awareness, limited promotion, and accessibility of waqf-takaful products. Existing literature suggests that the implementation of waqf within takaful products varies widely among providers, leading to inconsistencies in product standards and customer experiences (Ahmad et al., 2024). Furthermore, many takaful customers are not fully aware of the waqf component or its benefits, which may hinder their acceptance and trust in these products (Abu Bakar et al., 2023b). Additionally, challenges such as the lack of standardized guidelines for waqf management, limited customer education, and inadequate marketing strategies have been identified as barriers to the successful adoption of waqf-takaful products (Ahmad et al., 2022; Muhamat et al., 2019). These issues underscore the need for a comprehensive analysis of customer insights to better understand the factors influencing the acceptance of waqf-takaful death compensation products in Malaysia.

The acceptance of waqf-takaful products is essential for ensuring the long-term sustainability of the takaful industry in Malaysia. Therefore, this study aims to examine the factors influencing customer acceptance, including product knowledge, education, and marketing, and to identify the challenges hindering wider

adoption. The variables include product knowledge, which encompasses the awareness and understanding of the product among potential customers, and education and experience, which reflect the respondents' level of education and their familiarity with takaful products. Marketing and incentives are also critical, as they capture the respondents' exposure to promotional campaigns and their views on the incentives offered by takaful providers. Additionally, customer attitude is measured through trust, satisfaction, and overall disposition towards takaful products, while long-term customer benefits focus on the perceived advantages of maintaining participation in the waqf-takaful scheme over time. On the challenges side, this study explores the effectiveness of promotional strategies and accessibility, as well as institutional and policy issues, such as institutional support and regulatory frameworks. Lastly, customer perception is examined to identify general attitudes and potential misconceptions about waqf-takaful products. By systematically analyzing these factors, this study aims to provide comprehensive insights into the acceptance and challenges of waqf-takaful death compensation products in Malaysia, offering valuable implications for stakeholders in the takaful industry.

2. Literature Review

Takaful and Waqf Concepts

Takaful and waqf have been combined to create innovative financial products in Muslim-majority countries. Takaful operates on principles of mutual assistance and risk-sharing, avoiding prohibited elements like uncertainty, usury, and gambling (Abu Bakar et al., 2023a). Waqf-based takaful models have been implemented in Malaysia, offering death compensation and savings plans (Rahman & Ahmad, 2011; Abu Bakar et al., 2023a). These models aim to benefit socio-economic development and assist flood victims (Che Mohd Salleh et al., 2020; Ahmad et al., 2022). However, challenges exist in managing waqf assets, standardizing frameworks, and increasing awareness among potential participants (Abu Bakar et al., 2023a; Che Mohd Salleh et al., 2020). The integration of waqf and takaful must comply with both Shariah principles and modern regulatory requirements (Rodríguez-Moreno, 2018). Abu Bakar et al. (2023b) reveal that the Sustainable Development Goals (SDGs), established by the United Nations, provide a comprehensive framework for global development and human welfare, which can be significantly advanced through the integration of waqf and takaful. In Malaysia, these Islamic social financial mechanisms have begun to be incorporated into death compensation products by some takaful companies. Despite all of these challenges, the takaful industry has experienced rapid growth, influenced by increased petroleum prices and the emergence of re-takaful companies (Alhabshi & Razak, 2009).

The integration of waqf into takaful products, particularly death compensation schemes, offers potential benefits for socio-economic development in Malaysia (Abu Bakar et al., 2023a; Ahmad et al., 2022). While only a few takaful companies currently offer waqf-based death compensation products, these align with Maqasid Shariah principles (Abu Bakar et al., 2023a). The combination of waqf and takaful can provide both worldly and spiritual benefits to policyholders (Habibi & Yudha, 2017). However, challenges exist in implementing and managing waqf-takaful products, including inconsistent standards and governance issues (Ahmad et al., 2024; Muhamat et al., 2019). The success of waqf-takaful integration depends on factors such as formalized development processes, well-trained agents, and compliance with Shariah and regulatory requirements (Ahmad et al., 2024; Rodríguez-Moreno, 2018). Integrating waqf and Islamic finance can create synergies that promote social welfare and financial inclusion (Ahmed, 2021).

Importance of Death Compensation Products

Death compensation products play a significant role in personal financial planning and risk management. Life insurance and annuities provide financial security for dependents and retirees, addressing mortality risks and longevity concerns (Drinkwater et al., 2003; Stevens et al., 2011). These products are increasingly financialized, intertwining moral considerations with financial rationalities in intimate relationships (Langenohl, 2020). Government-sponsored death benefit programs can also offer psychological security to low-income families (Syaipudin, 2021). The value of life and implicit discount rates influence wage compensations for risky jobs, with workers trading off ex-ante and ex-post risk compensation (Moore & Viscusi, 1988). However, investment risk significantly affects longevity risk in insurance portfolios and the effectiveness of natural hedging strategies (Stevens et al., 2011). Despite their importance, there is a need for greater awareness and understanding of life insurance products among consumers, highlighting the necessity for insurance literacy programs (Biradar, 2021).

Takaful offers significant social and economic benefits while adhering to Shariah principles. It contributes to social welfare by providing financial protection and promoting cooperation (Abu Bakar et al., 2023a; Ahmad et al., 2022). Takaful products, particularly family takaful, serve as savings and investment instruments, positively impacting socio-economic development (Rahman, 2008). The industry's growth has been shown to contribute to economic development, employment, and GDP (Ahmad & Hasan, 2020; Shahid, 2018). Takaful also fulfills religious duties and spiritual needs while influencing socio-economic behavior (Rahman et al., 2019). In Nigeria, takaful has the potential to support economic reforms and growth (Yusuf, 2012). The industry's expansion globally, including in non-Muslim countries, demonstrates its increasing acceptance and potential for further growth (Kwon, 2001).

Previous Studies on Waqf-Takaful Products

Research on waqf-takaful products reveals diverse applications and challenges across different countries. In Malaysia, several takaful companies offer waqf-based death compensation products, adhering to Maqasid Shariah principles but facing implementation challenges (Abu Bakar et al., 2023a). The integration of waqf in takaful policies has shown potential, with some companies experimenting with innovative products (Rahman & Ahmad, 2011). However, takaful operators' readiness to adopt waqf features varies, with formalized development processes being a significant factor (Muhamat et al., 2019). Waqf management practices differ among Muslim countries, with Gulf countries showing more advanced development in areas like women's empowerment and healthcare (Hariri, 2023; Harun et al., 2012). Despite its potential for socio-economic development, waqf-takaful faces challenges in standardization and regulatory frameworks (Ahmad et al., 2022; Rosele & Johari, 2016). Nonetheless, waqf remains a powerful tool for mobilizing resources and meeting societal needs (Abdul Aziz et al., 2019).

In Malaysia, the integration of waqf into takaful models is seen as a potential solution to address issues in traditional takaful practices (Rosele & Johari, 2016). Investment-linked family takaful products have emerged as an innovative offering, combining investment and protection benefits (Parveen et al., 2020). However, the implementation of waqf-takaful models lacks consistency and standardization across companies (Ahmad et al., 2022). Key determinants of family takaful demand include agency systems, operator reputation, product offerings, and marketing strategies (Arifin et al., 2013; Shaifuddin, 2020). Despite growth in the takaful industry, penetration remains low compared to the Muslim population in Malaysia (Shaifuddin, 2020). Challenges in waqf practices include legal issues, lack of awareness, fund shortages, and management inefficiencies (Jalil, 2020). The takaful research field has seen significant growth, with Malaysia being a major contributor (Alam et al., 2023).

Acceptance and Challenges in Takaful Products

The acceptance of takaful products is influenced by various factors. Product knowledge, awareness, and education play crucial roles in consumer adoption (Ali, 2016; Swartz & Coetzer, 2010). Attitudes, perceptions, and religiosity significantly impact acceptance (Razak et al., 2013; Ali et al., 2019; Hassan & Abbas, 2019). Marketing strategies, product features, and relative advantage are also important determinants (Hassan et al., 2018; Qian & Darman, 2023). Social and religious factors, as well as compatibility with Islamic principles, contribute to consumer preferences (Mansor et al., 2015; Ali et al., 2019). However, challenges persist, including misconceptions about takaful being exclusively for Muslims and a lack of awareness among potential customers (Swartz & Coetzer, 2010). To enhance acceptance, takaful operators should focus on educating the public, improving marketing strategies, and developing innovative products that cater to both Muslim and non-Muslim consumers (Hassan et al., 2018; Qian & Darman, 2023).

The takaful industry faces numerous challenges globally, including regulatory issues, lack of awareness, and product design complexities. A key obstacle is the absence of a sophisticated regulatory framework and talent pool (Lubaba et al., 2022). Limited public awareness and education about takaful products hinder market penetration (Swartz & Coetzer, 2010; Ichsan, 2016). The industry struggles with misconceptions that it's exclusively for Muslims, impacting its growth potential (Swartz & Coetzer, 2010). Product innovation and alignment with Shariah principles remain ongoing challenges (Billah et al., 2019; Cheikh, 2013). Corporate governance, financial reporting, and rating issues also pose significant hurdles (Archer et al., 2011). Additionally, the industry grapples with operational inefficiencies, human capital shortages, and technological

limitations (Saeed, 2019). Addressing these challenges is crucial for the sustainable development of the takaful sector and its ability to provide ethical insurance solutions to a broader market.

The literature on waqf-takaful products reveals key trends, gaps, and areas of consensus. A major trend is the integration of waqf into takaful, which has been successfully implemented in Malaysia to offer death compensation and savings plans, aligning with Maqasid Shariah principles (Abu Bakar et al., 2023a; Ahmad et al., 2022). This integration is seen as a way to advance socio-economic development, particularly in Muslim-majority countries, by providing both financial and spiritual benefits (Habibi & Yudha, 2017). However, the literature also highlights significant challenges in this integration. These include inconsistent standards, governance issues, and a lack of public awareness, which hinder the widespread adoption of waqf-takaful products (Ahmad et al., 2022; Muhamat et al., 2019). The need for standardized frameworks and the formalization of development processes are emphasized as critical to the success of these products (Ahmad et al., 2024). Moreover, the literature points out a gap in the readiness of takaful operators to adopt waqf features and the varying management practices across different countries (Hariri, 2023; Harun et al., 2012). Another consensus in the literature is the role of takaful in promoting social welfare and financial inclusion while adhering to Shariah principles (Rahman, 2008; Ahmad & Hasan, 2020). Despite the growing acceptance of takaful globally, particularly in Muslim-majority countries, the industry faces challenges in regulatory frameworks, public awareness, and product innovation (Swartz & Coetzer, 2010; Billah et al., 2019). Misconceptions about takaful being exclusively for Muslims and operational inefficiencies also pose significant obstacles to its broader adoption (Swartz & Coetzer, 2010; Saeed, 2019).

The reviewed literature highlights that while waqf-takaful products offer potential benefits for socio-economic development, their implementation is fraught with challenges related to standardization, governance, and public awareness (Ahmad et al., 2022; Rodríguez-Moreno, 2018). These findings are relevant to the study as they provide a framework for understanding the factors that influence the acceptance of waqf-takaful products in Malaysia. The literature also underscores the importance of formalized development processes and the role of well-trained agents in the successful implementation of waqf-takaful products (Ahmad et al., 2024; Muhamat et al., 2019). This insight is crucial for the study as it examines the challenges faced by takaful operators in Malaysia and the factors that contribute to consumer acceptance. Additionally, the literature's emphasis on the need for greater public awareness and education about takaful products highlights a significant area of focus for the study, which seeks to assess how these factors impact the acceptance of waqf-takaful death compensation products among Malaysian consumers (Ali, 2016; Swartz & Coetzer, 2010).

Studies on waqf-takaful products have highlighted innovative trends such as the adoption of digital platforms for waqf collection and management. For instance, Razak et al (2013) discuss how mobile applications have facilitated the integration of waqf in takaful products, enabling wider access to underserved populations. Furthermore, recent works, such as those by Muhamat et al. (2019), have focused on how environmental waqf initiatives can be integrated into takaful offerings to support sustainable development. This represents a shift towards not only providing financial protection but also contributing to global sustainability goals. These trends underscore the importance of aligning waqf-takaful products with modern technology and global socio-economic challenges.

3. Research Methodology

Research Design

This study adopts a quantitative research design to investigate the acceptance and challenges associated with the waqf-takaful death compensation product in Malaysia. The research utilizes a descriptive cross-sectional survey method, which is particularly well-suited for capturing the relationship between the independent variables (IVs) and dependent variables (DVs) within a specific population at a single point in time. The study focuses on examining the impact of factors such as product knowledge, education, marketing, customer attitude, and long-term customer benefits on the acceptance of the waqf-takaful product, as well as identifying challenges related to promotion, accessibility, institutional issues, and customer perception.

Data Collection and Sampling Method

Primary data for this research was collected using a structured questionnaire designed to assess the acceptance and challenges of the waqf-takaful death compensation product among potential takaful customers in Malaysia. The questionnaire employed a Likert scale to measure respondents' levels of agreement with various statements related to the study's independent and dependent variables. To ensure a representative sample, a stratified random sampling technique was applied, stratifying the population based on key demographic factors such as age, gender, education level, and geographical location. The sample size of 107 respondents was determined using statistical power analysis to ensure reliability. The questionnaire's validity and reliability were tested through expert reviews and a pre-test survey.

The final sample consisted of 107 respondents selected from four takaful companies in Malaysia: Takaful Ikhlas Family Berhad, Etiqa Takaful Berhad, Zurich Takaful Malaysia Berhad, and Hong Leong MSIG Takaful Berhad. This selection provided a comprehensive understanding of the factors influencing acceptance and the challenges faced by customers in different demographic groups. The sample targeted takaful participants from the northern region (Perlis, Penang, Kedah, Perak) and the eastern region (Kelantan, Terengganu, Pahang) of Malaysia. This geographical focus ensured a broad representation of the acceptance and challenges of the waqf-takaful death compensation product, thereby enhancing the generalizability of the findings.

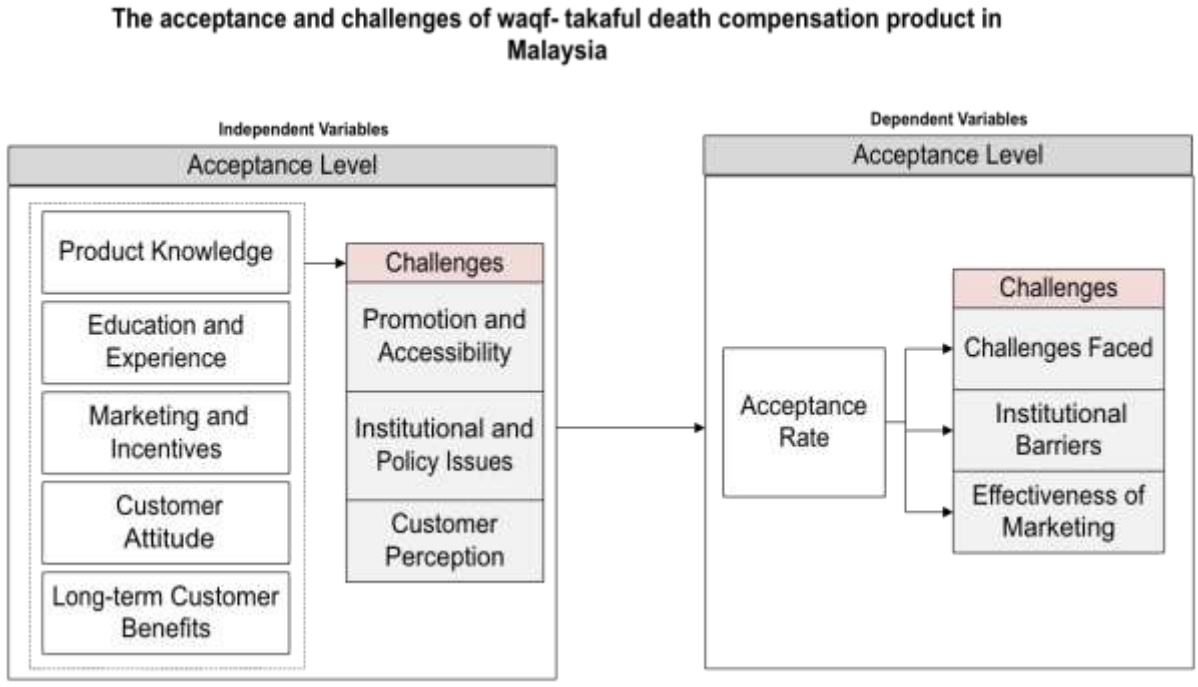
A purposive sampling technique was used to select respondents with prior knowledge or experience with takaful products, ensuring the sample was relevant to the research objectives. The cities in the northern and eastern regions were chosen for their diverse demographic profiles and varying levels of takaful penetration, representing both urban and rural populations. This diversity provides a comprehensive view of the factors influencing acceptance and challenges in different contexts. Additionally, these regions have seen increasing interest in Islamic financial products, including takaful, making them ideal for examining the integration of waqf-takaful products.

The questionnaire was adapted from previous research on customer acceptance of takaful products (Ali et al., 2019) and tailored to address the specific aspects of waqf-takaful death compensation products. The instrument was reviewed by experts in Islamic finance and takaful to ensure its relevance and validity. A pilot test was conducted with a small sample to ensure the clarity of the questions and assess the reliability of the instrument before the full survey was administered.

Measures

The study's variables were operationalized to align with the research objectives. Product knowledge was assessed through questions measuring the respondents' awareness and understanding of the waqf-takaful death compensation product. Education and experience were gauged by collecting data on the respondents' highest level of education and their experience with takaful products. Marketing and incentives were evaluated by inquiring about the respondents' exposure to marketing campaigns and their perceptions of the incentives offered by takaful providers. Customer attitude was measured through questions related to the respondents' trust, satisfaction, and overall disposition towards takaful products, while long-term customer benefits were assessed by evaluating the perceived long-term advantages of participating in the waqf-takaful scheme. On the challenges side, promotion and accessibility were measured by examining the effectiveness of promotional strategies and the ease of access to the product. Institutional and policy Issues were explored through questions on institutional support and the regulatory environment, while customer perception focused on identifying general attitudes and potential misconceptions about waqf-takaful products. Figure 1 illustrates the conceptual framework of this research, including the relationship between the independent and dependent variables.

Figure 1: Conceptual Framework: Relationship Between Independent and Dependent Variables



Data Analysis Techniques

Data collected from the surveys were analyzed using SPSS (Statistical Package for Social Sciences). The analysis began with descriptive statistics to summarize the characteristics of the sample and the key variables. Multiple regression analysis was conducted to explore the relationships between the independent variables (IVs) and dependent variables (DVs), such as the acceptance rate, challenges faced, effectiveness of marketing, and institutional barriers. Additionally, factor analysis was employed to identify underlying dimensions within the acceptance and challenges variables, while ANOVA tests were used to compare acceptance levels across different demographic groups.

Ethical Considerations

The study adhered to strict ethical guidelines, receiving approval from four takaful companies in Malaysia, namely Takaful Ikhlas Family Berhad, Etiqa Takaful Berhad, Zurich Takaful Malaysia Berhad, and Hong Leong MSIG Takaful Berhad. Participants were fully informed about the purpose of the research and provided their consent before participating. Confidentiality and anonymity of the respondents were maintained throughout the study, with all data securely stored and only accessible to the research team. The ethical considerations were carefully followed to protect the rights and privacy of the participants, ensuring that the research was conducted in a manner that respects the dignity and well-being of all involved.

4. Findings and Discussion

The mean analysis of the acceptance level toward waqf-takaful products among respondents reveals several key insights into the factors influencing their adoption, as summarized in Table 1.

Table 1: Descriptive Statistics for Acceptance of Waqf-Takaful Death Compensation Product

Item	N	Mean	Std. Deviation
B1 - Product knowledge is important for acceptance	107	4.79	0.413
B2 - Education is key to acceptance	107	4.65	0.478
B3 - Knowledgeable customers are better	107	4.54	0.587
B4 - Incentives from takaful companies are beneficial	107	4.57	0.585
B5 - Long-term customers have advantages	107	4.52	0.678

B6 - Knowledge of waqf-takaful products impacts industry growth	107	4.64	0.503
B7 - Customer acceptance influences public attitudes toward takaful	107	4.61	0.545
B8 - A good waqf-takaful product is easy to market	107	4.45	0.662
B9 - Marketing is critical to product acceptance	107	4.50	0.605
B10 - Experience influences the decision to subscribe	107	4.59	0.549

The highest mean score was observed for Product Knowledge (Mean = 4.79, SD = 0.413), indicating that a strong understanding of the product is fundamental for its acceptance. Education (Mean = 4.65, SD = 0.478) was also highlighted as crucial in promoting waqf-takaful products, aligning with previous research that emphasizes the importance of customer education in the success of Islamic financial products (Abu Bakar et al., 2023a). The study further found that respondents believe individuals with better knowledge are more likely to become loyal and informed customers (Mean = 4.54, SD = 0.587).

Respondents also showed positive feedback on incentives provided by takaful companies for joining death compensation products, with a mean score of 4.57 (SD = 0.585). This finding suggests that structured incentives can significantly increase customer participation, aligning with Che Mohd Salleh et al. (2020), who found that incentives play a key role in customer engagement in Islamic finance. The analysis also found that long-term customers (Mean = 4.52, SD = 0.678) have an advantage in subscribing to takaful services, reinforcing the idea that customer retention strategies can enhance acceptance. Furthermore, marketing was identified as a critical determinant of product success, with a mean score of 4.50 (SD = 0.605), indicating that effective marketing strategies play a central role in increasing product adoption.

The mean analysis of the challenges associated with promoting waqf-takaful death compensation products reveals that respondents generally recognize the difficulties in this area. As shown in Table 2, challenges such as limited promotion, obstacles in selling, and the need for better accessibility were noted.

Table 2: Descriptive Statistics for Challenges in Promoting Waqf-Takaful Products

Item	N	Mean	Std. Deviation
C1 - Are there challenges in promoting waqf-takaful?	107	4.54	0.587
C2 - Are there obstacles in selling waqf-takaful?	107	4.53	0.604
C3 - Is waqf-takaful accepted more than family takaful?	107	4.40	0.738
C4 - Is the waqf-takaful benefit available in the application?	107	4.50	0.805
C5 - Is there sufficient promotion of waqf-takaful products?	107	4.47	0.744
C6 - Do participants have the right to choose institutions freely?	107	4.50	0.664
C7 - Are participants limited to specific institutions?	107	4.51	0.851
C8 - Satisfaction with waqf-takaful services	107	4.53	0.756
C9 - Are distribution channels accessible in social media/print?	107	4.43	0.814
C10 - Is staff training needed for better promotion?	107	4.63	0.541

The study found significant challenges in promoting waqf-takaful death compensation products, with a high mean score of 4.54 (SD = 0.587) on the question of challenges in promotion. This was followed by the recognition of obstacles in selling (Mean = 4.53, SD = 0.604), suggesting that there are structural and marketing challenges that hinder sales efforts. Respondents indicated a slight preference for family takaful products over waqf-takaful (Mean = 4.40, SD = 0.738), highlighting that waqf-takaful adoption may still lag behind more traditional products. The analysis also revealed concerns about the promotion of waqf-takaful products (Mean = 4.47, SD = 0.744), suggesting that enhanced marketing strategies and broader outreach are necessary. Staff training (Mean = 4.63, SD = 0.541) was identified as a critical area for improvement to overcome these challenges and enhance the competence of agents in promoting waqf-takaful products effectively.

The Pearson correlation between the level of acceptance and challenges related to waqf-takaful products showed a statistically significant positive correlation ($r = 0.534$, $p < 0.001$), indicating that as acceptance levels increase, the perceived challenges also tend to rise. This suggests that raising awareness about waqf-takaful products leads to greater recognition of the challenges involved in their promotion and management.

The regression analysis further confirmed that the acceptance level is a significant predictor of the challenges faced, explaining approximately 28.5% of the variance in the challenges faced by takaful companies (R^2 = 0.285). This highlights the interconnectedness of acceptance and challenges, underscoring the need for comprehensive strategies that not only boost acceptance but also address the challenges associated with waqf-takaful products.

Overall, the findings indicate that while there is a generally positive reception toward waqf-takaful products, there are significant challenges that need to be addressed. Product knowledge, education, incentives, and effective marketing are crucial in overcoming barriers to adoption. Furthermore, addressing challenges like promotion, staff training, and product accessibility will be essential for the long-term success of waqf-takaful products. The study also highlights the importance of aligning marketing efforts with customer education to enhance the overall adoption of waqf-takaful products in Malaysia.

5. Conclusion

This study provides significant insights into the acceptance and challenges of waqf-takaful death compensation products in Malaysia. The findings reveal that product knowledge is a critical determinant of customer acceptance, with respondents placing the highest importance on it. Education, incentives, and effective marketing also emerged as vital factors influencing acceptance. The study confirms that customers with better product knowledge are more likely to adopt waqf-takaful products, highlighting the need for educational initiatives and targeted marketing strategies to enhance product understanding and acceptance. The analysis of challenges indicates that while there is generally a positive reception towards waqf-takaful products, significant obstacles remain. These challenges include limited market acceptance, inadequate promotion, and the need for specialized training for takaful staff and agents. The correlation and regression analyses further demonstrate that as the acceptance level of waqf-takaful products increases, so does the awareness of the challenges involved. This suggests that efforts to increase acceptance must also address these challenges to ensure the successful promotion and adoption of waqf-takaful products in the market.

Despite the valuable insights provided by this study, several limitations should be acknowledged. Firstly, the study's sample size is relatively small, consisting of respondents from the Northern and Eastern regions of Malaysia. This limits the generalizability of the findings to the broader population. Additionally, the study relied on self-reported data, which may be subject to biases such as social desirability or recall bias. The use of a cross-sectional survey design also restricts the ability to establish causality between the variables studied. Furthermore, the study primarily focused on the acceptance and challenges of waqf-takaful products without considering other potentially influential factors such as regulatory frameworks, economic conditions, or cultural influences. To build on the findings of this study, several avenues for future research are recommended. Firstly, future studies should consider expanding the sample size and geographical coverage to include respondents from different regions of Malaysia, thereby enhancing the generalizability of the results. Longitudinal studies could be conducted to explore the causal relationships between product knowledge, education, and acceptance of waqf-takaful products over time. Additionally, further research could investigate the role of regulatory frameworks, economic conditions, and cultural factors in shaping the acceptance and challenges of waqf-takaful products. Moreover, comparative studies between waqf-takaful and other Islamic financial products could provide a deeper understanding of the unique challenges and opportunities associated with waqf-takaful. Finally, qualitative research methods such as interviews or focus groups could be employed to gain richer insights into customer perceptions and experiences with waqf-takaful products, offering a more nuanced understanding of the factors influencing acceptance and the barriers to wider adoption. To sum up, takaful providers and policymakers should focus on enhancing customer education, refining marketing efforts, and addressing operational challenges to ensure the successful adoption and sustainability of waqf-takaful products.

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Breaking Barriers: Unleashing Workplace Culture to Empower Women and Combat Discrimination

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Abstract: Women's discrimination in the workplace refers to the behavioral component or differential actions taken towards women. Women often face discrimination due to societal biases and stereotypes. People usually view women as possessing positive traits such as kindness, compassion, and thoughtfulness due to gender stereotypes. Conversely, many people perceive women as reliant, feeble, and overly sentimental, viewing these traits as weaknesses that make them incompatible with leadership roles. Women often miss out on promotions or leadership opportunities, even though they are equally or more qualified than their male counterparts. The purpose of this study is to explore the relationship between women's discrimination in the workplace and workplace culture. A sample of this study included 215 respondents from Malaysian government-linked companies. The data was analyzed using the Structural Equation Modelling (SEM) approach. The findings reveal that workplace culture has a significant impact on women's discrimination in the workplace. Therefore, the implications of this study show that workplace culture is essential and has a direct influence on preventing workplace discrimination against women.

Keywords: *Women Discrimination, Workplace Culture, Workplace Discrimination*

1. Introduction

Women still face obstacles in advancing their careers and are underrepresented in certain organizations. Over the past century, the female labor market has significantly grown in most developed countries. However, women still do not consistently experience the same job conditions as men (Bishu & Headly, 2020). The 2022 Global Gender Gap Report highlights that the power structure remains predominantly controlled by men, even though women make up over half of the population in Malaysia. Most wealth and political power are held by men, leading to significant challenges for female employees. They struggle to attain higher authority positions and face increased obstacles in securing promotions (Global Gender Gap Report, 2022). Discrimination against women is more probable to occur in the workplace, mainly when human resource management decisions are made informally, based on subjective judgments, and without proper documentation, explicit and validated criteria, or transparent advertising of opportunities or training for supervisors and other personnel decision-makers (Valentine et al., 2021).

Gender discrimination against women in the workplace is a significant issue, widely acknowledged and thoroughly researched in various contexts. Studies have demonstrated that discrimination and harassment based on gender have detrimental effects on the physical and mental well-being of women, as well as their economic prospects (SteelFisher et al., 2019). Discriminatory behaviors often originate from stereotypes and prejudices that create perceptions of inadequacy among women, leading to discrimination in the workplace is linked to depressive symptoms and can negatively impact job attitudes, physical and psychological health, and work-related results (Kim et al., 2020; Triana et al., 2018). Furthermore, being subjected to discrimination in the workplace could result in a pessimistic view regarding achieving gender equality (Pitot et al., 2022). Although women comprise more than half of Malaysia's population, men predominantly hold and control most wealth and political power. Women face significant obstacles in obtaining higher-ranking positions and encounter greater challenges when pursuing promotions (Mamun, 2021).

The workplace culture significantly impacts employees' experiences and substantially influences their sense of belonging and inclusion within an organization. The research conducted by Goryunova et al. (2021) highlights the significance of fostering an inclusive workplace culture by implementing gender-sensitive practices and providing awareness training. Furthermore, it is essential to emphasize the differentiation between diversity

and inclusion, where inclusion specifically centers on molding employees' experiences within the workplace's cultural environment (Jerónimo et al., 2021). This highlights the importance of cultivating an inclusive work environment to tackle the inequities in employment chances. Furthermore, Gewurtz et al. (2021) have established a correlation between inclusive workplace practices and a range of positive results. Their research highlights the advantages of inclusive work practices, such as enhanced organizational culture, increased productivity, and reduced employee turnover (Gewurtz et al., 2021). Research by Santuzzi et al. (2021) and Wijayawardena (2022) highlights the positive effects of inclusion on job satisfaction, organizational commitment, and interpersonal trust, emphasizing the importance of fostering an inclusive workplace culture.

Gender discrimination remains a pervasive issue across multiple sectors, with the professional environment being no exception. It is essential to delve into the intricate dynamics of workplace culture and its specific impact on women to confront this challenge effectively. This comprehensive research endeavor aims to thoroughly examine how workplace culture influences the experience of gender-based discrimination among women in professional settings. Through in-depth analysis and understanding of this complex issue, organizations and policymakers can identify and implement the necessary initiatives to foster a work environment that is diverse, inclusive, and fair for all individuals.

Problem statement

Despite women joining the workforce at equal rates to men, their representation on corporate boards remains disproportionately low. Fortune's 2021 ranking shows women holding only 41 of 500 CEO positions in major U.S. corporations, and a global survey of around 4,000 organizations found that just 10% of board directors are female. Some experts suggest that the financial crisis 2008 was partly due to this lack of diversity in leadership (Herrera-Cano & Gonzalez-Perez, 2019). Furthermore, evidence suggests that companies with more female directors often achieve better accounting returns, although their market performance might need to be more robust (Leyva-Townsend et al., 2021).

Gender discrimination plays a significant role in the underrepresentation of women in senior roles, leading to salary disparities, limited job titles, and fewer advancement opportunities (Zare Khafri et al., 2022). This discrimination impacts women's job satisfaction and increases their likelihood of job turnover (Elçi, 2021). Moreover, the physical and emotional consequences of workplace gender bias further hinder women's economic and professional progress (SteelFisher et al., 2019). The "glass ceiling effect" is evident as men receive promotions at higher rates, perpetuated by a biased corporate culture that includes sexual harassment and opaque advancement criteria (Chow et al., 2020; Peng et al., 2022). These systemic barriers severely limit women's career advancement and access to equal opportunities within their organizations. Gender discrimination affects job satisfaction and the overall workplace atmosphere, with the organizational environment influencing the relationship between discrimination and job satisfaction (Asif & Rehman, 2021). The wage gap remains a significant symbol of gender bias, perpetuating inequality (Hou et al., 2022).

In Malaysia, gender discrimination affects women across all life facets despite advancements in education and rights awareness. Discrimination is especially prevalent in entry-level positions and entrepreneurship, where societal norms, family responsibilities, and male dominance pose significant obstacles (Poon & Leeves, 2022; Vazeerjan et al., 2022).

Beyond the workplace, Malaysian women face discrimination in the healthcare, legal, and economic sectors. They are often portrayed in media in roles associated with crime, which underscores the complex interplay between gender and economic factors (Harry, 2021; Yusoff et al., 2021). The labor migration system also reflects gender bias, adversely affecting women migrant workers (Miles et al., 2019). To combat these issues, Malaysia needs comprehensive policies targeting systematic prejudices across education, healthcare, entrepreneurship, and the judicial system. Addressing gender discrimination is crucial for fostering a fair, inclusive work environment conducive to everyone's professional development and well-being.

In conclusion, tackling widespread gender bias in workplace cultures requires acknowledging the factors contributing to gender disparities and implementing inclusive strategies. Research highlights the necessity for systemic change, which includes providing adequate support for women in leadership roles, challenging stereotypes, and improving work-life balance (Stephenson et al., 2022; Barkhuizen et al., 2022). By addressing

these interconnected aspects—supporting women in leadership, confronting stereotypes, and enhancing work-life balance—organizations can create a more equitable and productive work environment for all employees.

2. Literature Review

Female labor in Malaysia – an overview

Cultural, sociological, and economic factors shape the presence of women in Malaysia's workforce. Although there has been a rise in the percentage of women participating in the workforce in Malaysia, from 45.7% in 2008 to 56.1% in 2019 (Adzis et al., 2020), most of the labor force in the country is still male. In 2019, the labor force participation rate was 80.8% for males and 55.6% for females (Lew et al., 2022). This discrepancy results from the long-standing gender roles and cultural norms that have historically restricted women's opportunities to participate in the workforce, especially in certain industries like agriculture and trade (Arquisola, 2020). Moreover, the societal pressure for women to prioritize their home obligations following childbirth is an additional obstacle to their active engagement in the workforce (Aliyev et al., 2020). The barriers experienced by women in the workforce are also apparent in the phenomenon known as the leaky pipeline syndrome within the information and communication technology (ICT) industry. Female professionals encounter barriers that hinder their ability to stay in the industry and progress in their careers (Rajendran & Zawawi, 2019).

The presence of women in corporate boardrooms is a crucial element of gender diversity and inclusivity in the business sphere. Women's representation on corporate boards in Malaysia has risen significantly, with women occupying 30.6 percent of board seats in the top 100 publicly listed firms (PLCs) and about 25 percent in all PLCs on Bursa Malaysia (Bernama, 2023). In 2004, the Malaysian government implemented a strategy supported by Prime Minister Abdullah Badawi to promote gender equality. This strategy aimed to ensure that women occupy 30% of high-level managerial roles in the public sector (Abdullah & Ismail, 2013). In 2011, lawmakers implemented legislation that required companies in the corporate sector to enforce a 30% quota. In 2017, regulators expanded this 30% requirement to include publicly traded companies (Baharudin, 2021). The most recent revision of the Malaysian Code of Corporate Governance (MCCG)-2021 requires that all boards have a 30% representation of women. The MCCG-2021 recommendations emphasize the need for gender balance on boards and recommend a minimum of 30% female representation. This advancement demonstrates an increasing acknowledgment of the significance of gender diversity in corporate governance and decision-making procedures. This commitment highlights the importance of gender diversity in the corporate sector and the initiatives to establish more inclusive and fair boardrooms in Malaysia.

Malaysia is positioned at 103rd out of 146 nations in the Global Gender Gap Report 2022, indicating its level of gender equality. Malaysia ranks 88th for economic involvement and opportunity and 123rd for political empowerment. Malaysia is ranked 106th in the area of lawmakers, senior officials, and managers, with a score of 0.33 on the female-to-male ratio scale. A score of 0.00 indicates disparity, while 1.00 indicates equality. Malaysia is ranked 116th in women's representation in parliament and 90th in women's representation in ministerial positions. The equivalent ratios for these rankings are 0.17 and 0.92, respectively. The Global Gender Gap Report evaluates gender disparity regarding economic involvement and employment, educational achievement, political influence, life expectancy, and sex ratio (Global Gender Gap Report (2022), 2023).

Overall, the analysis of female labor in Malaysia demonstrates an intricate interaction of cultural, sociological, and economic elements that impact women's involvement in the workforce. To effectively tackle the gender disparities and challenges experienced by women in the labor market, comprehensive policies and interventions that consider the intersectionality of gender, health, geographical location, and cultural expectations are necessary. This approach aims to establish a labor force in Malaysia that is more inclusive and equitable for women.

Women's discrimination in the workplace

The workplace has long faced the persistent issue of gender discrimination, disproportionately affecting women. Studies have demonstrated that gender discrimination can exert a substantial influence on multiple dimensions of work-related consequences, including job stress and job satisfaction (Muyidi et al., 2022). A recent study on Saudi female journalists discovered significant correlations between gender discrimination,

supervisory assistance, government support, and their impact on occupational stress and satisfaction (Muyidi et al., 2022). Moreover, women undergoing surgical residency training were shown to have more excellent rates of abuse, such as gender discrimination and sexual harassment, according to a study by Hu et al. (2019). This highlights the widespread occurrence of gender discrimination and its harmful impact on women in professional settings.

Supervisory assistance is essential in shaping the work environment and influencing gender discrimination. Research has emphasized the impact of supervisor gender on the work-family culture, gender norms, and workplace expectations within an organization (Hennekam et al., 2022). Moreover, research by Li et al. (2021) has revealed that the attitude of supervisors who are supportive of family matters significantly affects the extent to which employees express their opinions and ideas. This study also highlights the varying ways in which supervisor behavior influences male and female employees. In addition, the concept of family-supportive supervisor behaviors has been examined from a gender perspective, highlighting the significance of comprehending the gender-specific factors that influence these actions (Sargent et al., 2022).

Co-worker assistance and supervisor support have been recognized as crucial in minimizing the effects of gender discrimination. The findings of a study conducted by Kungu et al. (2019) indicate that individuals who receive support from their family and co-workers are less likely to report experiencing chronic job discrimination. This emphasizes the significance of social support in combating gender discrimination in the workplace. Moreover, the study by Im and Cho (2021) revealed that supervisor incivility moderates employees' general self-efficacy and service performance. This effect is influenced by the gender of the supervisor and the employee, highlighting the intricate interplay of gender dynamics within the workplace. Furthermore, examining supervisor gender's influence on employee motivation and the supervisor-employee dyadic interaction has uncovered the noteworthy function of gender in shaping organizational determinants and results, such as gender prejudice (Kovach, 2020). Research conducted by Mensvoort et al. (2020) has revealed that female supervisors actively participate in initiatives to combat gender discrimination in the workplace, highlighting their potential to address gender discrepancies.

Gender discrimination substantially impacts the prospects for women to advance in different professional environments. Studies have emphasized the widespread occurrence of gender discrimination and its harmful impact on the development and promotion of careers. A study on gender disparity and gender norms highlighted the need to track advancements toward gender equality goals, underscoring the necessity of adopting a comprehensive strategy to tackle differences in possibilities for progress (Gupta et al., 2019). Moreover, the significance of mentoring as a measure to foster gender equality in academic medicine was emphasized, emphasizing the intricacy of tackling gender imbalances in professional progression (House et al., 2021). In addition, the COVID-19 pandemic has been discovered to threaten the growth of gender equality in academic medicine. This underlines the necessity of implementing specific methods to alleviate the negative impact on women's possibilities for progress in the medical sector (Woitowich et al., 2021).

Furthermore, the convergence of women's identities within the realm of professional accountancy careers illuminates the intricacies and obstacles encountered by women in their career advancement, underscoring the necessity for customized strategies to combat gender bias in career progression (Tiron-Tudor & Faragalla, 2022). The study by Tokbaeva and Achtenhagen (2021) emphasized the significance of comprehending the process viewpoint when addressing gender gaps in advancement chances for female workers in male-dominated industries, such as the IT sector. Moreover, the significance of senior leaders in shaping workplace gender equality was seen as a crucial element in facilitating organizational transformations to foster fair opportunities for women to progress (Cortis et al., 2021).

Within the realm of public administration, a detailed examination of gender prejudice in the civil service has emphasized the undervaluation and affront endured by women who defy traditional gender roles. This analysis has shed light on the structural obstacles that impede women's progress and limit their prospects for development (Nasir, 2022). The impact of historical prejudices on women's ability to attain leadership roles in government organizations underscores the necessity of confronting deeply ingrained biases to foster gender equality in professional progression (Wandia, 2022).

To summarise, gender discrimination in the workplace is a multifaceted issue encompassing various aspects of organizational dynamics. This includes the level of support provided by supervisors and colleagues to employees of different genders and the opportunities available for career advancement. Tackling these challenges requires implementing a comprehensive and focused strategy that addresses overt discrimination and aims to foster a workplace culture that promotes gender equality. Creating an inclusive environment supporting the progression of women's careers is crucial and involves initiatives beyond just addressing individual instances of bias. This may include implementing mentorship programs, conducting regular diversity training, and establishing policies promoting equal career growth opportunities.

Workplace Culture

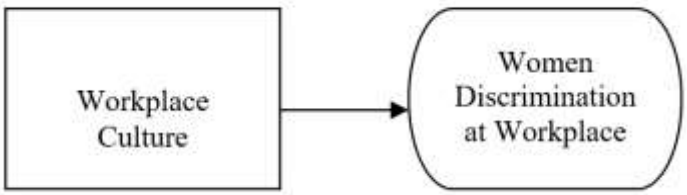
Workplace culture refers to a company's collective attitudes, values, behavioral standards, and expectations. It reflects the organization's underlying assumptions and guiding principles (Beno, 2021). A workplace embodies a comprehensive framework that includes values, beliefs, behaviors, goals, attitudes, work norms, and practices (Beno, 2021). The workplace culture has a significant and wide-ranging effect on various aspects, such as the well-being of employees, their intent to leave the organization, and the occurrence of deviant behavior in the workplace (Ahmad & Kaleem, 2019; Aleksić et al., 2019). Studies have demonstrated a strong correlation between workplace culture and workplace incivility. This connection goes beyond mere disagreement and counterproductive behavior, as it contributes to developing a peaceful work environment (McNamara et al., 2021; Sarkar & Garg, 2020). Furthermore, workplace culture substantially impacts how employees perceive discrimination and their level of involvement in the business (Kartolo & Kwantes, 2019; Nekula & Koob, 2021). The collective values, beliefs, and perceptions that exist inside an organization play a crucial role in determining its future competitiveness and have the potential to impact employees' creativity and their ability to adapt to changes in the workplace (Yang et al., 2022; Liu et al., 2022; Ranganathan, 2021). Furthermore, research has shown that workplace culture impacts worker stress levels, the assimilation of immigrants, and the development of a positive psychological work environment (Davis, 2020; Ertorer et al., 2020; Xu et al., 2022). Moreover, the workplace culture can mold employees' reactions to workplace changes and impact the caliber and expense of healthcare services (Ranganathan, 2021; Xu et al., 2022). Cultural environment significantly influences workplace rules and practices, impacting the behaviors, attitudes, and expectations of employers and workers in their interactions (Collazo & Kmec, 2019).

Nevertheless, while considering the issue of discrimination, it is essential to acknowledge that the dynamics of social interaction inside the workplace can be influenced by biased attitudes, resulting in the establishment of work environments that are characterized and enforced based on race and gender. This is especially apparent in sectors that have historically been dominated by men when the culture of the workplace plays a significant role in creating disadvantages for women. Gender stereotypes in the workplace are evident in the view that certain jobs are naturally suitable for either women or men, therefore reinforcing the idea of "female" and "male" occupations (Vernby & Dancygier, 2019). These prejudices play a role in establishing and maintaining work environments that discriminate against women, limiting their chances for progress and reinforcing gender inequalities.

Conceptual framework and hypotheses development

The primary research model in this study is exhibited in Figure 1.

Figure 1: Conceptual Framework



Based on the conceptual framework provided earlier, the hypothesis is developed as follows to align with the research objectives:

H1: *Workplace culture is significantly related to women's discrimination in the workplace.*

3. Research Methodology

This study employed a quantitative research approach. The researchers gathered data from 215 female employees working in Malaysian Government-Linked Companies. The study utilized a questionnaire consisting of three sections (1, 2, and 3). Section 1 gathered the participants' demographic data, including age, race, educational level, position level, and length of service in their current department. Section 2 focuses on workplace discrimination and divides it into three categories: (1) discrimination during the hiring process, (2) discrimination occurring on the job, and (3) discrimination related to promotions and evaluations. Section 3 focused on workplace culture, specifically examining four categories: (1) supervisor support, (2) co-worker support, (3) employer support for work-family balance, and (4) possibilities for career growth. The survey employed a 5-point Likert scale from 1 (indicating severe disagreement) to 5 (indicating strong agreement). The survey utilized a 5-point Likert scale, ranging from 1 (indicating severe disagreement) to 5 (indicating strong agreement) to capture the participants' responses. The Likert scale was chosen for its user-friendly nature, comprehensibility, and ability to provide dependable and satisfactory replies (Simms et al., 2019).

Measures

A: Workplace Culture
In previous studies, researchers measured workplace culture using four dimensions: supervisor support, co-worker support, employer-work-family support, and advancement opportunities.

Cronbach's Alpha of the resulting scale from the sample is ($\alpha = 0.897$), indicating a high degree of internal consistency of this measure, as shown in Table 1.

B: Women's Discrimination at the Workplace
For this research, women's discrimination in the workplace was assessed using three variables: (1) at the moment of hiring, (2) on the job, and (3) during evaluation/promotion (Kim et al., 2021). Cronbach's Alpha of the resulting scale from the sample is ($\alpha = 0.854$) as reported in Table 1.

4. Data Analysis and Results

A: Demographic Background and Respondents
The sample comprised 215 female employees. 85.6 percent (N = 184) of the employees were Malays, 8.4 percent were Indian (N = 18), and 5.6 percent (N = 12) were Chinese. In terms of age, 39.1 percent (N = 84) were between 30 and 31 years old, 38.1 percent (N = 82) were between 20 and 29, 15.3 percent (N = 33) were between 40 and 49, and 7.4 percent (N = 16) of respondents were above 50 years old. For the academic qualifications of those surveyed, 46.0 percent (N = 99) hold a bachelor's degree, 22.8 percent (N = 49) hold high school-level education, 21.4 percent (N = 46) hold a diploma, 8.8 percent (N = 19) hold a master's degree, and 0.9 percent (N = 2) holds a PhD's degree. Regarding the respondents' job positions, about seventy-one respondents (33.0%) in the survey held key decision-making positions either as senior executives, managers, or senior managers. A significant number of junior executives, consisting of sixty-one respondents (28.4%) who play a key role within the companies, also participated in this study. Meanwhile, sixty-six respondents (30.7%) hold non-executive positions and seventeen (7.9%) hold other positions. Regarding the length of service in the present department of the respondents, more than half of the respondents, which consists of one hundred and fifteen respondents (53.5%), have been with their present department for less than five years. On the other hand, one hundred respondents (46.4%) have been with their current department for more than five years.

B. The reliability and validity analyses
Table 1 shows the goodness of the data for this study. The Exploratory Factor Analysis using the extraction method of Principal Component with Varimax (Variation Maximization) Rotation was performed on the 15 items measuring workplace culture and 20 items measuring women's discrimination at the workplace. The results in Table 1 indicate that the Bartletts' Test of Sphericity is significant (P-Value < 0.05). Furthermore, the measure of sampling adequacy by Kaiser-Meyer-Olkin (KMO) is excellent since the value was 0.897 (workplace culture), and 0.854 (women discrimination at the workplace) exceeded the required value of 0.6. Based on the

computed Eigenvalue greater than 1.0. The eigenvalues are 2.506 (workplace culture) and 2.809 (women discrimination at the workplace). Finally, the study needs to calculate the value of Cronbach's Alpha for every dimension or component to assess the Internal Reliability of the particular dimension or component in measuring the latent construct. Internal reliability, sometimes called internal consistency, indicates how strong the respective items hold to each other when measuring the same construct. The value of Cronbach's Alpha should be greater than 0.7 for the items to achieve Internal Reliability.

Table 1: Goodness of data of the study

Variable	Item	Factor Loading	KMO	Bartlett Test of Sphericity	Eigenvalue	Cronbach Alpha
Workplace Culture	4	0.902 - 0.930	0.745	404.896 P = 0.000	2.506	0.897
Discrimination	3	0.760 – 0.912	0.773	425.615 P = 0.000	2.809	0.854

As in Table 2, the significant value is .000 (less than .05), showing a strong correlation between workplace culture and women's discrimination in the workplace.

Table 2: Correlation between workplace culture and women discrimination in the workplace

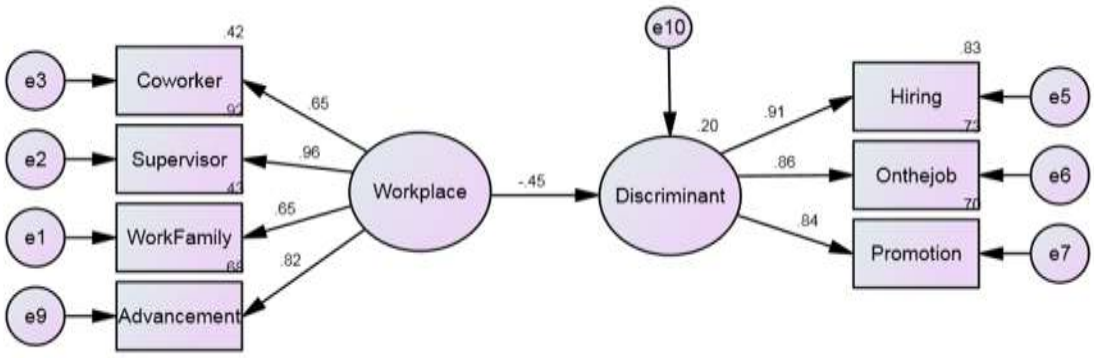
Variable	Mean	Std. Deviation	Sig. (p)
Workplace Culture	3.3491	0.870	0.000
Discrimination	3.5551	0.751	0.000

In a professional setting, the prevailing workplace culture is fundamentally important in assuring that all employees, regardless of gender, are afforded equal employment opportunities. Cultivating a positive and inclusive work environment for female employees can significantly reduce discrimination against them. In some workplaces, the workplace culture takes an active stance against discriminatory attitudes and behaviors, using social disapproval or lack of validation to discourage such conduct. Conversely, discriminatory attitudes and behaviors in other organizations are tolerated and may even be implicitly or explicitly endorsed. This discrepancy in workplace cultures can profoundly impact employees' experiences and well-being, influencing aspects such as job satisfaction, motivation and overall productivity.

C. Hypothesis Testing

Amos version 25 and SPSS version 25 were utilized to conduct the data analysis. A two-stage approach minimizes the changes and avoids interaction between the structural and measurement models (Kang & Ahn, 2021). First, the measurement model for each construct was independently tested for validity and reliability. Construct validity for this study was met, with each indicator variable arriving at a minimum value of 0.5 for standardized regression weight (Husna & Akmal, 2022). For reliability testing, Cronbach's alpha value was above 0.70, which indicated the existence of internal consistency, while composite reliability, a measure of the overall reliability of a collection of heterogeneous data, also met the value of 0.70 (Park et al., 2022). The standardized loadings are larger than 0.5, all average variance extract (AVE) values exceed 0.5, and composite reliability and Cronbach's alpha value exceed 0.70 (Almazrouei et al., 2020; Hair Jr. et al., 2021). Thus, the scale has good convergent validity, and the discriminant validity requirement has been well fulfilled.

Figure 2: The relationship between workplace culture and women's discrimination in the workplace.



The second stage of the two-stage approach involved analyzing the structural model to test the research hypotheses. The result of factor loading of workplace culture and women's discrimination at the workplace was found to be a good fit. Table 3 summarised the goodness-of-fit index; it revealed that the models met the level of goodness-of-fit for this study.

Table 3: Fitness Indexes indicate the fitness of the construct

Fitness Category	Benchmark	GDF	Model Index value	Comments
Absolute fit	> .9	GFI	0.951	The required level is required
Incremental fit	> .9	CFI	0.971	The required level is required
Parsimonious fit	< 3	Chisq/df	2.982	The required level is required

5. Conclusion

The study concluded that there is a statistically significant negative relationship between workplace culture and women's discrimination in the workplace, indicating that as the quality of workplace culture improves, the level of discrimination against women decreases. The negative correlation between workplace culture and discrimination aligns with the need for inclusive workplace practices to mitigate the costly issues of disharmony and communication failure, as emphasized in the study by Campos-García (2022), which underscored the importance of creating inclusive environments to enhance organizational attractiveness for women. Furthermore, the study's conclusion resonates with the necessity of fair treatment and equal employment opportunities in the context of globalization and evolving workforce demographics. The findings are consistent with the work of Ng et al. (2021), which examined employability skills and their alignment with workplace requirements, emphasizing the importance of fostering fair employment opportunities for young graduates. The study's conclusion also aligns with the need for addressing gender discrimination and promoting gender equality in the workplace, as evidenced by the work of Mori et al. (2022), which examined the impact of workplace vaccination opportunities on perceived organizational support and the study by Genin et al. (2020), which explored gender equality as a strategic priority for employers. Moreover, the negative relationship between workplace culture and discrimination is consistent with the findings of Peng et al. (Kim et al., 2020), which highlighted the adverse impact of gender discrimination on depressive symptoms among women in the workplace. In summary, the study's conclusion underscores the imperative of fostering inclusive workplace cultures to combat discrimination against women, aligning with the broader societal and organizational efforts to promote fair treatment, gender equality, and inclusive practices in the workplace.

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The Impact of Liquidity and Leverage on Firm Value of Public Listed Firms in Jordan

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Abstract: This study investigates the impact of liquidity and leverage on the firm value of publicly listed service firms in Jordan, providing insights into financial management practices in emerging markets. Using secondary data from 38 service firms listed on the Amman Stock Exchange between 2011 and 2021, the study measures firm value through Tobin's Q, liquidity via the cash ratio (CHR) and quick ratio (QR), and leverage through short-term debt (SD) and long-term debt (LD). Employing Partial Least Squares Structural Equation Modeling (PLS-SEM), the findings reveal that the quick ratio positively influences Tobin's Q, suggesting that higher liquidity, excluding inventory, enhances market valuation, aligning with Pecking Order and Agency Cost Theories. However, the cash ratio negatively affects firm value, indicating inefficiencies from excessive cash reserves. Both short-term and long-term debt positively impact Tobin's Q, supporting the Trade-Off Theory by highlighting the strategic benefits of leverage. While the study is limited to the Jordanian service sector and data from 2011 to 2021, its findings offer valuable empirical evidence on the distinct effects of liquidity and leverage in emerging markets. These insights are relevant for managers, boards, policymakers, and government agencies aiming to enhance economic prosperity and firm performance.

Keywords: *Liquidity, Leverage, Firm Value, Public Listed Firms*

1. Introduction and Background

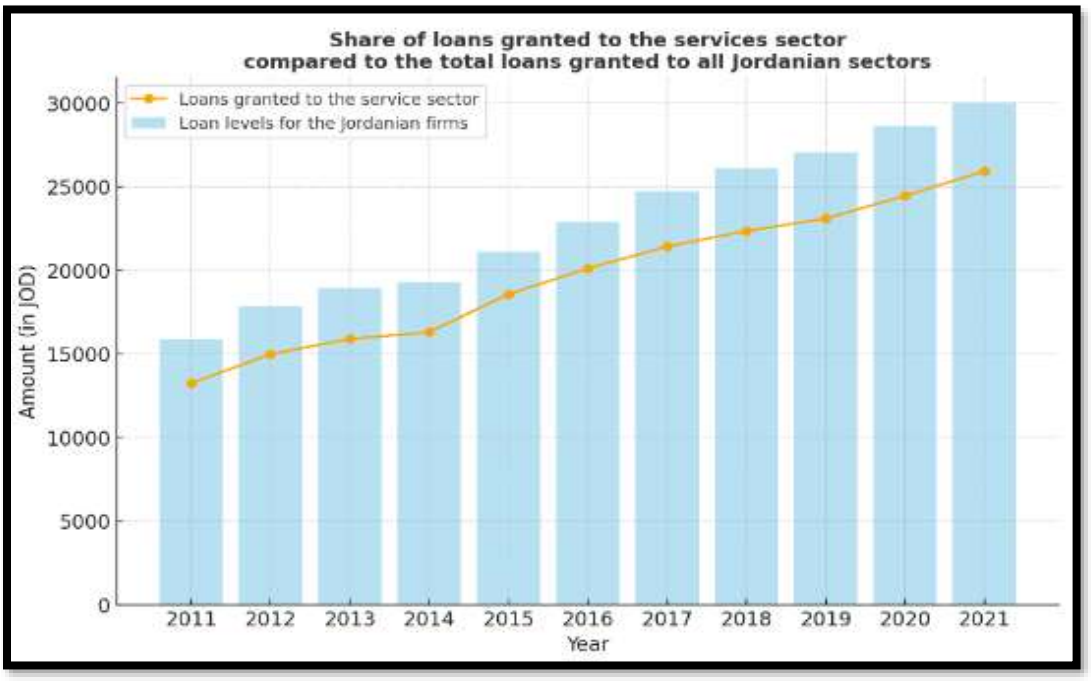
Understanding firm value is critical for assessing companies' success, particularly in the service sector within fast-paced and competitive markets like Jordan. The evolving economic landscape demands an in-depth understanding of the key factors driving financial performance. This study investigates the intricacies between liquidity, leverage, and firm value, with a focus on the unique challenges encountered by firms in emerging markets like Jordan. As fundamental aspects of corporate finance, liquidity and leverage significantly influence a firm's ability to sustain and enhance its value. Liquidity reflects a firm's capacity to meet its short-term obligations using readily available assets, ensuring smooth operational continuity and reducing the risk of financial strain (Dahiyat et al., 2021). In contrast, leverage refers to the strategic use of borrowed capital to fund operations and investments, with the potential to magnify both gains and risks (Hasan et al., 2014). However, excessive leverage can heighten financial vulnerabilities, increasing the likelihood of distress or insolvency if not effectively managed (Samo & Murad, 2019).

In recent years, the importance of studying the impact of liquidity and leverage on firm value has grown, especially in emerging markets like Jordan. The Jordanian service sector, a vital component of the national economy, has faced numerous financial challenges, including fluctuating liquidity levels and high leverage ratios (Al-Ali & Abu-Rumman, 2019). These challenges are compounded by economic instability and high interest rates, which further complicate financial management for service firms (Central Bank of Jordan, 2022). Despite extensive research on the relationship between liquidity, leverage, and firm value, there are mixed results and significant gaps in the literature. Some studies indicate a positive relationship between liquidity and the performance of companies, this suggests that firms with higher liquidity are better equipped to seize investment opportunities and fulfill short-term obligations efficiently, ensuring operational continuity and financial stability (Sahni & Kulkarni, 2018; Dahiyat et al., 2021). Conversely, other studies suggest that excessive liquidity may lead to inefficiencies and lower returns (Adusei, 2022). Similarly, the impact of leverage on the performance of companies is debated, with some research highlighting its positive effects on firm value through tax shields, while others point to the increased financial risk and potential for financial distress (Jihadi et al., 2021; Emmanuel, 2022). The problem of managing liquidity and leverage is particularly acute in developing countries like Jordan, where firms often face limited access to external financing and high

borrowing costs (Abbas et al., 2021). This scarcity of funds pressures managers to design optimal financial structures that balance debt and equity while maintaining sufficient liquidity to meet operational needs (Al-Najjar & Kilincarslan, 2019).

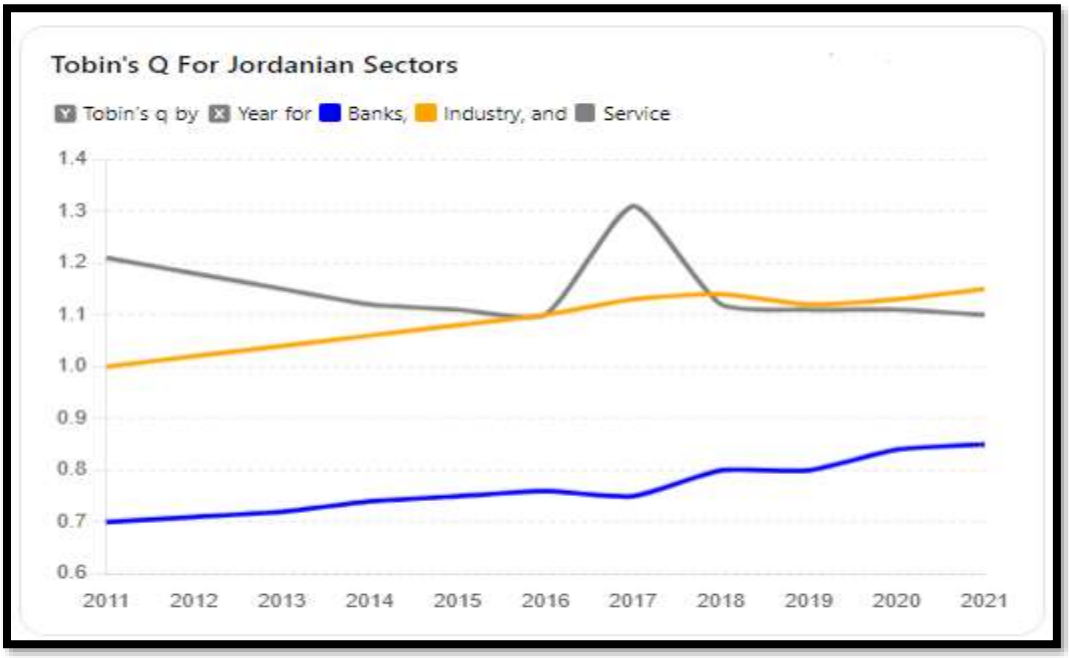
According to the Central Bank of Jordan (2021, 2017, and 2014), the Jordanian service sector is one of the Jordanian sectors that receives the most loans compared to other Jordanian sectors. Figure 1.1, shows that the Jordanian service sector ranks first in borrowing, which indicates that it is more exposed than others to risks that may affect its performance. According to the Jordanian Securities Depository Center (2022), the Jordanian services sector has recently faced challenges such as bankruptcy, mergers, and transformation. Additionally, Many Jordanian studies showed important issues that the Jordanian sectors suffer from, such as (Dahiyat et al., 2021; Momani & Obeidat, 2017) indicated that Jordanian companies suffer from clear fluctuations in their performance, in addition to the presence of a large number of companies that have resorted to closing or merging with other companies due to their inability to achieve a good performance that would help them to continue.

Figure 1: Share of loans granted to the services sector compared to the total loans granted to all Jordanian sectors



Despite facing high debt levels and limited liquidity, the Jordanian service sector continues to struggle in terms of firm value, as reflected by Tobin's Q. Figure 1.2 illustrates that the service sector has not experienced significant growth in firm value over the past 11 years, in contrast to other Jordanian sectors that have shown notable progress. Tobin's Q, which represents firm value in the market, is a key metric for investors. As Ali et al. (2016) noted, investors favor companies with growing Tobin's Q values and become cautious toward those with declining values over time. The service sector's lack of sustained development is further exacerbated by inconsistent government support. For example, the Jordanian Ministry of Investment (2018) reported a recovery in 2017, driven by measures that boosted sectors like tourism, resulting in a 12.3% increase in tourism income, totaling 2.7 billion. However, this momentum diminished as promotional efforts waned and financing interest rates rose, leading to a decline in service sector activities.

Figure 2: Firm value of Jordanian sectors ASE (2022)



These complexities underscore the need for a comprehensive study that examines the interplay between liquidity, leverage, and firm value, particularly in the context of the Jordanian service sector. This research aims to fill this gap and address issues by providing valuable insights for managers, investors, and policymakers aiming to enhance firm performance and ensure financial stability.

The Jordanian services sector plays a pivotal role in the national economy, accounting for a significant portion of GDP and employment. However, recent challenges such as bankruptcies, mergers, and transformations have tested its resilience and adaptability (Jordanian Securities Depository Center, 2022). These challenges highlight the pressing need to examine how financial strategies, particularly those related to liquidity and leverage, influence firm value in this sector. This study addresses a critical gap by examining these dynamics within the specific context of Jordan, offering insights that go beyond general economic frameworks. Unlike prior studies that often emphasize general financial dynamics, this research zeroes in on the service sector's unique challenges and characteristics within Jordan. It integrates key financial constructs and contextualizes them through theoretical lenses such as the Pecking Order Theory and Agency Cost Theory. The study's findings contribute to understanding financial decision-making in emerging economies and offer actionable recommendations for policymakers and business leaders.

2. Literature Review

Pecking order theory

The pecking order theory introduced by (Myers and Majluf in 1984), has significant implications for a firm's capital structure and investment decisions. Firms with high profitability and substantial internal funds tend to have lower levels of debt and are less likely to issue new equity. This preference impacts their financial flexibility, allowing them to respond swiftly to investment opportunities and economic changes. However, the theory is not without its criticisms. Some argue that it oversimplifies the complex decision-making process of financing and does not fully account for strategic or operational factors that may influence a firm's choices. Despite these critiques, the pecking order theory continues to serve as a valuable tool for understanding corporate financing behavior and the trade-offs firms navigate in their financial decision-making processes (Almajali et al., 2012; Robinson et al., 2015).

In the context of liquidity and leverage, the pecking order theory implies that firms with ample internal liquidity

will rely less on external debt and equity. Firms with higher liquidity can fund investments internally, reducing the need to issue debt. Conversely, firms with lower liquidity are more likely to incur debt to finance their operations, aligning with the theory's prediction that debt is preferred over equity when external funds are necessary (Myers, 2001). Leverage becomes a tool for financing when internal liquidity is insufficient, but firms still seek to minimize equity issuance due to its higher costs and potential adverse market signals. This theory underscores the strategic use of liquidity and leverage to minimize costs and maintain financial stability (Fama & French, 2005).

The Agency Cost Theory

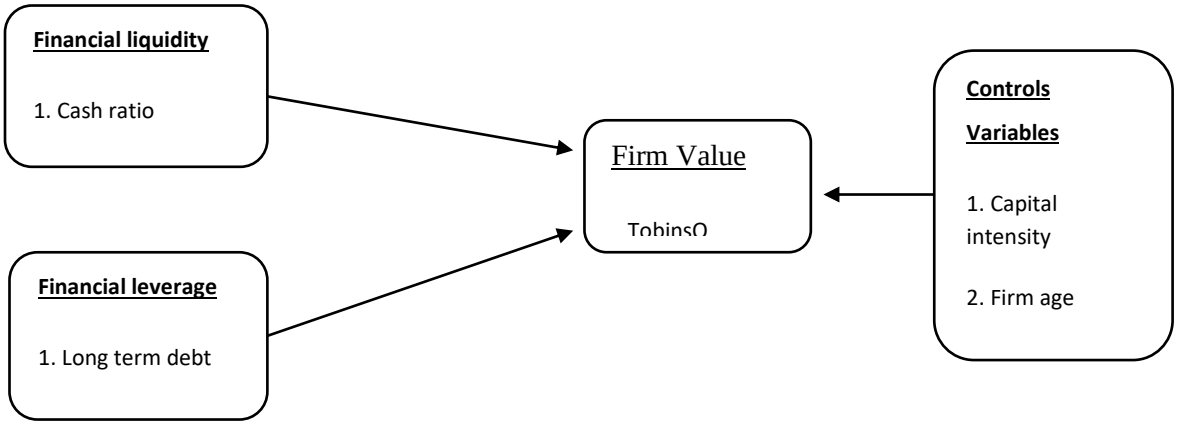
The agency cost theory, proposed by Jensen and Meckling (1976), explores the conflicts of interest that occur between managers (agents) and shareholders (principals) as a result of divergent objectives. These conflicts, referred to as agency costs, stem from managers potentially prioritizing personal goals over maximizing shareholder value. Agency costs can take various forms, including monitoring expenses incurred by shareholders to oversee managerial activities, bonding costs undertaken by managers to reassure shareholders of their commitment, and residual losses resulting from misaligned interests (Jensen & Meckling, 1976). When firms have substantial free cash flow, there is a risk of inefficient spending or overinvestment by managers, as they may allocate resources to projects that do not enhance shareholder value. Debt financing can help address this issue by reducing available free cash flow, thereby aligning managerial incentives with shareholder interests. However, excessive debt can lead to underinvestment, where managers might avoid profitable projects due to the burden of debt repayments. Striking an optimal balance between liquidity and leverage is essential to mitigate agency costs effectively (Jensen, 1986). Stulz (1990) also highlights that debt financing can discipline management by enforcing mandatory interest payments, which limit the opportunity for wasteful expenditures. While this can positively curb overinvestment, high levels of debt may negatively affect shareholders by creating significant interest obligations, potentially leading to underinvestment.

In summary, the Pecking Order Theory and Agency Cost Theory offer a comprehensive framework for analyzing the relationship between liquidity, leverage, and firm performance. The Pecking Order Theory posits that firms prioritize internal funds for financing, resorting to debt only when necessary and avoiding equity issuance due to higher costs and negative market signals (Myers & Majluf, 1984). This aligns with the study's focus on how liquidity, measured through the cash ratio and quick ratio, influences firm value (Tobin's Q). Similarly, the Agency Cost Theory highlights conflicts between shareholders and managers, suggesting that high liquidity can reduce these conflicts by enabling firms to meet short-term obligations efficiently. Conversely, excessive leverage may exacerbate conflicts, resulting in inefficiencies and financial distress (Jensen & Meckling, 1976). This theoretical foundation supports the study's exploration of the impact of short-term and long-term debt on firm value.

Research Framework

The pecking order theory and the agency cost theory collectively explain the relationships in the framework by illustrating how firms manage liquidity and leverage to optimize firm value. According to the pecking order theory, firms with high internal liquidity will prefer using these internal funds to finance their operations and investments before turning to external debt or equity (Myers & Majluf, 1984). This approach minimizes costs associated with asymmetric information and avoids the negative signals that can arise from issuing new equity (Myers, 2001). On the other hand, the agency cost theory suggests that high liquidity allows firms to meet short-term obligations efficiently, reducing the need for costly external financing and minimizing agency conflicts (Jensen & Meckling, 1976). Proper liquidity management ensures that managers have sufficient resources to invest in value-maximizing projects. Conversely, excessive leverage can lead to significant interest repayments, increasing the risk of underinvestment as managers might avoid valuable projects due to debt burdens (Stulz, 1990). This misalignment can harm firm value (Harris & Raviv, 1991).

Figure 3: Research Framework



Relationship between Variables

The Relationship Liquidity and Firm Value

Effective liquidity management is pivotal in shaping the relationship between liquidity and firm value, particularly during periods of financial instability. The cash transfer cycle highlights this connection, emphasizing the critical role of liquidity in maintaining operational continuity and stability during crises. Studies by Shaheen (2012) and Lartey et al. (2013) underline the importance of managing liquidity efficiently to withstand external shocks and sustain a firm's financial well-being. Similarly, Zaitoun & Alqudah (2020) stress that strong liquidity practices are fundamental for long-term firm stability and performance.

Empirical evidence further supports these assertions. Farhan et al. (2019) demonstrated that liquidity ratios, such as the current and quick ratios, positively impact firm value in Indian pharmaceutical companies. Kendirli et al. (2018) confirmed the critical role of the quick ratio in the Turkish banking sector, showing its consistent positive relationship with profitability and firm value across various periods, including during the global financial crisis. Likewise, Confidence and Igoniderigha (2023) found that liquidity significantly enhances firm value in Nigerian manufacturing firms. Their findings align with the Pecking Order Theory (Myers, 1984), which posits that firms prefer internal liquidity over external financing options, highlighting its importance in firm capitalization and performance. These studies collectively affirm the fundamental role of liquidity in enhancing firm value and navigating financial challenges.

Hence, and according to the theories related to the study and previous researchers, the current study indicates there is a positive impact of the liquidity on firm value of Jordanian service firms. This leads to the following hypothesis:
H1: There is a positive effect of Liquidity on the firm value of the Jordanian service firms.
Accordingly, the first hypotheses can be formulated into the following sub-hypotheses:
H1a: There is a positive effect of the cash ratio on Tobin's Q of Jordanian service firms.
H1b: There is a positive effect of the quick ratio on Tobin's Q of Jordanian service firms.

The Relationship Leverage and Firm Value

Sadeghian et al. (2012) emphasized the importance of adopting appropriate financial policies to drive company growth, highlighting the significant influence of debt policy on firm value. Their study analyzed the relationship between debt types (short-term, long-term, and total debt) and firm performance indicators, including Gross Margin Profit, ROA, and Tobin's Q Ratio, using size and growth rate as control variables. The findings revealed that higher debt levels negatively affected corporate performance, particularly for firms heavily reliant on debt to finance assets without considering other factors. Similarly, Majumdar and Chhibber (1999) investigated Indian firms and reported a strong negative relationship between debt levels and firm performance, further reinforcing the risks associated with excessive debt reliance.

Gleason et al. (2000) showed the relationship between capital structure, and performance in European retail

firms, using both financial and operational metrics. Their findings indicated a negative relationship between capital structure and performance, suggesting that agency problems might lead firms to adopt debt levels higher than optimal, ultimately reducing performance. Similarly, Appiah et al. (2020) examined financial leverage and firm performance in Ghana, focusing on various forms of debt. Their study revealed that total debt to total assets negatively impacted both accounting and market performance, with short-term debt showing a negative effect on return on assets and Tobin's Q but not on return on equity. Abor (2007) extended the discussion to SMEs in Ghana and South Africa, highlighting that long-term and total debt ratios negatively affected SME performance, further supporting the view that excessive debt levels, potentially driven by agency conflicts, reduce firm performance. These studies collectively underline the need for balanced debt policies to optimize performance.

Hence, and according to the theories related to the study and previous researchers, the current study indicates there is a negative impact of the leverage on the firm value of Jordanian service firms. This leads to the following hypothesis:
H2: There is a negative effect of Leverage on the firm value of the Jordanian service firms.
Accordingly, the second hypothesis can be formulated into the following sub-hypotheses:
H2a: There is a negative effect of short-term debt on Tobin's Q of Jordanian service firms.
H2b: There is a negative effect of long-term debt on Tobin's Q of Jordanian service firms.

3. Research Method

Data Selection and Collection

Secondary data for the sample of this study, which is the Jordanian service sector, was collected through two sources, first is the Amman Stock Exchange and the second is the annual reports of companies. The companies that meet the conditions of the study were selected, which is the study period and the availability of financial data. This study focuses on the period from 2011 to 2021 due to the availability of comprehensive and reliable financial data for Jordanian service firms during this time. This period captures significant economic fluctuations and financial challenges, including the global financial crisis's aftermath and the COVID-19 pandemic's onset. While extending the dataset to 2023 could provide additional insights, data consistency, and completeness were prioritized to ensure robust analysis and comparability across firms.

Population and Sample

This study includes all 38 companies in the Jordanian service sector listed on the Amman Stock Exchange between 2011 and 2021. This sector accounts for 22% of Jordan's GDP (Jordanian Ministry of Investment, 2022). It is also one of the largest employers in Jordan, with 42.5% of the workforce (Amman Chamber of Commerce, 2019).

Measurement and Operational Definition of Variables

Independent Variables

Liquidity: refers to a firm's capacity to secure funds at a reasonable cost to fulfill obligations as they arise. It encompasses the ability to handle deposit withdrawals, meet loan demands, and convert certain assets into cash within a short timeframe without incurring losses (Rizki et al., 2018). This study utilizes two proxies to measure liquidity:
Cash Ratio: evaluates a company's ability to meet its short-term obligations using only cash and cash equivalents, without relying on the sale or liquidation of other assets. This metric is particularly valuable for assessing a firm's immediate financial solvency (Durrah et al., 2016; Habib et al., 2021).
Formula: CHR = Cash / Current Liabilities
Quick Ratio: assesses a company's capacity to satisfy short-term obligations using its most liquid assets (excluding inventory). This provides a more rigorous assessment of liquidity than the current ratio (Marsha & Murtaq, 2017; Farhan et al, 2019).
Formula: QR = (Cash + Accounts Receivable) / Current Liabilities
Leverage: is called any borrowing or use of financial instruments that magnify the impact of profits or losses on the investor (Ibrahim & Isiaka, 2020). This study used two proxies to measure leverage:

Short-Term Debt: encompasses obligations that must be repaid within a fiscal year or the operating cycle, whichever is longer. It is typically used to address immediate financial needs and plays a crucial role in a company's financial planning (Prempeh & Niah Asare, 2016; Appiah et al., 2020).
Formula: SD = Short Term Debt / Total Assets
Long-term debt: refers to financial obligations that are due for repayment over a period exceeding one fiscal year. It is typically utilized for large-scale investments and projects, with the expectation that these investments will generate sufficient returns to cover the associated debt costs (Prempeh & Niah Asare, 2016; Appiah et al., 2020).
Formula: LD = Long Term Debt / Total Assets

Dependent Variable
Firm value: offers a comprehensive assessment of a company's worth, going beyond market capitalization by factoring in debt obligations and cash reserves. This approach provides a clearer and more accurate picture of a company's financial standing (Damodaran, 2012). This study used one indicator to measure Firm value:

Tobin's Q: is a measure of a company's growth potential and market value relative to its book value. It helps predict profitability and performance. A Tobin's Q value less than one indicates the market value is below the company's book assets, suggesting undervaluation. Conversely, a value greater than one indicates the market value exceeds the book assets, suggesting better investment opportunities and good management performance (Malahim et al., 2022; Saidat et al., 2022).
Tobin's Q= (Market Capatalization+Total Debt)/ Total Assets

Control Variables
This study used three indicators to measure control variables:
Capital Intensity: The extent to which a company invests in fixed assets about its total assets. Higher capital intensity can affect a company's operational and firm value (Widyastuti et al., 2022; Oeta et al., 2019).
Formula: CI = Total of Fixed Assets / Total Assets
Firm Age: refers to the number of years since a company was started. Older firms may benefit from their expertise, but they may also face competition from newer, more flexible firms (Rahman, 2022; Akben-Selcuk, 2016; Coad et al., 2013).
Formula: AGE = The Year of the Research – The Year the Firm Started

4. Results

Descriptive Statistics
Table 1, illustrates the descriptive statistics including maximum, minimum, mean, and standard deviation of the sample of Jordanian service companies for the past 11 years (2011-2021). The data were collected from the Amman Stock Exchange and Annual reports of companies.

Table 1: Descriptive Statistics

Variable	N	Mean	Min	Max	Std. Deviation
TQ	418	1.070	0.222	2.328	0.386
CHR	418	0.277	0.001	1.328	0.335
QR	418	0.779	0.011	2.635	0.568
SD	418	0.249	0.018	0.803	0.169
LD	418	0.054	0.000	0.280	0.073
CI	418	0.445	0.000	0.989	0.319
AGE	418	21.40	2.00	83.00	16.19

The cash ratio (CHR) measures a firm's ability to settle short-term liabilities using cash and cash equivalents, with an average of 27.7% of liabilities covered by cash reserves. While some firms have minimal reserves (close to zero), others have sufficient cash to cover obligations entirely, as indicated by the maximum value. The significant variability among firms is reflected in the standard deviation.

The quick ratio (QR), excluding inventory from liquid assets, shows an average of 77.9% of liabilities covered by liquid assets, highlighting firms' varying liquidity levels. Its wide range and standard deviation emphasize the notable differences in liquidity management strategies.
Short-term debt (SD) accounts for 24.9% of assets on average, indicating reliance on short-term financing. Moderate variability in its use is evident, reflecting firms' different approaches to managing short-term obligations.
Long-term debt (LD) represents a smaller portion of assets, averaging 5.4%, with minimal variability, suggesting limited reliance on long-term debt as a financing source for most firms.
Capital intensity (CI), which measures investment in fixed assets, averages 44.5%, indicating substantial asset commitment. The wide range and variability reflect differences in firms' operational structures and investment strategies.
The age of firms (AGE) averages just over 21 years, with significant variation, from relatively new firms to those operating for decades, demonstrating the diversity in firm maturity within the sample.
Overall, these statistics highlight the diversity among firms regarding liquidity, leverage, asset composition, and operational longevity, providing valuable insights into their financial strategies and characteristics.

Variance Inflation Factor (VIF)

Table 2: VIF

VARIABLE	VIF
CHR	1.979
QR	1.709
SD	1.351
LD	1.163
CI	1.180
AGE	1.152

Table 2, shows that the VIF values for Cash Ratio (CHR), Quick Ratio (QR), Short-term Debt (SD), Long-term Debt (LD), Capital Intensity (CI), and Age of the Firm (AGE) are 1.979, 1.709, 1.351, 1.163, 1.180, and 1.152, respectively. All these values are well below the threshold of 10 (Hair et al., 2010). This suggests that each variable is relatively independent and does not exhibit a strong linear relationship with the others, ensuring that the regression coefficients are reliable and the statistical inferences made from the model are valid.

Explanatory power

R-Square
The R-Square (R^2) test evaluates the extent to which independent variables explain the variance in a dependent variable, with values ranging between 0 and 1. An R^2 value closer to 1 indicates a stronger explanatory power. According to Rigdon (2012), this measure represents the proportion of variation in the dependent variable attributable to the predictors. Cohen (1988) provides guidelines for interpreting R^2 values: 0.26 indicates a substantial effect, 0.13 reflects a moderate effect, and 0.02 suggests a weak effect for endogenous latent variables. These benchmarks assist in assessing the strength of the explanatory model.

Table 3: R-Square

	R-square	R-square adjusted
TQ	0.085	0.071

The R-square value for Tobin's Q (TQ) is 0.085, indicating that 8.5% of the variance in TQ is explained by the independent variables in the model. The adjusted R-square is slightly lower, at 0.071, accounting for the number of predictors, suggesting that 7.1% of the variance is explained. These relatively low values imply that the independent variables in the model account for only a small portion of the variability in firm value, suggesting that additional factors not included in the model may also play a significant role. As noted by Rigdon (2012), an R-square value between 0 and 1 is expected, and these results fall within this range.

Q-Square

In PLS-SEM, Q-Square is used to assess a model's predictive relevance. It indicates how well the model's parameter estimates reconstruct the observed values. A positive Q-Square value indicates predictive relevance for a specific endogenous construct. Q-Square values above zero indicate the model has adequate predictive power (Hair et al, 2013).

Table 4: Q-Square

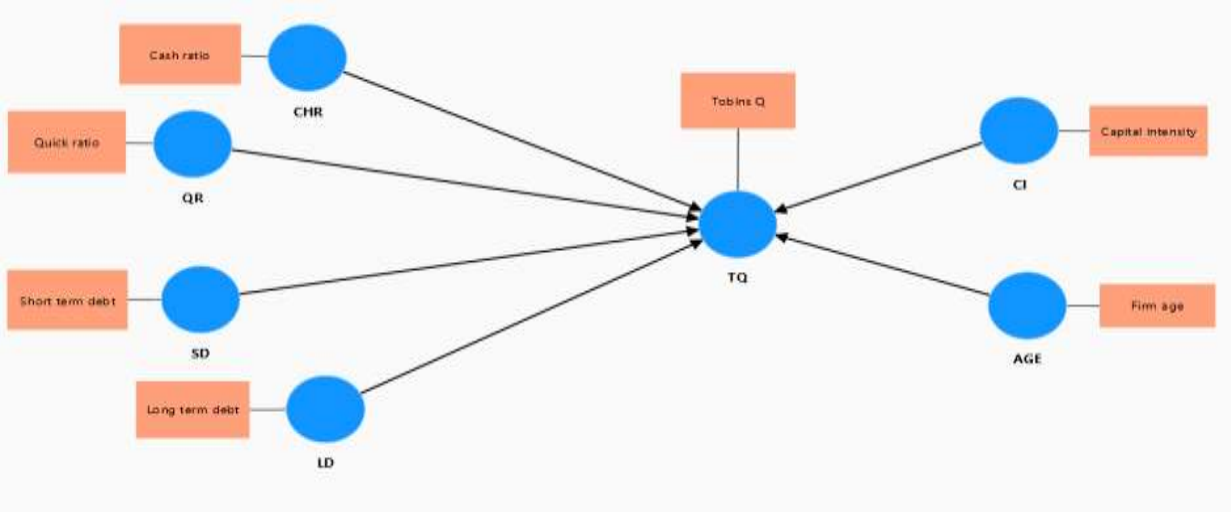
	Q^2predict	RMSE	MAE
TQ	0.056	0.977	0.798

The Q-Square predict value for Tobin's Q (TQ) is 0.056, indicating modest predictive relevance. The RMSE is 0.977, showing that the model's predictions deviate from actual values by about 0.977 units on average, indicating moderate accuracy. The MAE is 0.798, suggesting that the average absolute prediction error is 0.798 units, reflecting reasonable accuracy in the model's predictions.

Hypothesis Test

Path analysis tests model hypotheses. PLS uses a nonparametric bootstrap procedure to validate estimated path coefficients, as it assumes a non-normal distribution of data. Common critical values for one-tailed tests include 1.28 with a 90% significance level, 1.645 with a 95% significance level, and 2.33 with a 99% significance level (Hair et al., 2017).

Figure 4: The structure model study PLS-SMART



Path Coefficient Analysis

Table 5: Path Coefficient

Hypothesis		Path	Original Sample	T Statistics	P Values	Result
H1	H1a	CHR -> TQ	-0.096	1.282	0.100	Not Support
	H1b	QR -> TQ	0.289	4.279	0.000	Support
H2	H2a	SD -> TQ	0.140	2.783	0.003	Not Support
	H2b	LD -> TQ	0.065	1.376	0.084	Not Support
Controls Variables		CI -> TQ	0.104	2.085	0.019	Effect
		AGE -> TQ	0.080	1.508	0.066	Effect

The analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) reveals the relationships between liquidity, leverage, and firm value measured by Tobin's Q (TQ). The path coefficient for the relationship between the cash ratio (CHR) and TQ is -0.096, with a t-statistic of 1.282 and a p-value of 0.100, indicating H1 is not supported by H1a. Conversely, the quick ratio (QR) positively influences TQ, with a path coefficient of 0.289, a t-statistic of 4.279, and a p-value of 0.000, indicating H1 supported by H1b. The relationship between short-term debt (SD) and TQ shows a path coefficient of 0.140, a t-statistic of 2.783, and a p-value of 0.003, indicating H2 is not supported by H2a. Long-term debt (LD) and TQ have a path coefficient of 0.065, a t-statistic of 1.376, and a p-value of 0.084, also indicating that H2 is not supported by H2b. Among the control variables, capital intensity (CI) has a positive effect on TQ, with a path coefficient of 0.104, a t-statistic of 2.085, and a p-value of 0.019. The age of the firm (AGE) has a marginal effect, with a path coefficient of 0.080, a t-statistic of 1.508, and a p-value of 0.066.

Discussion

Liquidity and Firm Value

The connection between liquidity and firm value, as measured by Tobin's Q, provides valuable insights for managing finances in Jordanian service firms. The quick ratio (QR) demonstrated a significant positive influence on Tobin's Q, indicating that firms with higher levels of liquidity, excluding inventory, are better positioned to meet short-term liabilities, thereby boosting their market value. This outcome is consistent with the principles of the Pecking Order Theory and agency cost theory, which suggest that firms prioritize internal liquidity over external funding due to its lower costs and minimal adverse signaling (Myers & Majluf, 1984). Supporting evidence for this relationship can also be found in the studies by Durrah et al. (2016), Kendirli et al. (2018), and Confidence & Igoniderigha (2023). Conversely, the cash ratio (CHR) exhibited a negative impact on Tobin's Q, implying that excessive cash reserves, if not effectively utilized, can result in inefficiencies and a decline in market valuation. This finding aligns with research by Habib et al. (2021), Kalcheva & Lins (2007), Isshaq et al. (2009), and Lee & Lee (2009). These results underscore the critical role of effective liquidity management, particularly in maintaining a balanced level of liquid assets, to ensure smooth operations and capitalize on potential investment opportunities, as highlighted by Zaitoun and Alqudah (2020).

Leverage and Firm Value

The study highlights the positive impact of leverage on firm value, as measured by Tobin's Q. Both short-term debt (SD) and long-term debt (LD) contribute positively to firm value. Specifically, short-term debt showed a significant positive relationship with Tobin's Q, aligning with the Trade-off Theory, which emphasizes balancing the tax benefits of debt against potential financial distress costs (Kraus & Litzenberger, 1973). This finding is supported by previous studies (Salim & Yadav, 2012; Saeedi & Mahmoodi, 2011; Hussein, 2020; Mohammadzadeh et al., 2012), which demonstrate that increased debt can enhance corporate performance by lowering capital costs and providing tax advantages. The positive relationship suggests that Jordanian service firms can strategically use debt to enhance market valuation, reinforcing the importance of prudent debt management for sustainable growth.

Although the relationship between long-term debt (LD) and firm value is not statistically significant, it still shows a positive contribution, consistent with the idea that long-term financing provides stability and tax benefits. This finding, supported by studies such as Soesilo et al. (2020), DJ et al. (2011), and Simorangkir (2019), highlights the role of long-term debt in supporting investments and improving valuation, especially for Jordanian service firms facing liquidity constraints and operational challenges. While excessive reliance on short-term debt could heighten financial risks, optimizing leverage strategies is critical.

Control Variables

Control variables such as capital intensity (CI) and firm age (AGE) significantly influence firm value. Capital intensity (CI) positively impacts Tobin's Q, reflecting its role in enhancing operational efficiency and firm value, as supported by Saji and Eldhose (2017). Firms with higher capital intensity tend to allocate resources effectively, contributing to improved performance. Firm age (AGE), on the other hand, shows a marginally positive effect on Tobin's Q. Older firms may leverage their accumulated experience and established market presence to drive performance, though they might face challenges from younger, more dynamic competitors. This observation aligns with Ilaboya and Ohiokha (2016), who explored the nuanced relationship between firm

age and financial performance. These findings highlight the importance of considering control variables in understanding firm value dynamics.

5. Conclusion

This study sheds light on the relationship between liquidity, leverage, and firm value, as measured by Tobin's Q, in Jordanian service firms. The positive influence of the quick ratio highlights the importance of adequate liquidity in boosting market valuation and operational efficiency, consistent with the Pecking Order Theory (Myers & Majluf, 1984). In contrast, the negative effect of the cash ratio emphasizes the risks of holding excessive cash reserves without efficient use, underscoring the need for optimal liquidity management. The positive effects of both short-term and long-term debt on Tobin's Q, as supported by the Trade-off Theory (Kraus & Litzenberger, 1973), illustrate the benefits of leveraging debt strategically while maintaining careful debt management.

However, the study has its limitations. It focuses exclusively on the Jordanian service sector, limiting the applicability of its findings to other contexts or industries. Additionally, the use of secondary data from 2011 to 2021 may not capture the latest economic and market dynamics. Future research could expand the scope to include diverse sectors and countries, offering a more holistic perspective. Exploring other firm value metrics and incorporating more recent data could further enrich the analysis. Moreover, examining the role of macroeconomic variables, such as interest rates and inflation, might reveal their moderating effects on the relationships between liquidity, leverage, and firm value.

For managers, these findings highlight the need for balanced financial strategies. Maintaining an optimal quick ratio is critical for enhancing market valuation and operational performance. Avoiding excessive cash reserves without a strategic plan is equally important to prevent inefficiencies. Furthermore, leveraging debt wisely can offer tax benefits and reduce capital costs, but overleveraging should be avoided to mitigate financial risks. By achieving a balanced approach to liquidity and leverage, managers can enhance firm value, ensuring sustainable growth and long-term stability.

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Financial Planning for Retirement among Gig Workers in Peninsular Malaysia: A Proposed Conceptual Framework

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Abstract: This study aims to examine the factors affecting financial planning for retirement among gig workers in Peninsular Malaysia. To guarantee financial well-being during post-retirement life, people need to have proper financial planning for retirement. Using a systematic review of the literature, two main online databases, Scopus and Web of Science, were used to assess the literature on past studies based on the advanced search query and enriched keywords: ("FINANCIAL WELL-BEING*" OR "FWB" OR "FINANCIAL WELLBEING") AND ("FINANC*" OR "RETIR*") AND ("PLAN*") from the beginning of 2020 till the end of 2024. As a result, four variables were incorporated, which are financial risk tolerance, financial behaviour, financial knowledge, and financial well-being. At the same time, financial well-being also acts as a mediator. The theory of life-cycle hypothesis and past empirical studies served as the underpinning theory to link the relationship between four variables and financial planning for retirement, resulting in a proposed conceptual framework for this study. This study is expected to contribute to the literature on financial well-being in the context of financial planning for retirement, specifically for gig workers.

Keywords: *Gig Workers, Financial Planning, Retirement, Financial Well-Being, Conceptual Framework, Malaysia*

1. Introduction

Financial planning for retirement is crucial throughout people's lifespans because they need to have sufficient money to survive. It is stated that those who are not making any plans for their retirement will experience unsuccessful long-term financial plans. (Mustafa, et al., 2023). Retirement is known as the shift from active employment to a new stage of life, which is frequently marked by decreased labour force involvement and the earning of pension income (Anuar et al., 2023; Denton & Spencer, 2009). Retirement planning is explained by deliberate processes that are meant to guarantee both financial stability and well-being in retirement (K & Kakkakunnan, 2023). Building up enough money to sustain a chosen lifestyle after retiring entails determining one's financial needs, establishing objectives and formulating a strategy, which makes retirement planning very important to improving people's well-being (Noone et al., 2021).

In this case, Bank Negara Malaysia (2022) has already raised the issue of the deficit in retirement funds, and the possibility of getting worse in future is at stake. Therefore, financial planning for retirement is very much needed because issues involving inadequate retirement stash could be solved through planning (Mustafa et al., 2023). Studies on financial planning for retirement have been explored by past researchers involving various groups, such as working adults (Hershey et al., 2007), baby boomer women (Glass Jr. & Kilpatrick, 1998), government servants (Tan & Singaravelloo, 2020), private sector employees in East Coast Malaysia (Haron et al., 2019), financial professionals and non-professionals (Bačová et al., 2017). However, a study on gig workers is still limited, as there is only one study that has focused on financial planning for retirement among gig workers. Yet, the study by Anuar et al. (2023) focuses on behavioural factors instead of gig workers' well-being.

According to the definition by Subbiah (2023), the gig economy is a free market system in which businesses hire independent contractors to frequently complete brief jobs and temporary work, and people who work in the gig economy are known as gig workers. Despite the existing gig economy beforehand in the market, the gig economy started to garner attention in 2020 mainly due to advanced technology, the COVID-19 pandemic, and economic factors, where gig workers are needed to provide delivery services to customers' homes. (Subbiah, 2023). As a result, the rise of the gig economy is now producing income of almost $1 trillion, leaving traditional jobs behind by rising three times faster. (Fava, 2022). According to a global survey conducted by Datta et al. (2023), there are between 154 million and 435 million gig workers globally, and demand for their services increased by 41% between 2016 and 2023. Similarly, in Malaysia, more than 100,000 new people are making money through more than 140 platforms, resulting in a gig economy in Malaysia expanding due to growing

consumer demand (Bernama, 2023). Malaysia is divided into two main geographical locations, which are Peninsular Malaysia and East Malaysia, and this study mainly focuses on Peninsular Malaysia because of the difference in population distribution and urbanisation as well as economic exposure. Central Intelligence Agency (CIA) (2024) released that Peninsular Malaysia is entitled to almost 80% of the overall Malaysian population, leading to a greater population density compared to East Malaysia. In comparison to East Malaysia, Peninsular Malaysia is more urbanised and has greater economic exposure for the gig economy to expand, as Peninsular Malaysia is a well-established city with strong internet access and infrastructure that supports gig economy platforms (Abdullah et al., 2024).

Despite the growing gig economy, there is another side of gig work where gig workers face many circumstances, including volatile income, the absence of retirement benefits and no access to benefits and protection that are available for regular employees, which make it difficult to achieve financial well-being (Abd Samad et al., 2023). This is proven by statistics where more than 400 gig workers participated in a survey that revealed 37% lacked insurance against working accidents, 59% lacked pension savings, 59% lacked emergency funds, and 57% lacked access to healthcare (The United Nations Capital Development (UNCDF), 2020). Without all of those benefits, gig workers cannot achieve financial well-being, especially when their work is determined by the demands of the jobs themselves (Abd Samad et al., 2023). Additionally, Abdullah et al. (2024) stated that Peninsular Malaysia is known as the "business activity centre", and the gig economy is developing in this area, yet gig workers are still not acknowledged by Malaysian labour laws, leaving them vulnerable without proper social protection and retirement scheme. Hence, there is a need for gig workers to have good financial planning for retirement to improve their well-being.

Table 1: Summary of Previous Studies on Gig Workers in Malaysia and Peninsular Malaysia

Author (s)	Region	Study's Objective	Gap of the study	Findings
(Anuar et al., 2023)	Malaysia	To examine the determinants of financial planning for retirement among gig workers in Malaysia.	Absence of a thorough framework that addresses the various facets of retirement preparation.	The study found financial literacy, retirement goals, future time perspectives, social influence, and saving attitude as mediators in the study of the conceptual framework.
(Abdullah et al., 2024)	Peninsular Malaysia	To delve into the difficulties and problems that gig workers encounter in the emerging industry.	Absence of legal protections and social security protections for gig workers.	The study points out the difficulties gig workers encounter, such as lack of official definitions, social security, and the disparity between government and platform owners.
(Ahmad, et al., 2024)	Malaysia	To investigate policies that promote gig workers' well-being.	Research on Malaysian gig workers' well-being is lacking, and initiatives to improve their welfare are required.	The study's findings are that the new age of autonomy and flexibility of employment, which includes gig workers, is being warmly received by the Malaysian government and policies that improve the welfare of gig workers are required.
(Azim et al., 2024)	Malaysia	To examine the well-being of Malaysian gig workers.	Malaysian gig workers frequently do not receive standard employment benefits, which raises questions regarding their	The study suggests that the gig workers in Malaysia have poor well-being. The study also discovered that occupational satisfaction mediates the relationship between social and financial security.

			general well-being.	
(Mohd Daud et al., 2024)	Malaysia	To determine factors of financial resilience among gig workers in Malaysia and look at its current situation.	Gig workers frequently endure unstable incomes and lack typical social safeguards.	The findings highlight financial literacy, income level, and age as significant factors in determining gig workers' financial resilience, resulting in poor financial resilience against shocks.
(Abd Samad et al., 2023)	Malaysia	To investigate the well-being of gig workers in Malaysia and identify challenges faced by gig workers.	Little research has been done on the welfare of gig workers in Malaysia, and the failure to pay attention to protection and financial considerations for them.	The study found that flexibility in work schedules is the primary driver of gig work, and obstacles include a limited capacity for saving and an uncertain retirement.
(Ab Rashid, et al., 2023)	Malaysia	To investigate the factors that influence gig workers' participation among B40 and M40 while analysing the impact on improving the socioeconomic sustainability among these two sectors.	Insufficient investigation of gig job aspects for B40 and M40, and the impacts of socioeconomic sustainability are not well understood.	The findings show a positive correlation between circumstances, earnings, risk, prospects, and workload with the socio-economic sustainability of B40 and M40 while flexibility does not show any significant impact. The outcomes also demonstrate that the B40 and M40 income groups differ significantly in their approaches to socio-economic sustainability.
(Muhyi et al., 2023)	Malaysia	To determine the driving forces behind people's decisions to enter the gig economy.	There is a limited study that investigated what drives workers to participate in the gig economy, especially in Malaysia.	The results showed that the primary driver of motivation for gig workers in Malaysia was financial purposes. Additionally, the pull factors were more influential than the push factors.

As mentioned earlier, the study on financial planning for retirement among gig workers is still limited. Based on Table 1, there is one study that particularly focuses on financial planning for retirement among gig workers in Malaysia conducted by Anuar et al. (2023) Among those past studies, there is one study that purposely focuses on Peninsular Malaysia, which a study by Abdullah et al. (2024) that studied the difficulties and problems faced by gig workers; Ahmad et al. (2024) studied policies that can improve the well-being of gig workers in Malaysia; Azim et al. (2024) studied the well-being of Malaysian gig workers; Mohd Daud et al. (2024) studied factors on financial resilience among gig workers in Malaysia; Abd Samad et al. (2023) studied the well-being of gig workers in Malaysia along with the challenges faced by them; Ab Rashid et al. (2023) studied causes that influences gig workers in Malaysia to participate in the gig economy, specifically among B40 and M40; Muhyi et al. (2023) studied the reasons people choose to participate in the gig economy. Yet, among those past studies, the study that addressed financial planning for retirement among gig workers in Peninsular Malaysia and their financial well-being in retirement aspects is still scarce. Consequently, various studies have

significantly addressed the factors affecting financial planning for retirement, such as saving attitude. (Shariff & Isah, 2019) (Anuar et al., 2023) (Alkhawaja & Al-baity, 2022), financial literacy (Pg Hj Md Salleh & Baha, 2020) (Safari et al., 2021) (Tan & Singaravelloo, 2020), financial well-being (Chua & Chin, 2021) (Lim & Lee, 2021) (Adam & Frimpong, 2017), and future time perspectives (Alkhawaja & Al-baity, 2022) (Larisa et al., 2020). However, no study has used financial risk tolerance, financial behaviour, financial knowledge, and financial well-being in one framework. Therefore, this study aims to focus on factors affecting financial planning for retirement among gig workers in Peninsular Malaysia to provide insights into the well-being of gig workers based on these objectives: 1) to determine the relationship between financial risk tolerance, financial behaviour and financial knowledge towards financial well-being among gig workers in Peninsular Malaysia; 2) to determine the relationship between financial well-being towards financial planning for retirement among gig workers in Peninsular Malaysia; 3) to determine whether financial well-being mediates the relationship between financial risk tolerance, financial knowledge and financial behaviour towards financial planning for retirement among gig workers in Peninsular Malaysia.

2. Literature Review

Fundamental Theory

To construct a framework, the research needs to have its theoretical foundation. This research is underpinned by the theory of life-cycle hypothesis presented by Modigliani and Brumberg in 1954. The theory of life-cycle hypothesis explains how one's consumption patterns change over time, which can influence one's decision in planning to adjust and fit their financial requirements (Coleman, 2006). According to the theory, when a person is young and does not have a reliable source of income, they must borrow money to cover basic expenses. Once they obtain consistent income upon beginning a profession, they will be able to save money for retirement and might as well pay off their prior debt. When they reach retire phase, their income tends to decrease, making them unable to cover extra expenditures (Stasinopoulos, 2015). The life-cycle theory's fundamental idea is that individuals cognitively separate their needs into three different financial accounts: current income, current assets and future income, along with the wealth needed to support them (Martin & Davari, 2018). In managing three different accounts simultaneously, people must learn financial knowledge beforehand to engage in any financial behaviour, including planning, saving and borrowing (Grable & Rabbani, 2023). With financial knowledge, people will be able to make sound decisions in financial behaviour and might as well have a good level of financial risk tolerance (Bai, 2023). Knowledgeable people tend to behave positively when it comes to managing their finances, leading them to have a good level of financial well-being throughout their lives. Thus, it is significant to use this theory to explain financial planning for retirement, as retirement planning needs to have a careful and proper plan to ensure all the resources are sufficient.

Financial Planning for Retirement

Creating a good retirement life is a very complex process that requires years of tenacity and careful planning. Retirement strategies are different from other types of investing strategies since they enable people to become financially independent, letting them live to the fullest even when they are not employed. (K & Kakkakunnan, 2023). Ofori (2021) stated that retirement planning helps people identify their income during post-retirement as well as the way to handle numerous incomes effectively (Anuar et al., 2023). In addition, retirement planning is a process of making financial plans for life after work and entails investing and putting money aside to guarantee a good retirement living (K & Kakkakunnan, 2023). Despite this, the study supported the idea that the retirement process is complicated and requires several planning factors. In determining factors of retirement, most of the studies centre their research on financial planning, and each of the studies has a different focus and variables. As such, Anuar et al. (2023) focus on financial literacy, retirement goals, future time perspective, and social influence; Ghadwan et al. (2022) focus on financial literacy, financial risk tolerance and cultural factors; Chua and Chin (2021) focus on financial literacy, financial attitude, financial well-being, and financial behaviour; Larisa et al. (2020) focus on financial literacy, future time perspective and financial risk tolerance. Yet, the study that specifically focuses on financial well-being and financial planning for retirement is still limited. Moreover, past studies usually explore demographic factors without paying attention to financial behaviour and financial risk tolerance (Larisa et al., 2020). Similarly, financial literacy also becomes one of the most common factors being explored, yet financial knowledge is still needed to complete financial literacy.

Factors Affecting Financial Planning for Retirement

Financial Risk Tolerance

Financial risk tolerance is the capacity to deal with situations in which there is a significant degree of ambiguity regarding the likelihood of reaching a goal and the potential loss (Rahman et al., 2023). In the context of financial planning for retirement, financial risk tolerance is the ability and desire of a person to withstand changes in retirement investment while working toward their financial objectives (Husna et al., 2023). Financial risk tolerance is crucial when it comes to a variety of personal financial decisions, including investing for retirement and planning for retirement and usually being used as one of the factors in financial planning models (Rahman et al., 2023). However, to have a good tolerance towards financial risk, typically, people need to have financial knowledge because a high level of risk tolerance depends on a high level of financial knowledge (Mutlu & Özer, 2022). Naturally, someone who is financially literate, usually derived from an awareness of theoretical concepts, would be aware of the dangers associated with retirement and would be encouraged to have a retirement planning budget before retirement (Husna et al., 2023). Though excessive risk might result in unsafe outcomes, higher risk tolerance frequently relates to more realistic planning, and at the same time, individual thoughts may be different, resulting in different outcomes in financial planning for retirement.

Financial Behavior

Financial behaviour is described as an individual's capacity to spend, budget, financial plan, and save daily income. (Hidayat & Paramita, 2022). Behavioural finance can be implemented by combining the principles of economics and psychology as well as financial theory, which results in satisfying the basic requirement based on income, leading to the development of financial behaviour. (Hidayat & Paramita, 2022). In the context of financial planning for retirement, financial behaviour can be seen when people save, plan and spend for their retirement to accumulate wealth for post-retirement life. According to Chua and Chin (2021), financial behaviour plays a significant role in wealth accumulation for retirement over their lifetime. However, to conduct financial behaviour, people need to have the financial knowledge to transform knowledge into behaviour. (Chua & Chin, 2021). People who know more about finance are more worried about and ready for retirement as they are aware of pension schemes and effectively diversify their investments. (García Mata, 2021). Hence, when it comes to financial planning for retirement, financial behaviour is crucial, and elements such as financial knowledge can inclusively affect people's intentions to plan for their retirement actively.

Financial Knowledge

Financial knowledge is the compilation of understanding different aspects of the financial world that are obtained through official education or any informal sources (Prawestri et al., 2022). Financial knowledge can be comprehended by utilising financial theory and concepts that can empower people to make well-informed choices about their assets and retirement funds (Maharani & Sari, 2023). Since people need to be informed about retirement savings and investment plans, financial knowledge becomes one of the psychological factors that need to be paid attention to (Alkhawaja & Al-baity, 2022). One can choose the best way to apply their current level of financial knowledge and make decisions based on their level. Therefore, it is assumed that those with greater financial knowledge will be able to make extremely wise decisions and possess responsible behaviour solely based on the present financial situations, including financial retirement (Prawestri et al., 2022). On the other side, financial knowledge, financial behaviour and financial attitude have an intricate relationship, directly or indirectly, because financial knowledge somehow relates to financial behaviour as well. According to García Mata (2021), people with more knowledge may display significant financial behaviour that can help them in their financial planning for retirement.

Financial Well-Being – Mediator

Financial well-being is defined as a multifaceted notion that refers to the ability to maintain desirable living standards and financial independence in the present and maintain financial stability for the future. (Jin, 2023). In the context of financial planning for retirement, financial well-being might be interpreted as people's ability to sustain their current standards of living while planning for their retirement. (Chua & Chin, 2021). When it comes to financial well-being, people with different perceptions might perceive the concept differently as it is subjective, depending on factors such as financial status and residential nature, which could lead to financial stability. (Guo & Huang, 2023). However, securing financial well-being during retirement might be difficult because people need to consider other criteria such as expenditure, wealth accumulation as well as financial knowledge (Chua & Chin, 2021; Fan & Henager, 2022). Financial well-being can be hard to achieve in financial

planning for retirement. As suggested by Taylor et al. (2024), the financial well-being of retirees relatively depends on achieving financial goals set earlier and stability of income, yet people still need to work on their financial well-being to have a stable retirement life despite retirement savings and benefits offered.

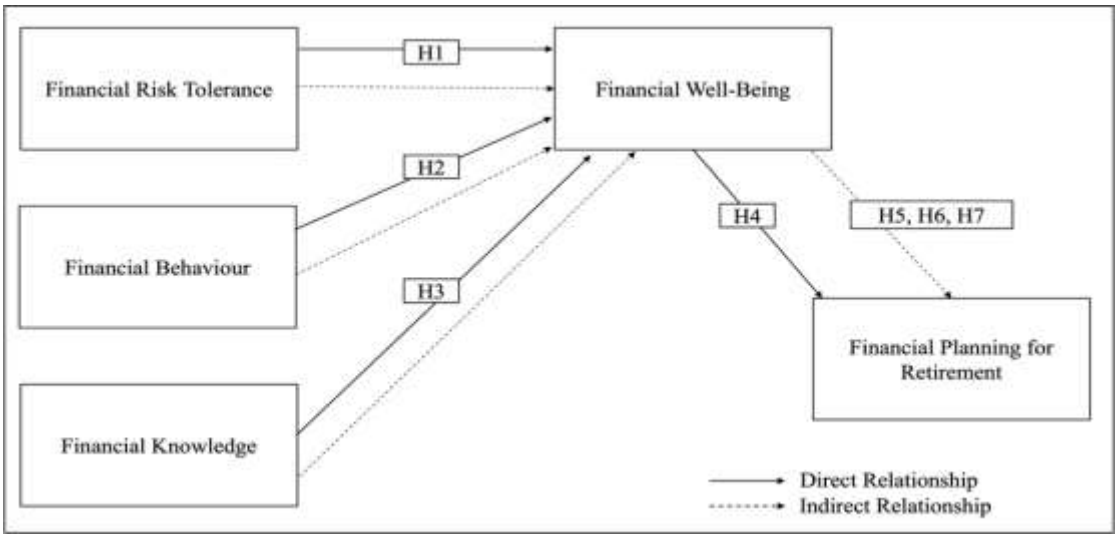
3. Methodology

Based on the prior literature reviews and the underlying theory of the life-cycle hypothesis, the proposed conceptual framework for antecedents of financial planning for retirement among gig workers in Peninsular Malaysia has been developed. By using systematic search techniques, all the past literature was carefully assessed using a three-level procedure (identification, screening, and eligibility). Implying this method resulted in the effectiveness and thoroughness of the past literature, minimising irrelevant results and, at the same time, guaranteeing that significant research studies are not being overlooked. The first phase involved the identification of any synonym words, related phrases or keywords related to the study context. All the databases were searched using the Boolean operator, phrase searches, truncation, wild card, and field code functions starting from the beginning year of 2020 to the end year of 2024 using keywords ("FINANCIAL WELL-BEING*" OR "FWB" OR "FINANCIAL WELLBEING") AND ("FINANC*" OR "RETIR*") AND ("PLAN*"). For the review, two databases were selected as the best resources for finding relevant papers, which are Scopus and Web of Science. Additionally, five (5) supporting databases, such as Google Scholar, Research Gate, Scispace, Emerald Insights, and Mendeley, were used as sources. Throughout the identification process, the researchers discover a total of 1544 publications. Based on 1544 publications found, the process was then followed by the screening method, leading to a total of 1033 articles that met the specific timelines. The last step is conducting the process of eligibility, where only 529 articles meet the requirements before proceeding to further analysis.

4. A Proposed Conceptual Framework

Solely based on the theory of life-cycle hypothesis and empirical review of past studies, the conceptual framework was developed to present the hypotheses of the study. Based on the context of this study, financial risk tolerance, financial behaviour, financial knowledge, and financial well-being could all serve as underlying factors in determining financial planning for retirement. However, financial well-being in financial planning for retirement is still scarce despite the significance of past studies involving financial well-being and retirement. Therefore, based on the literature review and underpinning theory, Figure 1 presents the study's aims in determining factors affecting financial planning for retirement (financial risk tolerance, financial behaviour, financial knowledge, and financial well-being). In addition, this study also intends to explore the role of financial well-being as a mediator between the relationship of independent variables and a dependent variable.

Figure 1: Proposed Conceptual Framework of Current Study



5. Conclusion and Recommendations

In conclusion, based on the literature review of the variables, this study proposed financial risk tolerance, financial behaviour, financial knowledge, and financial well-being as the factors affecting financial planning for retirement, with financial well-being acting as a mediator. The systematic search has led to synthesising the variables into a conceptual framework, as shown in Figure 1. Thus, this study allows us to grasp in detail factors that can impact financial planning for retirement among gig workers in Peninsular Malaysia, specifically in the context of financial well-being, where studies in this realm are still scarce. The proposed conceptual framework not only contributes to the literature but also emphasises the actual problem faced by gig workers. Since gig workers' well-being is still low, the government can develop proper financial planning for retirement among gig workers to ensure their financial well-being is protected. The highlights of gig workers' issues may help future research to explore the same context using demographic segmentation to identify specific barriers faced by each demographic, as each demographic criterion might portray different levels of financial well-being in the retirement planning context.

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Emerging Technologies Revolutionizing the Accounting Profession–Practical Applications

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Abstract: Digital transformation is reshaping all sectors with the rapid emergence of new technologies that have garnered significant attention in recent years, and the accounting profession is no exception to this paradigm shift. The profession, however, has been slower in adopting emerging technologies due to practitioners' lack of awareness of the latest advancements, a shortage of technology-accounting experts, and concerns about the quality of financial reports generated using these technologies. Emphasizing the benefits and applications of these technologies is crucial for helping accountants and auditors understand better their potential to improve daily tasks and workflows. Therefore, this study aims to explore the evolution of digital usage in the accounting profession while investigating various technological advancements and their advantages and practical applications. The findings revealed the progression of digital usage in the accounting profession, tracing key milestones from the Pre-Computer Era to the introduction of computers, the emergence of the internet and ultimately to IR 4.0, which has driven the advancement of emerging technologies such as big data, AI, RPA, blockchain, XBRL and cloud-based software. The researcher also highlights the practical uses of these technologies, which include estimation and valuation, analysis and management, automation, integration and accessibility, control and updates and authentication. The results are hoped to inspire industry players to embrace new technologies and provide top management with valuable insights for making well-informed decisions about technology selection and investment.

Keywords: *Emerging Technologies, Cutting-edge technologies, Digitalization Accounting, Accounting Technology, Accounting Profession*

1. Introduction

In the era of the Fourth Industrial Revolution (IR 4.0), accounting methods and practices are evolving significantly due to the emergence of cutting-edge technologies (Malaysian Institute of Accountants (MIA), 2017). Accounting industries are giving priority to technology due to their ability to automate most accounting methods and practices in multiple areas such as marketing, administration, and decision-making guidance and particularly able to perform financial analysis for the organization (Estep et al., 2023; Mihai & Dutescu, 2022; Phornlaphatrachakorn, 2020). As businesses strive to meet customer demands, they are increasingly embracing the digital era to enhance customer service and accelerate transactions and processes. Businesses are willing to allocate some amount of money to invest in information and communication technology (ICT) in line with the extensive use of the Internet in their daily business activities. To achieve this goal, businesses are eagerly embracing new cutting-edge technologies such as artificial intelligence, big data, robotic process automation, cloud-based software and blockchain. These technologies will complement the existing ones such as Microsoft applications, mobile applications, social networking, blogs, websites and communication technology (Shamsudin et al., 2024).

Despite the numerous benefits of technology, the accounting profession has often been criticized for lagging behind other industries in its adoption (Afroze & Aulad, 2020; Gavrilova & Gurvitsh-Suits, 2020; Omar et al., 2017). Many practitioners remain unaware of the ongoing evolution of technologies within the profession, and firms often lack the necessary expertise to fully integrate these advancements (Lestari et al., 2019). Digital adoption in developing countries varies significantly, with some regions progressing slower than desired. For instance, Saudi Arabia reports ongoing advancements but acknowledges that their adoption levels have yet to reach their targets (Alnasrallah & Saleem, 2022). In Bangladesh, the adoption process has been slow and disrupted due to strict compliance with accounting standards (Afroze & Aulad, 2020). Similarly, in Romania, implementation efforts have stagnated due to financial constraints, as digital adoption requires substantial investment (Vărzaru, 2022). In Estonia, awareness of emerging technologies like AI is relatively high, with 82%

aware of AI and 54% aware of big data, yet only 11% have adopted AI in the profession (Gavrilova & Gurvitsh-Suits, 2020).

In Indonesia, the use of emerging technologies among SMEs remains unrealistic, as even basic accounting software has not been widely adopted (Inayatulloh et al., 2021). Comparatively, Malaysia has shown more progress in digital adoption within the accounting profession, albeit at a gradual pace. For example, Omar et al. (2017) Note that fewer than 20 companies, or approximately 1%, disclosed AI adoption in their annual reports. However, Syed Ibrahim et al. (2022) Highlighted that post-COVID-19, technology disclosure in annual reports has become more robust and significant. According to the MIA report, AI adoption among accounting professionals increased from 13% in 2017 to 22% in 2019. Similarly, big data usage rose from 21% in 2017 to 45% in 2019, reaching 69% in 2022 (Malaysian Institute of Accountants (MIA), 2017, 2023a; MIA Professional Practices & Technical Team, 2020).

It can be argued that the profession is beginning to embrace cutting-edge technologies in accounting and auditing processes, reflecting a gradual shift toward digital adoption. While these advancements hold great promise, questions remain regarding the credibility, quality and security of financial reports produced using digital tools (Vărzaru, 2022). Furthermore, with the increasing development of technology tailored to meet the needs of accountants and auditors, there is a growing need to understand how these solutions can be effectively utilized to transform the profession and enhance its processes. Therefore, the present study aims to explore the evolution of digital usage in the accounting profession while investigating various technological advancements and their advantages and practical applications. This study may encourage industry players to explore new technologies while providing top management with valuable insights to make informed decisions on technology selection and investment, ensuring efficient resource allocation.

2. Evolution of Digital Usage in the Accounting Profession

Technology adoption has become a major attention in the accounting profession, particularly with the surge in digital transformation in recent years. (Alnasrallah & Saleem, 2022; Bosi, 2021). Technology has profoundly reshaped the accounting industry over the past few decades, evolving from a supporting tool to an essential driver in financial practices (Ceruzzi, 2003; Meservy et al., 1992; Shamsudin et al., 2024). The accounting profession, which has existed for centuries (Perry, 1996; Zhang et al., 2021), initially relied on the introduction of the double-entry principle, introduced by Luca Pacioli in 1494, published in 'Summa De Arithmetica Geometria Proportioni et Proportionalita' in Venice, Italy (Peters & Emery, 1978). Although the double-entry principle has long served as the foundation of accounting practices, its application in a purely manual, nontechnological environment- relying on handwritten records and physical documentation- has been subject to significant criticism (Zhang et al., 2021). The criticism is not solely questioning the fundamental validity of the system but rather its lack of flexibility as this will impact reporting quality in fulfilling modern business needs.

During the Pre-computer Era (14th century to 1980s), the accounting and auditing processes relied heavily on basic tools such as calculators and typewriters, with most work done manually using handwriting in physical documents, and ledgers were maintained in a physical book (Peters and Emery, 1978). The manual process was very time-consuming and prone to mistakes and errors (AbuAkel & Ibrahim, 2023). Such errors and inefficiencies could deteriorate audit and reporting quality as the high error risk and lack of precision reduce the reliability of financial statements.

In the Early Computerization Era between the 1980s and 1990s, when computers were first introduced, they were only affordable to large businesses and firms due to budget and expert constraints (Ceruzzi, 2003). Businesses and firms initially attempted to use personal computers (PCs) and basic software to streamline bookkeeping, manage large volumes of transactions and decrease time spent on manual tasks like basic calculations (Meservy et al., 1992). According to Cardinali et al. (2023), even though data was stored digitally, it was often printed out and stored physically which introduced risks related to data accessibility and security. As a result, accountants and auditors are still relying on manual handling of digitized data which still carries errors and redundancy.

In the early 1990s, the emergence of the internet allowed the improvement of features in the accounting and auditing process as it allows information sharing, global communication, and online services like digital trading and e-commerce (Bosi, 2021; Koh et al., 2024). This digital shift allowed accountants and auditors to move from using basic tools to software applications for recording, processing, storing, and analyzing data (Hsiung & Wang, 2022; Shamsudin et al., 2024). These advancements enhanced financial statements produced to be more accurate, timely and easily accessible records, supporting higher reliability and transparency in financial reporting. By the 2000s, the widespread adoption of the Internet significantly accelerated the digital transformation in accounting and auditing. Communication technologies like email, messenger and other online communication platforms such as video conferencing, Google Meet and Webex have gained attention from time to time for simplifying the communication process between accountants, auditors and clients (Malaysian Institute of Accountants (MIA), 2023b; Shamsudin et al., 2024).

The increasing use of software and tools in accounting and auditing processes has been accompanied by research into more complex technologies. Studies on advanced technologies such as artificial intelligence (AI), began as early as the 1990s at Brigham Young University (Meservy et al., 1992). Research on internet-based protocols, including secure, expert systems, algorithm-based records and early concepts of blockchain smart contracts also began in the 1990s (Szabo, 1997). The rise of the internet has fueled the need for technologies beyond existing software for analysis, sharing and integration. The Fourth Industrial Revolution has accelerated the development of cutting-edge technologies, including big data, AI, robotic process automation (RPA), cloud computing and blockchain, all driving significant business changes (Mbizi et al., 2022; Shahzad et al., 2023). The Digital Transformation Initiative (DTI) launched by the World Economic Forum in 2016, aimed to unlock technology potential across industries such as automotive, healthcare and logistics. The World Economic Forum (2016) Advocated the expansion of digital transformation across sectors such as platform economies and professional services. Similarly, Davos (2017) Emphasized the pivotal role of technology in transforming business models, fostering intelligent automation, enhancing digital agility and empowering talent.

The development of accounting and auditing software keeps evolving along with the demand for real-time data access and timely information for stakeholders. Consequently, cloud-based software and tools have been introduced, offering real-time access to client data, enhanced collaboration, secure data storage, support for remote work and automation of tasks like invoicing and payroll thereby enhancing the quality of reporting (Adjei et al., 2021; Kamal et al., 2023; Ria, 2023). Cloud-based applications like Google Drive, Dropbox and OneDrive are also used in the profession to facilitate secure file storage, easy access and efficient sharing of documents among team members and clients (Malaysian Institute of Accountants (MIA), 2017, 2023b; Romney et al., 2021; Shamsudin et al., 2024). As more and more advanced cloud-based accounting software is developed, accountants use more comprehensive accounting and auditing software such as SAP, Oracle, SQL, Xero, QuickBooks Online, Sage, MYOB, Audit Command Language (ACL), CCH Prosystem fx and Audit Express (Romney et al., 2021; Shamsudin et al., 2024). Advanced software supports the need of the industry for reliable, real-time financial data, for better accessibility and flexibility.

In Malaysia, MIA has actively promoted the adoption of technology in the accounting profession since 2016. This initiative began with the introduction of MIA Digital Technology Blueprint and was further reinforced in 2023 through the establishment of Ethical Guidelines on Technology Usage for Public Practitioners (Malaysian Institute of Accountants (MIA), 2017, 2023b). The accounting industry is encouraged to embrace a wide spectrum of technologies. The MIA highlights several widely adopted tools, including communication platforms, application software, data analytics, social networking, multimedia and video platforms, blogs, websites, and cloud computing. Additionally, the MIA underscores the significance of emerging technologies such as artificial intelligence, robotic process automation, big data analytics and blockchain in transforming the profession (MIA Professional Practices & Technical Team, 2020).

3. Digital Usage in the Accounting Profession

According to the Oxford Dictionary, ‘usage’ can be defined as ‘do something with an object or adopt a method or consume to serve for a purpose, meanwhile ‘digital’ can be defined as ‘relating to the use of computer technology or device or system that using digits’ (Hawkins, 2020). Therefore, digital usage refers to the

application or adoption of computer-based technologies, systems or devices to perform tasks, serve specific purposes or achieve desired outcomes. Digital usage exists when the firm employs various types of technologies in their accounting or auditing process to produce the end of the product which is the financial reports. The accounting and auditing process involves classifying, recording, summarizing, analyzing, adjusting, audit planning, risk assessment, substantive testing, test of control and other related activities. The following section will explore how digital usage is practically implemented in the accounting profession and the benefits it offers in enhancing these processes.

Accounting Information System (AIS)

An accounting information system (AIS) can be defined as a complex system that is integrated and linked within departments to exercise respective accounting functions. (Siqani et al., 2019). AIS function involves collecting data for input, processing and storing data and subsequently producing sufficient and quality accounting information as output for users to make quality decision (Siqani et al., 2019). The designed system and software technologies should be able to document all the activities and procedures involved in assembling all the data in conjunction with the financial statements, and the system and technology should be intended to provide high-quality financial reports (Setiawan et al., 2021). According to Shamsudin et al. (2024), AIS encompasses various application software such as accounting software, auditing software, company secretary software and taxation software which are utilized within the public sector.

Cloud Accounting

Cloud accounting refers to the practice of accessing accounting software and related resources through an internet connection enabling operations on a demand-driven basis (Adjei et al., 2021; Lestari et al., 2019). Another study defined cloud accounting as a web-based accounting software that enables users to access financial data from any location and at any time, as long as there is an internet connection. (Kamal et al., 2023). It may be accessed through various devices such as PCs, laptops, smartphones, tablets and iPads. Cloud-based software enables continuous access to our work which requires a dependable connected database, ensuring seamless accessibility, engagement and interaction from everywhere (Adjei et al., 2021; Polenova et al., 2019). In other words, cloud accounting encompasses cloud-based application software such as cloud-based accounting software, auditing software, company secretary software and taxation software in which these applications can be accessed at any time and from any location, provided there is an internet connection. Cloud technologies are widely used among accountants and auditors as they help the audit and accounting staff to directly liaise with the partners to get a fast response on certain critical issues.(Polenova et al., 2019).

Cloud-based technology enables the integration of accounting data within an organization while also facilitating access to external resources like legal acts, government planning documents and public engagement platforms, subject to specified usage restrictions (Polenova et al., 2019). While the financial data is highly accessible, access is restricted exclusively to authorized individuals with specific usernames and passwords. (Polenova et al., 2019; Romney et al., 2021). Shared databases improved storage security and lowered storage costs for users as the existing application software requires additional costs for firms that deal with substantial amounts of data that exceed certain capacity or storage limits (Ahmad et al., 2024).

Artificial Intelligence (AI)

Artificial intelligence (AI) is a form of intelligence demonstrated by machines, in contrast to that exhibited by human beings (Cutting & Cutting-Decelle, 2021; Mihai & Dutescu, 2022). In simpler terms, AI can be described as the application of computerized technologies to perform tasks that would typically require human intelligence (Estep et al., 2023). Machine learning is a crucial component of AI, where computer algorithms are continuously updated based on experience and input data which is then analyzed and processed within the system (Mihai & Dutescu, 2022). Intelligent machines have the capabilities to cater to and rearrange information queries, analyze trends within data and independently carry out evaluations of multiple domains like revenues, inventories, client commitment, fraudulent circumstances and other relevant entries (Ahmad et al., 2024). Specifically, deep learning is a subset of machine learning that employs multiple layers within various types of neural networks to model complex patterns and representations of data (Mihai & Dutescu, 2022). According to Adeoye et al. (2023), Natural Language Processing under AI was ranked highest as it allows quick interactions along datasets in auditing processes. AI through intelligent document processing can be used to extract data from structured documents (e.g.: sales invoices, receipts to customers), semi-structured

documents (e.g.: bank statements, receipts from suppliers and unstructured documents (e.g.: email, PDF documents such as tenancy agreements, scanned written documents) (Mihai & Dutescu, 2022).

AI-based on financial reporting perspectives can be defined as a data mining tool logically structured and computerized based on programmed algorithms to analyze patterns and anomalies within financial data sets to improve auditing and accounting processes through identification of risk areas, automation and authorization of documents at an impressive rate (Adeoye et al., 2023). AI has been widely used by numerous industries like banking, healthcare, manufacturing, retail and audit firms is no exception (Adeoye et al., 2023; Chitturu et al., 2017; Estep et al., 2023). Some companies utilize AI for simple functions such as automation and repetitious processing but some of them utilize it for complex duties. In the future, AI is expected to resolve more complicated and complex accounting problems with the use of fuzzy logic, neural networks and other techniques which yet to be utilized in the accounting profession (Afroze & Aulad, 2020).

Blockchain

Blockchain can be defined as Distributed Ledger Technology (DLT) which stores data in block form and sequentially adds the blocks to the chain. (Swan, 2015). It refers to an interconnected and decentralized digital ledger that safeguards a complete record of every single transaction administered among servers in a network in real-time. (Ahmad et al., 2024). In accounting, the most popular type of blockchain technology besides Fintech, Cryptocurrency and Smart Contracts is Distributed Ledger Technology (DLT) (Zhang et al., 2021). Under DLT, data is stored in a chain of blocks and involves two mechanisms: Fractional Accounting Transactions (FAT) and Hierarchical Accounting Transactions Execution (HATE).

The use of blockchain in the accounting profession involves the application of smart ledgers, which function as distributed ledgers for transactions (data) stored in blocks. These ledgers are integrated across users using cryptographic validation, designed to be unbreakable for modification. Importantly, they adhere to accounting information recording standards and regulations, ensuring real-time accuracy and compliance (Juma'h & Li, 2023; Liu, 2018). According to Zhang et al. (2021), traditionally, only two records needed to be created related to the purchase transaction. The first process is related to purchase activity (T-Purchase) which involves recognition of purchase and accounts payable and the second is recording payment of the debt which involves recognition of cash and reduction of accounts payable (T-payment). The integration of blockchain technology will fractionate the transaction procedures. When placing an order (T-purchase), it needs to verify the authenticity of purchasing decisions by checking the current inventory level with the inventory departments (T-inventory). Then, the supplier will provide external confirmation regarding the availability of the ordered product (T-availability). Once the product availability is confirmed, the finance department is promptly notified to initiate the payment process (T-payment). Experts see the potential of this technology to be further used for user authentication, cybersecurity technology development, and some other new applications (Ahmad et al., 2024).

Big Data Analytics

Practitioners use big data in a variety of ways, and one of its functions is for analysis. If practitioners find inconsistencies between data analyzed via big data and company reports, this raises their concerns about possible errors in the financial reports (Saleh et al., 2023). Both internal and external auditors in Canada are at the leading edge of accounting applications of big data, particularly when dealing with large corporations whose ledgers contain billions of transactions (Saleh et al., 2023). The auditors additionally acknowledged that big data enables the identification of potential fraud risk areas, detection of anomalies, and identification of areas that are not typically covered by traditional auditing methods. Furthermore, it facilitates the integration of both financial and non-financial data, enables comparisons and computes costs before presenting outcomes to users within organizations. The growth of the internet and mobile applications further streamlined access to accounting data as evidenced by the increasing adoption of cloud accounting (Polenova et al., 2019). Additionally, big data analysis enhances the identification of anomalies, possible errors and issues that may have been overlooked in the conventional audit process (Saleh et al., 2023).

Robotic Process Automation (RPA)

Robotic Process Automation (RPA) in accounting refers to the use of software robots or "bots" to automate repetitive and rule-based tasks within the accounting function. In Taiwan, robotic process automation is used

by Big 4 accounting firms including Analytical Process Automation (APA) to enhance and increase the quality of audit works (Hsiung & Wang, 2022). Shamsudin et al. (2024) discovered that RPA is also used in audit and non-audit firms for data extraction and analysis and perform bank reconciliation. RPA is used to validate input before entering into application software. It is also utilized for asset management, arrangement of financing and tax formulation (Hsiung & Wang, 2022).

Extensible Business Reporting Language (XBRL)

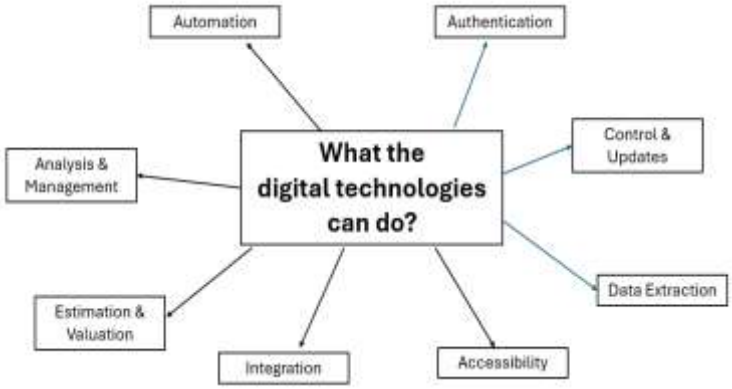
Extensible Business Reporting Language (XBRL) was originally known as Extensible Financial Reporting Mark-up Language (XFRML). However, its name was changed to XBRL to better encompass the broader scope of corporate reporting which includes not only financial reports but also a variety of other reports. This change was made to reflect the understanding that corporate reporting extends beyond financial statements. (Ghani et al., 2014). The researcher further explained that XBRL is related to Hyper Text Mark-up Language (HTML) in that it utilizes Extensible Mark-up Language (XML) schemas within a relational database. Previously, there were inefficiencies in filing annual returns and financial reports, as all submissions were made in hardcopy form. With the shift toward a digital world, hardcopy submissions for FS, AR, and EA are no longer ideal. As such, there is a need for a more digitalized and readable format to facilitate data interoperability. (Uyob et al., 2022). As a result, the emergence of XBRL as an electronic platform addresses these shortcomings as traditional reporting struggles to convert paper-based data into valuable information (Ilias et al., 2019).

XBRL helps to centralize data submitted to regulators (Ilias et al., 2020, 2021), reduce the possibility of re-keying of data (Ilias et al., 2019), increase information transparency, ease the submission of tax filing and serve as a better analytical tool for investors (Ilias et al., 2020). The increasing importance of technology in the accounting profession and the growing adoption of XBRL by businesses in Malaysia make XBRL one of the solutions for analytical financial data purposes.

4. Practical application of digital usage in the accounting profession

In the previous section, we provided definitions and a brief overview of emerging technologies such as cloud computing, blockchain, big data, AI, RPA and XBRL. This section examines how these digital innovations enhance and improve current accounting and auditing processes. Cardinali et al. (2023) through their qualitative studies conducted among professional service firms, observed that digitalization has fundamentally altered how clients interact with accountants and auditors. Previously, clients would make requests, such as "Please do this account for me." Now they pose more strategic and advisory-oriented questions, such as, "How can I respond to the crisis?" or "Where can I improve the company's profit?" This shift underscores a significant change in the role of accountants and auditors who are now expected to provide more strategic, advisory services rather than solely perform traditional accounting tasks. Figure 1 below summarizes the practical applications of digitalization in the accounting profession. Digital technologies play a crucial role in various accounting functions including estimation and valuation, analysis and management, automation, integration and accessibility, control and updates and authentication.

Figure 1: Summary of Practical Applications of Digital Technology in the accounting profession



In **estimation and valuation**, AI has revolutionized various processes, including estimating insurance claim loss reserves and analyzing customer reviews on company products for warranty provisions (Estep et al., 2023). Additionally, AI aids in budgeting, forecasting taxes and forecasting investments (Gavrilova & Gurvitsh-Suits, 2020). According to Hsiung & Wang (2022), RPA also facilitates estimation and valuation, when particularly the tool is applied in tax formulation.

For **analysis and management**, AI plays a significant role in cost and budget management as well as the flexible allocation among responsibility centers in manufacturing. (Vărzaru, 2022). Furthermore, AI assists in analyzing accounts receivable and payable, along with costs and expenses, highlighting its analytical capabilities. (Gavrilova & Gurvitsh-Suits, 2020). Besides AI, blockchain technology is crucial for data structure and information management. (Zhang et al., 2021). RPA also plays a role and can be used for reviewing investment projects and arranging financing, showcasing its role in financial (Hsiung & Wang, 2022). In general, IT is employed to review, analyze, and sort financial data. (Phornlaphatrachakorn & Kalasindhu, 2021).

Automation in accounting is significantly enhanced by AI which simplifies accounting documents and aids audit program development and sample size determination (Afroze & Aulad, 2020; Vărzaru, 2022). AI also facilitates the issuance and acceptance of invoices (Gavrilova & Gurvitsh-Suits, 2020). Additionally, big data technology is pivotal in fraud detection. (Mittal et al., 2021). Generally, technology is employed to generate accounting information automatically across various domains such as warehouses, sales, manufacturing, trading, and personnel (Lestari et al., 2019). Advancements in technology may result in greater identification of fraudulent activities and more correct account calculations, raising the quality of financial reports (Odunayo et al., 2023).

Integration and accessibility of accounting data are achieved through cloud accounting as it facilitates resource sharing and data center requirements (Ria, 2023). CA is also able to link accounting data with planning documents, regulatory legal acts and public records. (Polenova et al., 2019). The integration function also can be seen through the usage of AIS and blockchain. AIS helps integrate data within departments (Siqani et al., 2019), while Blockchain enables the sharing of knowledge and control over content and performance (Zhang et al., 2021), ensuring ongoing access and a continuous working mode (Adjei et al., 2021; Lestari et al., 2019; Polenova et al., 2019). AI has exceptional capabilities in data extraction, effectively processing information from various types of documents. These include structured documents like sales invoices, semi-structured documents like bank statements and unstructured documents like emails and scanned written documents (Mihai & Dutescu, 2022).

Control and updates are managed by CA, ensuring secure data storage and facilitating easy configuration. (Ahmad et al., 2024; Ria, 2023). Besides, CA ensures that software versions are constantly up to date. (Polenova et al., 2019). Other than that, RPA is used for financial asset management and budget implementation monitoring, adding another layer of control to financial management. (Hsiung & Wang, 2022), while blockchain monitors and observes accounting ledger performance to ensure adherence to accounting standards (Zhang et al., 2021). AI is also used for internal control evaluation and real-time inventory counting. (Afroze & Aulad, 2020; Gavrilova & Gurvitsh-Suits, 2020), with the intent to apply the technology for fraud detection (Mittal et al., 2021).

Finally, **authentication** in accounting is bolstered by RPA which validates input into existing accounting information systems (Mihai & Dutescu, 2022)And blockchain, which verifies accounting records (Zhang et al., 2021). AI further facilitates fraud detection through artificial neural networks (Afroze & Aulad, 2020). These integrated digital technologies streamline and enhance the accuracy and efficiency of accounting functions, contributing to more effective and reliable financial management. Technology has significant positive effects on public enterprises as it helps to improve decision-making processes, financial reporting quality, and control systems, increase performance and facilitation in transaction processing (Siqani et al., 2019).

Interdependence between Different Types of Technologies in the Accounting Profession

Digitalization of the accounting profession is not a standalone process. To accomplish certain tasks, AI and non-AI technologies like blockchains and cloud computing are typically used in tandem (Estep et al., 2023). This aligns with the findings of Hsiung & Wang (2022) who argued that the effective use of RPA should be

complemented by blockchain and Internet of Things (IoT) technologies. They highlighted the "Financial Blockchain Correspondence Service" developed by the Financial Regulatory Commission of the Ministry of Finance in Taiwan, as an example of such integration. The combination of these technologies provides a comprehensive and integrated solution, allowing the accounting process to be carried out faster, more accurately and securely. The contention is further supported by Odunayo et al. (2023) who highlighted that it is not possible to rely on a single technology alone; the utilization of one technology should be supplemented by another. For example, blockchain technology is indispensable, but it requires the integration of cloud-based apps and accounting information systems to achieve full functionality (Zhang et al., 2021). The combination of several technologies is crucial to enhance the robustness and adaptability of the developed technology, as well as to facilitate convenient access and improved management of data stored in the blockchain via cloud-based apps. An accountant cannot rely on just one technology as the use of a single technology will have an impact on other aspects as well.

Therefore, conducting comprehensive research that encompasses all relevant technologies is essential. The impact of adopting technology on financial reporting quality varies. For example, Firm A may exclusively use AI which can automate data analysis and improve accuracy. Firm B may rely solely on cloud computing which enhances accessibility and data storage efficiency. Firm C might implement both RPA and blockchain which can streamline repetitive tasks and ensure data integrity. Each technology influences financial reporting in distinct ways, underscoring the importance of examining their varied impacts across different firms. Technologies cannot operate effectively in isolation; instead; their integration often yields synergistic benefits that improve overall efficiency and accuracy. For instance, combining AI with blockchain can enhance data verification and analysis processes. Similarly, integrating RPA with cloud computing can optimize data sharing and management while enabling flexible data processing. Therefore, a comprehensive analysis requires a deep understanding of how these technologies interact and complement one another.

5. Conclusion

In conclusion, IR 4.0 has revolutionized the accounting profession, driven by the emergence of technologies such as artificial intelligence, big data, robotic process automation, cloud-based software, XBRL and blockchain to complement the existing technologies such as AIS. These technological advancements offer significant potential to automate processes, enhance financial analysis and support decision-making. However, challenges remain, including limited awareness, expertise gaps, and concerns regarding the credibility and security of digitally generated financial reports. As the accounting profession increasingly adopts these innovations, it is crucial to investigate their practical applications and benefits. Such evidence can help encourage practitioners to embrace the latest technologies and integrate them into their workflows.

The early sections of this paper traced the evolution of digital usage in accounting, from the Pre-Computer Era (14th century–1980s) with double-entry bookkeeping, to the Early Computerisation Era (1980s–1990s), when larger businesses adopted computers and basic software. The emergence of the internet in the 1990s revolutionized global communication, online services, digital trading and advanced technologies, prompting extensive research into new tools for the accounting profession. Since 2016, the Fourth Industrial Revolution (IR 4.0) has catalyzed significant transformations, introducing technologies like big data, AI, RPA and cloud-based software. These innovations have fundamentally reshaped accounting and auditing practices.

This paper provides an overview of digital adoption in accounting, starting with AIS and extending to emerging technologies such as cloud accounting, AI, blockchain, big data, RPA and XBRL. The researchers highlight the practical applications of these technologies, offering insights into their role in enhancing efficiency and accuracy within accounting and auditing processes. Moreover, the study emphasizes that no single technology operates in isolation; instead, each complements and integrates with others to achieve their intended functions within these practices.

The findings and discussion of this study aim to encourage industry players to embrace new technologies and provide top management valuable insights for making informed decisions about technology selection and investment, thereby ensuring optimal resource allocation. However, this research has two primary limitations. First, it is a descriptive review based on relevant papers sourced from Scopus, which may lack the depth and

rigor of a systematic literature review. Future research could address this limitation by adopting a systematic literature review approach to provide a more structured and comprehensive analysis of the topic. Second, as emerging technologies represent a relatively new area within the accounting profession, this study relies solely on secondary data, which may not fully capture the practical applications or challenges encountered by practitioners. To address this gap, qualitative research methods, such as interviews with industry professionals, are recommended to gain deeper insights and provide a more nuanced understanding to complement the findings of this descriptive review.

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Analyzing Non-Muslim Characteristics Buying Halal Products in Petaling Jaya, Selangor

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Abstract: This study investigates the factors influencing non-Muslim consumers' intention to purchase halal products in Malaysia, focusing on halal awareness, halal certification, halal knowledge, and halal marketing. Using a quantitative approach, data were collected via surveys from 300 respondents at malls in Petaling Jaya and analyzed using SPSS version 29. The results reveal that halal certification and marketing strategies have a significant positive impact on purchase intention, while awareness and knowledge show moderate influences. These findings highlight the critical role of certification and targeted marketing in fostering non-Muslim consumer confidence in halal products. The study contributes to the growing body of knowledge on halal consumer behavior and offers practical insights for marketers and policymakers aiming to expand the halal market beyond the Muslim community.

Keywords: *Halal products, Non-Muslim consumers, Purchase intention, Halal certification, Halal Marketing, Halal Knowledge.*

1. Introduction

Nowadays, the halal market is growing in popularity (Azam and Abdullah, 2021). The halal industry is growing fast, and companies and governments need to figure out what makes non-Muslim consumers intend to purchase halal products in Malaysia (Lim, Lada, et al., 2022). Non-Muslim consumers make up approximately 40% of Malaysia's population, providing a significant market segment for halal products (Department of Statistics Malaysia, 2023). Consumer tastes and driving forces can offer essential insights into the dynamics of halal consumption (Ramli et al., 2023).

Rising prominence in the global halal industry has influenced changes in the attitudes of Malaysian Muslims and non-Muslim consumers (Tarofder et al., 2022). Non-Muslim consumers in Malaysia have been attracted to the benefits of halal products and to consuming them for safety reasons (Lee et al., 2016). Non-Muslim consumers expressed ambivalence regarding the Islamic killing procedure, perceiving it as inhumane and showing an unclear view of halal cuisine (Juergensmeyer et al., 2022).

Muslims and non-Muslims have particularly increased knowledge about halal practices and products in Malaysia (Halimi et al., 2022). Numerous factors, such as globalization, growing health consciousness, and increased demand for ethical and sustainable consumption, can be attributed to halal products (Azam and Abdullah, 2020). Non-Muslim consumers' preference for halal products highlights the importance of understanding the gap between awareness and product choice (Billah et al., 2020). However, the primary obstacle preventing acceptance and usage of halal products among non-Muslim consumers is general ignorance about what defines a halal product and the importance of halal certification (Rafiki, 2023).

Unclear information on halal certification, ingredients, and manufacturing procedures provides a barrier for non-Muslim consumers to make decisions to purchase halal products (Adekunle and Filson, 2020). Due to that, it's worsened by the growing demand for halal products outside of Muslim-majority countries as people from many cultural backgrounds express interest in halal-certified products for reasons such as health, ethics, or the desire for high-quality products (Elasrag, 2016).

Halal certification means verifying a product or business complies with Islamic law (Supriyadi et al., 2024). Halal products have gained significant recognition in Malaysia (Ismail et al., 2023). The concept of halal extends beyond food and includes various domains like cosmetics, equipment, clothing, hotel management, the medical field, and other business forms (Rafiki et al., 2023).

Businesses highly value halal certification to ensure following Islamic dietary standards (Supian, 2016). However, non-Muslim consumers struggle to navigate the array of halal logos, leading to confusion and challenges in purchasing intention (Adekunle and Filson, 2020). Many varieties of symbols can mislead consumers (Won et al., 2020), emphasizing the need for clear criteria and information about the certification process to build trust (Dashti et al., 2024).

Non-Muslim consumers evaluate labels and symbols of any halal products since they are unaware of halal products and services (Ambali and Bakar, 2014). However, despite the quality maintenance method, consumers believe halal cuisines are more sanitary, healthy, and tasty, increasing their understanding of the importance of eating healthy meals (Ramli et al., 2023). Non-Muslim consumers' understanding of high-quality food impacts people's preferences for halal products (Aziz and Chok, 2013). Non-Muslims' perceptions of halal products can help halal businesses thrive, adding to Malaysia's overall economic development (Hashim and Mohd Nor, 2022). Non-Muslim consumers sometimes lack a thorough grasp of halal procedures, consumer relevance, and accompanying advantages beyond religious conformity (Wilkins et al., 2019).

This study aims to investigate the factors influencing non-Muslim consumers' intention to purchase halal products in Malaysia, focusing on their awareness, knowledge, understanding of certification, and responses to marketing strategies. By addressing these factors, the study seeks to identify key barriers and opportunities for businesses to improve their approach to catering to non-Muslim consumers in the halal market.

2. Literature Review

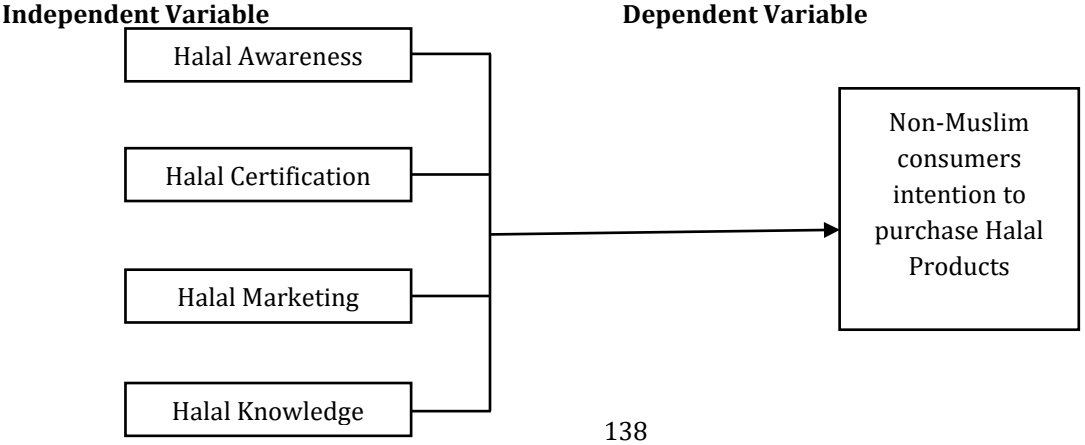
Research Framework

The theoretical framework illustrated in Figure 1 was developed based on the literature reviewed and evaluated to determine non-Muslim consumers' intention to purchase halal products about halal awareness, halal certification, halal marketing, and halal knowledge. This study's variables include dependent and independent variables. The independent variables (halal awareness, halal certification, halal marketing, and halal knowledge) influence the dependent variable, which is non-Muslim consumers' intention to purchase halal products. Figure 1 highlights the hypotheses created for this study, which are aligned with the research questions and objectives.

Extensive literature was reviewed to support the development of the framework. Prior studies have emphasized the significance of halal awareness as a determinant of consumer behavior, indicating awareness influences attitudes and trust in halal products (Azam and Abdullah, 2020). Halal certification has been highlighted as a key factor in fostering trust and reducing ambiguity for non-Muslim consumers (Aziz, 2023). Halal marketing strategies have proven effective in promoting the benefits of halal products, especially when tailored to non-Muslim demographics (Ramli et al., 2023). Additionally, halal knowledge has been linked to increased consumer confidence and understanding, bridging the gap between awareness and purchasing decisions (Chong et al., 2022).

The proposed framework builds on these findings, aiming to explore how these variables collectively influence non-Muslim consumers' intention to purchase halal products.

Figure 1: Proposed Framework



3. Methodology

Population and Sampling

The study focuses on non-Muslim consumers in Petaling, Selangor, which had a population of 2,298,130 in 2020 according to the Department of Statistics Malaysia (DOSM). Primary data will be collected through a structured survey questionnaire distributed to respondents in this region. The population in Petaling consists of 36.5% Chinese, 10.1% Indians, and 0.8% Others, making it essential to account for demographic diversity when designing the survey.

The proposed framework emphasizes the need to understand diverse consumer profiles to tailor halal marketing strategies effectively (Saleh and Wahab, 2024). Stratified sampling will be employed to ensure representative samples from different subgroups. The population is divided into three strata: Others (0.8%), Indians (10.1%), and Chinese (36.5%). The sample size for each stratum will be calculated using the formula:

$$nh = (Nh/N) * n$$

In this formula where **nh** is the sample size for the **hth** stratum, **Nh** is the population size of the stratum, **N** is the total population, and **n** is the desired overall sample size (Keskinturk and Sebnem, 2007). Based on Krejcie and Morgan's table, the total sample size needed is 384, distributed proportionally as 3 for Others, 39 for Indians, and 140 for Chinese. Krejcie and Morgan's guidelines suggest that for a population of 182, a sample size ensuring a 95% confidence level with a 5% margin of error is sufficient for representativeness. This method ensures that each non-Muslim household in Petaling has an equal chance of being chosen, thereby enhancing the validity and generalisability of the study findings.

The survey questionnaire comprises five sections, designed to capture comprehensive insights into the study variables. The first section collects demographic information such as age, gender, ethnicity, and education level. The second section focuses on halal awareness by examining the respondents' familiarity with halal concepts and their ability to differentiate between halal and non-halal products. The third section explores perceptions of halal certification, trust in certification bodies, and clarity regarding the certification processes. The fourth section investigates the influence of halal marketing strategies, including advertisements, promotions, and packaging, on purchase decisions. The fifth section assesses respondents' halal knowledge, particularly their understanding of halal principles, ingredients, and manufacturing practices. Lastly, the final section focuses on purchase intention, aiming to gauge the likelihood of respondents purchasing halal products as influenced by the aforementioned factors.

The questionnaire employs a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to measure responses, ensuring ease of analysis and comparability. Pilot testing will be conducted with 30 respondents to validate the reliability and clarity of the questions. This structured survey and stratified sampling approach aim to ensure that the data collected is both representative and robust, enabling meaningful insights into non-Muslim consumers' behavior towards halal products.

4. Results

Halal Awareness

Table 1 shows descriptive statistics for Halal awareness (HA) with mean values ranging from 3.55 to 3.96. The analysis of halal awareness among respondents reveals the highest acceptance for HA10 "Halal awareness promotes diverse cultural understanding", with a mean of 3.96. The lowest level of acceptance for HA2 is "It doesn't matter whether the product is halal or not", which has a mean of 3.55.

Table 1: Descriptive analysis of Halal awareness

Code	Items	N	Mean	Std.Dev
HA1	Understand the basic principles of halal food. (Hygiene & safety)	182	3.74	0.967
HA2	It doesn't matter whether the product is halal or not	182	3.55	0.949
HA3	Halal awareness an important in today's multicultural society, even for non-Muslims	182	3.65	0.871
HA4	Awareness of halal certification increases consumer trust in food labelling.	182	3.70	0.874
HA5	Halal awareness promotes respect for various cultural and religious practices.	182	3.58	0.936
HA6	Halal awareness influences my purchase intention behavior when purchasing halal-certified products.	182	3.77	0.910
HA7	Awareness programs on halal are necessary for non-Muslim consumers.	182	3.81	0.868
HA8	Halal awareness promotes a deeper understanding of Islamic dietary laws.	182	3.68	0.884
HA9	Use digital platforms or devices to learn more about halal products.	182	3.78	0.851
HA10	Halal awareness promotes diverse cultural understanding.	182	3.96	0.897
HA11	Recommend halal-certified products for other people based on your halal awareness.	182	3.65	0.944
HA12	Actively seek information on the halal status of products.	182	3.73	0.866
Valid N (listwise)	**182**			

Halal Certification

Table 2 shows a descriptive analysis of Halal certification (HC) revealing mean values ranging from 3.24 to 3.76. Respondents strongly agreed with HC3 "Halal certification verifies specific requirements are met during food manufacturing," with a mean of 3.76. At the same time, HC8 is the lowest agreement, indicating "More campaigns are needed to educate non-Muslim consumers about halal certification," with a mean of 3.24.

Table 2: Descriptive analysis of Halal certification

Code	Items	N	Mean	Std.Dev
HC1	The concept of halal certification helps inform decisions when purchasing food products.	182	3.40	0.885
HC2	Halal-certified products are subject to higher quality standards compared to non-certified ones.	182	3.51	0.962
HC3	Halal certification verifies that specific requirements are met during food manufacturing.	182	3.76	0.913
HC4	A product that has halal certification strongly influences purchase decisions.	182	3.48	0.973
HC5	The presence of halal certification makes a difference when comparing similar products.	182	3.28	0.863
HC6	The lack of a halal certification label provides doubt on the product's quality.	182	3.55	0.919
HC7	Halal certification builds trust and confidence in the food industry.	182	3.30	0.905
HC8	More campaigns are needed to educate non-Muslim consumers about halal certification.	182	3.24	0.938
HC9	Halal certification promotes honesty and integrity in food labelling.	182	3.37	0.862
HC10	Halal-certified products are suitable for the global market.	182	3.49	0.927
HC11	Halal certification helps to create confidence and credibility.	182	3.61	0.944
HC12	Clear labelling and information about halal certification on products facilitate informed purchasing decisions.	182	3.57	1.005

HC13	Halal certification contributes to global food safety standards, benefiting consumers worldwide.	182	3.42	0.959
Valid N (listwise)	**182**			

Halal Marketing

A descriptive analysis of Halal marketing (HM) is presented in Table 3 with a mean ranging from 3.36 to 3.88. The highest agreement is with HM11, which states "Effectiveness of halal marketing campaigns influences recommendation of halal products to friends and family," with a mean of 3.88. The least acceptance is with HM4, "Marketing campaigns highlight benefits of halal certification are informative," with a mean of 3.36. This means respondents believe halal marketing campaigns are quite effective at influencing recommendations, but they are slightly less convinced of the informative nature of campaigns focused on halal certification benefits.

Table 3: Descriptive analysis of Halal marketing

Code	Items	N	Mean	Std.Dev
HM1	Halal marketing campaigns play a significant role in shaping my purchasing decisions.	182	3.51	0.933
HM2	Companies should prioritize transparency in their halal marketing efforts.	182	3.42	0.868
HM3	Halal marketing strategies help me feel more connected to diverse cultural and religious practices.	182	3.76	0.884
HM4	Marketing campaigns that highlight the benefits of halal certification are informative.	182	3.36	0.835
HM5	Marketing campaigns for halal products should target non-Muslim consumers as well.	182	3.59	0.922

Table 3: Descriptive analysis of Halal marketing (continued)

Code	Items	N	Mean	Std.Dev
HM6	Marketing for halal products has encouraged people to experiment with new products and foods.	182	3.38	0.888
HM7	Information about halal certification increases consumer confidence in the authenticity of the brand when it appears in advertising.	182	3.50	0.872
HM8	Halal marketing campaigns educate consumers about the principles and process behind halal certification.	182	3.63	0.868
HM9	Halal marketing campaigns to be inclusive and welcoming towards non-Muslim consumers.	182	3.60	0.915
HM10	Halal marketing campaigns have made more aware of the religious significance behind halal products.	182	3.57	0.942
HM11	The effectiveness of halal marketing campaigns influences the of recommendation halal products to friends and family	182	3.88	0.894
Valid N (listwise)	**182**			

Halal Knowledge

Table 4 shows a descriptive study of respondent's Halal knowledge (HK), with mean values ranging from 3.37 to 3.90. The highest level of acceptance is with HK4, which claims, "Understanding halal and its importance in Islamic dietary habits expands the perspective of other cultural traditions," with a mean of 3.90. Furthermore, the lowest agreement is with HK6, "Understanding requirements in halal certification improve the impression of product quality and safety," with a mean of 3.37. This implies respondents strongly believe in the importance of halal education in extending cultural perspectives.

Table 4: Descriptive analysis of Halal knowledge

Code	Items	N	Mean	Std.Dev
HK1	Have a good understanding of what the term "halal" means.	182	3.57	.982
HK2	Familiar with the basic principles and requirements of halal food production.	182	3.45	.895
HK3	Understand that halal certification extends beyond food products.	182	3.73	.848
HK4	Understanding halal and its importance in Islamic dietary habits expands the perspective of other cultural traditions.	182	3.90	.868
HK5	Actively seek information about halal certification to make informed decisions when purchasing food products.	182	3.60	.859
HK6	Understanding the requirements for halal certification improves the impression of product quality and safety.	182	3.37	.906
HK7	Better education can help clear up misunderstandings about halal certification.	182	3.67	.941
HK8	Introducing halal knowledge into educational program initiatives will help society by encouraging diversity and equality.	182	3.53	.877
HK9	Believe that school and institutions should include information on halal knowledge.	182	3.43	.948
HK10	Public education campaigns are necessary to clear up common misconceptions about halal certification.	182	3.65	.955
Valid N (listwise)	**182**			

Non-Muslim consumer's intention to purchase halal products

Table 5 provides a descriptive analysis of non-Muslim consumers' intentions to purchase halal products, showing mean values ranging from 3.42 to 3.71. The highest mean is with statement NMC4, "Presence of halal on a product label influences my purchasing decisions positively," which has a mean of 3.71. Moreover, the lowest is with NMC8, "Halal certification is a significant aspect to consider when analyzing a brand's or company's trust," which has a mean of 3.42. This shows while the presence of a halal label strongly affects purchasing decisions, the role of halal certification in building brand trust is somewhat less influential for consumers.

Table 5: Descriptive analysis of Non-Muslim consumer's intention to purchase halal products

Code	Items	N	Mean	Std.Dev
NMC1	The presence of a halal label significantly influences my decision to purchase a product.	182	3.51	1.007
NMC2	Prioritize halal-certified products over non-certified ones when available.	182	3.65	1.012
NMC3	More likely to purchase products from companies known for producing halal food.	182	3.47	.845
NMC4	The presence of halal on a product label influences my purchasing decisions positively.	182	3.71	.955
NMC5	Halal-certified products are safer and better quality than non-certified ones.	182	3.50	.968
NMC6	Purchasing halal-certified products helps promote diversity in the market.	182	3.63	.816
NMC7	Offers might make me more likely to buy halal products.	182	3.49	.921
NMC8	Halal certification is a significant aspect to consider when analyzing a brand's or company's trust.	182	3.42	.795
NMC9	Ensure that the food I purchase meets halal standards by checking its ingredients.	182	3.53	.984
Valid N (listwise)	**182**			

Regression Analysis

Table 6 presents a multiple regression analysis that examines the impact of halal awareness, halal certification, halal marketing, and halal knowledge on non-Muslim consumer's intention to purchase halal products. The findings show a strong correlation between these variables and the intention of non-Muslim consumers intention to purchase.

Halal certification has the highest regression coefficient value of 0.474. Thus, it indicates that non-Muslim consumers' confidence in purchasing halal products can be greatly increased by displaying an authentic halal certification from an authorized agency, such as JAKIM in Malaysia. The standardized coefficient, with a Beta value of 0.432, further affirms its importance. The standard deviation of halal certification towards non-Muslim consumers' intention to purchase halal products is 6.427.

Furthermore, halal knowledge had a lesser influence on non-Muslim consumers' intention to purchase halal products, as indicated by regression coefficients of 0.136. The standardized coefficient for halal knowledge is 0.113, while the standard deviation is 1.988. This implies informing consumers about the concept of halal and its importance for ensuring food safety, hygienic practices, and quality may encourage consumers to think about purchasing halal products.

Table 6: Coefficients of Multiple Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.187	0.290		0.645	0.520
	Halal Awareness	0.172	0.066	0.159	2.593	0.010
	Halal Certification	0.474	0.074	0.432	6.427	<.001
	Halal Marketing	0.271	0.097	0.210	2.785	0.006
	Halal Knowledge	0.136	0.068	0.113	1.988	0.048

a. Dependent Variable: Non-Muslim consumers' intention to purchase halal products.

Correlation Analysis

Table 7 presents Pearson's correlation coefficients to illustrate the relationships between independent variables which are Halal Awareness (HA), Halal Certification (HC), Halal Marketing (HM), and Halal Knowledge (HK), and the dependent variable, Non-Muslim Consumers' intention to purchase halal products (NMC).

Tables show the correlation coefficient between halal certification and non-Muslim consumers' intention to purchase halal products stands out with the highest strength at r = 0.66. Acceptable halal certification plays an important role in establishing consumer trust and confidence, which is required to influence purchase decisions.

On the other hand, the relationship between halal knowledge and non-Muslim consumers' intention to purchase halal products shows the lowest correlation strength with a coefficient of r = 0.392, indicating it is relatively weaker than other independent factors, suggesting while knowledge of halal ideas is useful, it may not be as powerful as awareness, marketing, or certification in influencing purchase intentions.

Table 7: Pearson's Correlation result

Variables	HA	HC	HM	HK	NMC
Halal Awareness	1				
Halal Certification	0.354**	1			
Halal Marketing	0.541**	0.636**	1		
Halal Knowledge	0.288**	0.346**	0.400**	1	

Non-Muslim consumers intend to purchase halal products	0.458**	0.661**	0.616**	0.392**	1

** Correlation is significant at the 0.01 level (2-tailed).

Hypothesis 1:
There is a positive relationship between halal awareness with non-Muslim consumer intention to purchase halal products.

Linear regression analysis presented in Table 8 examines the impact of Halal Awareness on Non-Muslim consumers' intention to purchase halal products. Results indicate a strong positive relationship between Halal Awareness and purchase intention. These findings suggest increasing Halal awareness effectively enhances the intention of Non-Muslim consumers to purchase halal products, underscoring the importance of awareness programs in shaping consumer behavior.

Table 8: Linear regression analysis between Halal Awareness and Non-Muslim consumer intention to purchase halal products

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.705	0.268		6.363	<0.001
	Halal Awareness	0.495	0.072	0.458	6.920	<0.001

Hypothesis 2:
There is a positive relationship between halal certification with non-Muslim consumers' intention to purchase halal products.

Table 9 presents the results of a linear regression analysis that investigates the influence of Halal certification on Non-Muslim consumers' intention to purchase halal products. Analysis reveals a significant positive effect of Halal Certification, with a standardized beta coefficient of 0.661. This coefficient indicates a strong relationship, where higher Halal Certification levels are associated with a greater intention to purchase halal products. The highly significant p-value of less than 0.001. A constant term of 1.036, also significant with a p-value below 0.001, represents baseline intention to purchase when Halal Certification is at zero. Overall, these results highlight Halal Certification is a crucial factor in influencing Non-Muslim consumer's purchase intentions.

Table 9: Linear regression analysis between Halal Certification and Non-Muslim consumer intention to purchase halal products

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.036	0.214		4.843	<.001
	Halal Certification	0.725	0.061	0.661	11.823	<.001

Hypothesis 3:
There is a positive relationship between halal marketing with non-Muslim consumers' intention to purchase halal products.

Table 10 outlines the findings of a linear regression analysis effect of Halal Marketing on Non-Muslim consumers' intention to purchase halal products. Results indicate a strong positive relationship, with a standardized beta coefficient of 0.616. This suggests effective Halal Marketing significantly increases the likelihood that Non-Muslim consumers will choose to purchase halal products. The p-value of less than 0.001 supports the statistical significance of this effect. Additionally, the constant term of 0.713, significant at the 0.009 level, reflects the baseline purchase intention when Halal Marketing is absent.

Table 10: Linear regression analysis between Halal Marketing and Non-Muslim consumer intention to purchase halal products

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.713	0.271		2.628	0.009
	Halal Marketing	0.794	0.076	0.616	10.502	<.001

Hypothesis 4:
There is a positive relationship between halal knowledge with non-Muslim consumers' intention to purchase halal products.

The findings from linear regression analysis, outlined in Table 11, demonstrate a p-value of <0.001. Analysis reveals a significant positive effect, with a standardized beta coefficient of 0.392. This indicates that increased Halal Knowledge is strongly associated with a higher intention among Non-Muslim consumers to purchase halal products.

Table 11: Linear regression analysis between Halal Knowledge and Non-Muslim consumer intention to purchase halal products

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.850	0.298		6.199	<.001
	Halal Knowledge	0.472	0.083	0.392	5.718	<.001

5. Conclusion and Recommendations

This study provides several recommendations to key stakeholders, including the Ministry of Higher Education (MOHE), halal certification bodies, industry players, and the community. MOHE should integrate halal studies into academic programs such as business and food science, ensuring students gain knowledge about halal awareness, certification, and marketing strategies. Strengthening collaborations with the halal industry through internships and research initiatives can bridge academic knowledge with practical skills. Encouraging research on halal consumer behavior, especially among non-Muslims, can guide policies and improve market strategies.

Halal certification bodies must standardize procedures globally to enhance consumer trust. Transparent certification processes, including clear labelling and regular compliance reporting, are essential for building confidence. Educating consumers about the ethical, quality, and health aspects of halal products is necessary to improve market acceptance. Integrating technologies like blockchain and QR codes can enhance traceability and make certification more accessible.

Businesses should prioritize obtaining halal certification and prominently showcase it on products to attract diverse consumers. Marketing strategies should emphasize ethics, quality, and health benefits to connect with wider audiences. The community, especially non-Muslims, plays a key role by exploring halal-certified products, supporting ethical practices, and engaging in educational initiatives. These actions can promote a more inclusive halal market and drive sustainable industry growth.

Conclusion
This study examined the influence of halal awareness, certification, marketing, and knowledge on non-Muslim consumers' intention to purchase halal products. The findings revealed a positive relationship between these factors, with halal certification identified as a significant trust-building element. Marketing strategies focusing on universal values such as quality, ethics, and health, combined with consumer education, played a crucial role in shaping purchasing intentions. These insights underscore the growing acceptance of halal products among non-Muslim consumers and highlight the importance of transparent certification processes, inclusive

marketing, and effective education. These factors provide valuable guidance for stakeholders aiming to enhance the halal industry's growth in a rapidly expanding global market.

The study's policy implications suggest the need for stronger collaboration between educational institutions, industry players, and certification bodies to ensure standardized halal education, consistent certification processes, and inclusive marketing strategies. Additionally, policymakers should prioritize consumer education and awareness campaigns, particularly among non-Muslim groups, to increase understanding of halal products and their ethical, health, and quality benefits. These actions will foster a more inclusive market, driving consumer trust and broadening the appeal of halal products beyond religious boundaries.

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The Effect of Enterprise Risk Management Implementation on Non-Financial Performance in Jordan Manufacturing Firms: A Review

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Abstract: Previous business crises have highlighted the shortcomings in the methodologies employed for risk management within organizations. In response to these problems, organizational risk management has gained importance recently for the oversight of corporate risk. Unlike solo-based risk management, Enterprise Risk Management (ERM) analyses the organization's whole risk exposure in an integrated and complete manner. The execution of such an integrated approach is essential for all organizations of size and types. Therefore, this study aims to investigate how the COSO ERM framework is considered a crucial framework that provides precise direction and guidance in enterprise risk management among manufacturing enterprises in Jordan and its impact on non-financial performance to enable organizations to mitigate risks and losses and exploit the opportunities. Furthermore, it highlights the prominent role of risk governance including boards of directors, risk committees, chief risk officers, and IT systems as moderators of this relation.

Keywords: *Risk Governance, Enterprise Risk Management, Manufacturing Industry, Jordan.*

1. Introduction and Background

In today's world, businesses are exposed to a broad range of challenges that come from several sources such as globalization, environmental uncertainty, advances in technology and complex financial models, as well as changes in corporate governance (Gatzert & Martin, 2015). The continual changes in business in the global market necessitate a proactive strategy in identifying and managing both company performance and risks (Hamdan & Alheet, 2020). Organizations that have an effective control system and strong integrated risk management are prepared to handle such complexities and risks of today's world and gain better performance over their competitors (Saeidi *et al.*, 2019). Risk management was initially referred to as typical risk management and designed to manage hazards that occur in financial institutions and insurance firms. Later, it transformed into ERM and has been applied throughout all organization types over time (Schiller & Prpich, 2014; Kwateng *et al.*, 2022).

According to Kiew and Yap (2018), ERM is a method that helps in the identification of potential incidents that could influence the organization's objectives. Moreover, it guarantees that risks are within the organization's risk appetite and that the organization fulfil its goal and maintains competitiveness. Furthermore, Lundqvist (2015) concluded that to manage a large range of risks in an integrated manner, a well-governed system is required where the implementation of risk governance is the major step that exceeds traditional risk management in ERM. Thus, the top management gets risk information from all levels of the corporation and integrates it into the decision-making process (Stein *et al.*, 2019).

According to research, risk governance has an essential role in risk management processes (Abid *et al.*, 2021; Nguyen & Dang, 2022). The gap between corporate governance and risk management is being closed by risk governance (Lundqvist, 2015), where a proper risk governance framework would ensure that the risks inherent in the operations of the company are accommodated within the risk appetite (Abid *et al.*, 2021). In addition, the risks are identified, measured, and monitored at appropriate time (Maheshwari *et al.*, 2022). Meanwhile, the board of directors, boards subcommittees and executive level have clearly defined duties in managing enterprise risks (Hassan *et al.*, 2021). Based on previous literature, risk governance determinants are CRO, board of directors, risk committee, and IT systems. CRO plays an essential role in facilitating the formulation of ERM policies and frameworks (Shivaani, 2018). Additionally, it collaborates with managers to ensure a comprehensive monitoring of the organization's risk management processes (Najwa *et al.*, 2019). In most firms, CRO has a direct connection to the BoDs, while others may employ a specialized RMC (Salaudeen *et al.*, 2018).

In Jordan particularly, the industrial sector is not mandated to hire CROs. Still, it has to establish a framework of risk management where the BoDs should supervise the implementation of this framework and conduct an annual evaluation of the risk management plan. In contrast, internal audit conducts risk monitoring and reports directly to the BoDs or associated committees (Ministry of Industry and Trade-Jordan, 2022). It is worth noting that the industrial sector is significantly impacting various sectors like insurance and transport. Furthermore, it contributes approximately 40% to the GDP and supports the stability of the Jordanian dinar exchange rate (Ministry of Investment-Jordan, 2018).

Problem Statement: The standards outlined by ISO 31000 (2018) emphasize that industrial enterprises encounter a diverse range of both external and internal risks that can affect the achievement of their objectives. These risks include operational, strategic, competitive, financial, reputational, and compliance risks (Jalal-Karim, 2013). In addition, the coronavirus pandemic has further underscored the necessity for businesses to implement new strategies and scenarios to manage the uncertainty (Mahdi & Nassar, 2021).

Jordan is a country considered a developing country in the Middle East, which faces numerous challenges regarding competitive advantages in its manufacturing sector. Jordan's economic growth plan (2018-2022) indicates that the manufacturing sector has encountered obstacles, including increased pricing and decreased demand, caused by intense competition from countries such as Turkey and the Gulf states. Consequently, it adopts strategies that assist firms in overcoming such challenges and enhancing competitive advantage, customer satisfaction, and reputation (Alshourah, 2021). One approach is ERM, which promotes organizational risk considerations, and how well its implementation can yield long-term competitive advantages (Altanashat *et al.*, 2019).

In addition, effective ERM strategies assist in managing unforeseen challenges, guaranteeing adaptability, and maximizing opportunities, allowing organizations to achieve superior performance (Armeanu *et al.*, 2017). However, businesses are recognizing the major risk management in manufacturing firms (Shad *et al.*, 2019). The majority of research was conducted in the financial industry, including banks and insurance companies (Harvey *et al.*, 2020). In addition, previous studies rarely investigated the impact of ERM deployment on non-financial performance metrics (Pérez-Cornejo *et al.*, 2019). In Jordan particularly, the adoption of risk management is still in its infancy (Silva *et al.*, 2018). Furthermore, the ERM is still a slightly new concept (Silva et al., 2018). Lastly, most previous research has employed a dummy variable for measuring the ERM implementation (Ojeka *et al.*, 2019). However, risk governance generates a culture that promotes risk awareness within an organization and delineates responsibilities, authority, and responsibility for supporting the risk management process (Erin *et al.*, 2020b). The empirical studies that measure risk governance are limited (Zhang, 2021).

According to Frazier *et al.* (2004), moderators can be offered when previous studies show weak or inconsistent results related to the association between an independent and a dependent construct. In the current study, it is noticed that ERM performance shows mixed results (Jaber *et al.*, 2024). Previous studies have assessed various risk governance factors such as moderators, including the board of directors, the risk management committee, and IT systems across various industries (Saeidi *et al.*, 2019; Malik *et al.*, 2020). The existence determinants of RG in different types of industries have shown that RG is accepted in improving risk management effectiveness within all organization types. However, based on the researcher's investigation, the potential moderating role of the RG has not been thoroughly examined, especially determinants like BoDs, RC, CRO, and IT systems. Moreover, most of the studies were conducted in financial institutions. Consequently, this study aims to contribute by analyzing the impact of the RG as a moderator. In other words, the impact of ERM deployment on non-financial performance is based on CRO, Risk committee, Board of directors and IT system. A suitable fit between ERM and RG is required to improve non-financial performance. In addition, to the study of Hassan *et al.* (2021), it is proposed that additional studies should consider how moderator variables affect ERM-performance relation. The prospect of moderating variables between ERM and value creation has produced limited research from scholars (Farrell & Gallagher, 2019). Thus, the current study intends to investigate the ERM implementation using the COSO framework and its effect on non-financial performance moderated by risk governance including BoDs, RC, CRO and IT systems.

2. Literature Review

ERM is increasingly gaining acceptance among businesses and institutions globally, as it facilitates the identification, control, exploitation, and monitoring of risks from various sources to boost the long-range and short-range values of the interested parties (Saeidi *et al.*, 2019). Furthermore, it helps mitigate both direct and indirect expenses related to financial distress faced by a company, particularly during a financial crisis (Adhariani, 2022). Based on previous investigations, firms employing ERM demonstrate high levels of revenue and expense efficiency (Grace *et al.*, 2015). A study conducted by Nasr *et al.* (2019) showed a positive and significant correlation between the implementation of ERM and Tobin's Q ratio. However, no such significant association was found between ERM implementation and ROE. For instance, the ERM strategy affects a firm's long-term performance and not its short-term success. Similarly, Iswajuni *et al.* (2018) examined the impact of ERM on the firm value in manufacturing firms that are listed on the Indonesian Stock Exchange, as proxied by Tobin's Q. The results indicated that ERM has a substantial beneficial impact on company value. Conversely, Nasr *et al.* (2019) found that ERM influences ROA but does not impact Tobin's Q.

On the other hand, based on previous studies, some determinants strengthen RG's effectiveness in organization. Those main RG determinants include CRO, RMC, Board of Directors, and IT system. Studies varied since some examined the relationship between BoD size, CRO appointment, and risk-taking (Najwa *et al.*, 2019), while other studies investigated the CRO member of RC, CRO presence, CRO financial experience, RC existence, and its effect on bank performance. Besides that, previous studies were conducted in different types of industries including non-financial (Shivaani, 2018) and financial organizations (Abid *et al.*, 2021). However, most RG studies were conducted in the financial sector and this gap is supported by Shivaani (2018). In addition, based on the researcher's review, it was found that most studies investigated the impact of RG on performance or risk-taking behavior by improving and enhancing the risk management process. However, a limited number of studies have investigated the moderating effect of risk governance on the relationship between ERM implementation and performance in the industrial sector.

COSO framework: In 2004, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed the ERM Integrated Framework. ERM is defined as "a strategic process that engages an entity's board of directors, management, and various stakeholders, implemented throughout the entire organization." This process enables the detection and handling of potential events that could influence the organization's objectives. Furthermore, it connects risk management with the organization's risk appetite to guarantee the reasonable achievement of its objectives. Moreover, the most recent COSO ERM Framework was published in 2017 after the 2004 edition (COSO, 2017). This approach presents a unique perspective, highlighting that ERM is no longer primarily concerned with mitigating risk to an acceptable level. Rather, it is considered an important factor in formulating strategies and recognizing opportunities to attain value (COSO, 2017). COSO frameworks of 2004 and 2017 can be traced back to the COSO Internal Control Framework which is subsequently utilized by numerous large firms globally for internal control systems to effectively manage the organization (Alijoyo & Norimarna, 2021).

Furthermore, the COSO standard states that risk management is not an ordered procedure in which each component is after another one. In contrast, it is a wide-ranging and cyclical process in which any element has an immediate and direct influence on others (COSO, 2004). The following ERM stages are derived from COSO, 2004: (1) *Internal environment* which consists of subcomponents including risk appetite, risk management philosophy, and risk culture; (2) *Objective setting* where an organization must clearly define its objectives before analysis of risks, which includes strategic, operations and reporting objectives where those objectives should be compatible with risk appetite; (3) *Event identification* that identifies the events resulting from an internal or external component that may have a good or bad effect on the organization; (4) *Risk assessment* which is the process that evaluates the likelihood and impact of the event if it does occur; (5) *Risk response* which depends on the level of risk appetite that the organizations can implement based on one of the four risks treatments strategy (Susilo & Kaho, 2018) which are Avoidance, Mitigation, Transfer or Acceptance; (6) *Control activities* which are also referred to as internal or management controls that enhance the effectiveness of risk response actions by adopting mainly two components of policies and procedures; (7) *Information and communication* which means that related information must be identified, captured and communicated to staff in order to help them fulfil their role and responsibility regarding ERM; and (8) *Monitoring and evaluation*

which is the process in monitoring the control mechanisms, reviewing indicators, and periodically measuring the progress and deviations from the risk management plan (Mukhlis & Damayanti, 2021).

Risks Type: Risks, described as uncertainty affecting an organization's achievement of objectives, have potential consequences that may be either favorable or unfavorable (Saranza *et al.*, 2024). A thorough understanding of the various risks impacts the institution by evaluating the severity of risks and selecting the appropriate risk management strategy. Thus, firms effectively manage enterprise-wide risk and attain the desired performance (Perera *et al.*, 2022). Furthermore, risks must extend beyond the assessment of regulatory, legal, and financial risks to examine internal risks (documentation, business processes support, and information technology,) and external risks (social, political, governmental, economic, and environmental).

Based on COSO (2004), different kinds of risks are encountered by businesses including operational, strategic, financial, reputational, and compliance risks. The strategic risk impacts the capability of attaining the objectives of the organization, while operational risk impacts the ongoing processes. Similarly, according to Wikipedia (2024), operational risks are defined as the risk of loss that results from insufficient processes, systems, and people or from outside events. Meanwhile, compliance risk happens because of inconsistency in the rules and regulations of the government and the partner organizations. Furthermore, financial risk happens when assets are lost from natural disasters and thefts. Lastly, reputational risk arises when generally the perceptions of the institution name, the qualifications given, and its operations are considered negative (Burnaby & Hass, 2009).

Risk Governance as Moderator: According to Stein *et al.* (2019), RG is defined as a framework that enables management and the board of directors to oversee a company's risks and manage them within the established risk limits. Part of the previous literature on risk governance showed the need to appoint a risk committee. RC is defined as a subcommittee of the board, mainly concerned with risk management (Nguyen, 2022). Another crucial factor of risk governance is the invention of the CRO. CRO is referred to as a specialized managerial position, whose responsibility is risk management coordination (Erin *et al.*, 2020a). In addition, it evaluates the progress of risk management efforts and assists other managers in reporting relevant risk information throughout the entire organization for both upward and downward directions, as well as across other departments, to ensure effective implementation of ERM (Erin *et al.,* 2020a). Lastly, according to Erin *et al.* (2020a), IT systems considered RG as a determinant that promotes risk information transparency. For instance, an effective computerized risk management system that performs independent risk evaluations within the organization has become a must.

In addition, based on previous research that studied RG as a moderator, like those done by Malik *et al.* (2020) and Rustiarini and Suryandari (2021), the significance of the risk committee as a moderator has been investigated. In contrast, more research has concentrated on the role of the board of directors (Ping & Muthuveloo, 2015). Meanwhile, Saeidi *et al.* (2019) examined IT as a moderating variable. However, Malik *et al.* (2020) urged further research to investigate the significance of CRO reporting as a moderator in ERM performance relations.

Risk Committee presence: The board risk committee is a subcommittee of the board that concentrates only on risk management (Nguyen *et al.*, 2019). Also, RC indicates a board's dedication to proficiently managing risks (Abid *et al.*, 2021). In addition, RC plays a role in mitigating compliance risk by adhering to codes, regulations, or shareholder demands (Nguyen & Dang, 2022). According to previous studies (Jia & Bradbury, 2020; Kacem & El Harbi, 2022), firms with an RC perform better than other firms. Moreover, board committee affects the taking risks in banks. Besides, it improves bank-level risk governance by integrating an ERM approach and making recommendations on risk strategy, appetite, and tolerance level; thus, promoting an organizational risk awareness culture (Malik *et al.*, 2020). Furthermore, the study done by Aljughaiman and Salama (2019) indicated that a more robust independent RMC can enhance the risk management process. In addition, Bhuiyan *et al.* (2020) found that risk committees can minimize bank risk. Abdullah and Shukor (2017) concluded that an independent risk committee helps mitigate financial fraud, particularly in large corporations. Similarly, Amoozegar *et al.* (2017) found that the existence of a specialized risk committee influences a bank's operational and stock price performance both during the crisis and in non-crisis times. Furthermore, de Villiers *et al.* (2022) concluded that dedicated RMCs oversee environmental risks and enhance sustainability performance.

Chief Risk Officer Presence: According to COSO (2004), the purpose of CRO's role is to work closely with other managers to carry out successful risk management practices by facilitating the sharing of key risk information throughout the organization. Furthermore, the existence of CRO on the executive committee indicates that risk management is prioritized within the organization (Magee *et al.*, 2017). Additionally, it ensures that the board remains consistently informed about the latest changes (Agnese & Capuano, 2020). The study done by Erin *et al.* (2020a) claimed that the monitoring provided by a CRO guarantees a robust risk governance framework. Similarly, Beasley *et al.* (2005) believed that the CRO can act as a key element in the formulation of risk management frameworks, analyses, and policies. Likewise, Agnese and Capuano (2020) showed that the presence of a CRO can mitigate bank risk. Conversely, institutions where the CRO possesses limited authority result in higher risks and reduced performance (Amoozegar *et al.*, 2017).

Board of Director Gender Diversity: According to agency theory, the board of directors refers to one of the internal monitoring mechanisms that protect the interests of shareholders (Meckling & Jensen, 1976). It is considered the highest decision-making body that plays a crucial role in overseeing effective governance (Latif *et al.*, 2022). For instance, the board of directors has the responsibility to define the firm's goals, tactics, strategies, and levels of risk, establishing company policies (Bussoli *et al.*, 2022). Furthermore, Pierce and Goldstein (2018) and Nguyen and Dang (2022) concluded that the board's primary responsibilities include managing enterprise risks, creating the firm's risk policies, articulating the risk appetite, defining the limits for risk-taking, and evaluating the efficacy of the overall risk management techniques and assisted by RMC through frequent reporting of various risks, risk profiles, risk levels, and patterns to the BOD (Karyani *et al.*, 2019). Based on a previous study, Nirino *et al.* (2022) revealed that the company's BoDs play a pivotal role in performing sustainable practices to stakeholder demands and legal requirements. In addition, Al-Jaifi (2020) investigated the relationship between board gender diversity and banks' non-financial performance in the ASEAN industry. The study concluded that board gender diversity positively affects corporate governance performance, but it has no impact on the bank's environmental and social performance. Similarly, Shakil *et al.* (2020) and Disli *et al.* (2022) found a significant positive relationship between Body diversity and non-financial performance.

Risk Technology: Data, on its own, is not inherently valuable; it requires tools to transform it into knowledge and support decision-making (Dubey *et al.,* 2020). This is especially true in the digital age, where data are considered a key asset for modern enterprises. Technological advancements have significantly enhanced the ability to collect data, process information, and generate knowledge beyond human limitations (Al Shraah *et al*., 2021). According to COSO (2004), to achieve ERM objectives within the scope of risk management, the appropriate data must be "determined, gathered, and communicated in a form and time frame that enables individuals to fulfill their responsibilities" while eliminating existing redundancies in risk management activities through the implementation of an integrated framework as supported by an IT platform. In organizational risk management, information must be available throughout the organization as well as presented in the requested format and timeframe (Vitolla & Rubino, 2014). Furthermore, it must be integrated across both strategic and operational tiers of the organization to aid managers in comprehending and evaluating the current wide variety of internal and external threats (Secretariat, 2001). Furthermore, the information must be appropriate, consistent, reliable, and updated (Mitterbaur *et al.,* 2016). Consequently, technologies are considered essential to the success of risk management initiatives (Oliveira et al., 2018), where decentralized risk management cannot be handled without IT support (Gleißner *et al.,* 2022).

ERM and Organizational Performance: A previous study investigated the effect of ERM and firm performance within financial and non-financial listed firms on the Ghana Stock Exchange and also considered the size of the firm as a moderator variable (Horvey *et al.*, 2020). The study found that ERM has a positive relationship with firm performance for both financial and non-financial firms. In contrast, Otero González *et al.* (2020) showed that ERM is not associated with a change in the financial performance of Spanish companies. Similarly, Glowka *et al.* (2020) took into consideration the size of the firm (small and medium size firms) and the author found that ERM does not directly influence financial performance indicators. Traditionally, researchers have focused on financial performance as a return on investment or net earnings (Hussain & Hoque, 2002). However, with increasing competition in the business environment, other aspects of performance should also be considered (Kaplan & Norton, 2005) such as reliability, quality, time-to-market, new production introduction, order/shipment information, increased customer service, efficient capital deployment, delivery dependability,

flexibility, customer satisfaction, and business efficiency (Tracey *et al.*, 1999). Previous studies also showed that ERM implementation has a substantial impact on competitive advantage, particularly when moderated by information technology (Saeidi *et al.*, 2019). In addition, Pérez-Cornejo *et al.* (2019) found that ERM positively influences corporate reputation. Furthermore, ERM is considered a major factor in attaining organizational goals and wealth creation based on a study done by Kwateng *et al.* (2022).

3. Significance and Contribution of Research

This research intends to conduct further study on ERM specifically by selecting manufacturing firms in Jordan. The researchers expect that the developed framework of this study can assist and facilitate the ERM adoption process for the manufacturing sector by helping to identify the gaps between their current practices and their weaknesses. The need for an effective ERM implementation in the Jordan manufacturing sector is important to survive and strive in the international competitive uncertain and risky market. Furthermore, manufacturing firms pay more attention to risk governance that affects ERM non-financial performance relation. In particular, investing in risk technology affects the effectiveness of ERM and improves the non-financial performance of the organization.

The current research's conceptual model combines RG which includes Bod, RC, CRO, and risk technology as moderators that modify the relationship between ERM and non-financial performance. This notes the role that ERM contributes to non-financial performance, as well as RG as a moderator that supports ERM implementation to improve non-financial performance. Previous studies have shown mixed results about the effect of ERM on firm performance. Thus, to make a theoretical and practical contribution to the body of knowledge that is already in existence, this study looks into the theoretical contribution by analyzing the relationship between ERM and its impact on non-financial performance in particular. It also looks into the role of RG as a moderator.

The current investigation expands upon the research conducted by Saeidi *et al.,* (2019) which recommended studying other intangible factors as moderators in the relationship between ERM performance. Moreover, that study only considered competitive advantage while this study suggests including images, reputation, and customer satisfaction besides competitive advantages. Secondly, it extends the investigation done by Malik *et al.,* (2020) which suggested future studies to investigate the importance of other factors that moderate ERM and performance besides risk committee. Third, this study uses all eight COSO components of ERM in the implementation; however, previous studies only considered its adoption as a dummy variable or its implementation by a simple question (Anton, 2018; Eastman & Xu, 2021). Next, it expanded Pérez-Cornejo *et al.'s* (2019) study which recommended examining other non-financial performance indicators. Fifth, the majority of previous studies were conducted among developed countries, while the present study extends the generalizability of such research into the context of Jordan. Lastly, most ERM and risk governance studies were conducted on financial institutions while few studies were done in manufacturing firms. This study then addresses the gaps in previous research that have not adequately been explored.

4. Conclusion and Recommendations

The prior studies on ERM show many weaknesses and limitations, particularly in the study objectives and population. Consequently, additional research that explicitly focuses on the Jordanian industrial context remains necessary. The study is conducted to examine the opportunities and risks faced by manufacturing organizations in the context of uncertainty and competitive business environments. Moreover, the article also highlighted several benefits that effective ERM implementation may provide to manufacturing companies. These advantages encompass improved threat mitigation and greater opportunity exploitation, resulting in increased customer satisfaction, and a strengthened image and reputation, which subsequently ensures competitive advantages. Secondly, it improves risk awareness and risk culture while integrating risk planning with strategic planning. Third, it enhances non-financial performance in Jordanian manufacturing by improving the effectiveness and efficiency of resource use in achieving objectives. Fourth, it enables firms to accept greater risk, capitalize on diversification, and mitigate inefficiencies by the distribution of risks across other departments or sectors. Lastly, the improvement of internal communication and the minimization of information asymmetries are achieved, which enables a more precise decision-making process.

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The Influence of Basic Psychological Needs on Insurance Agencies Performance

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Abstract: The fulfilment of Basic Psychological Needs (BPNS)—autonomy, competence, and relatedness—has become a crucial factor influencing employee well-being and corporate performance across all sectors. This study examines the influence of Basic Psychological Needs (BPNS) on employee motivation and performance in insurance companies based on Self-Determination Theory (SDT). Despite substantial research on BPNs in sectors including education and healthcare, their influence on the insurance industry, especially in Malaysia, remains inadequately investigated. The findings indicate that meeting these needs can cultivate a supportive work environment, alleviate workplace difficulties, and enhance employee engagement and organizational efficiency. This research fills the literature gap by contextualizing the significance of BPNS concerning the performance of insurance agencies, highlighting the relationship between psychological well-being and firm performance. This study systematically reviews current studies to highlight the possibility of utilizing BPNS satisfaction to improve staff retention, satisfaction, and productivity, fostering insurance companies' competitive growth.

Keywords: *Autonomy, competence, relatedness, performance, insurance agencies.*

1. Introduction

Fundamental components of human motivation and well-being are basic psychological needs, as articulated in Self-Determination Theory (SDT). Three basic needs—autonomy, competence, and relatedness—are essential for promoting psychological health and improving overall well-being, as per SDT (Chang et al., 2015; Martela et al., 2023). Autonomy is the desire to feel in control of one's actions and decisions, competence is the desire to feel adequate in one's activities, and relatedness is the desire to feel connected to others (Chang et al., 2015; Martela et al., 2023). Across various populations and contexts, research consistently demonstrates that satisfying these needs is associated with positive psychological outcomes. The importance of basic psychological needs (BPNS) is well-documented in various fields, particularly organizational psychology, education, and health. The Self-Determination Theory (SDT) framework posits that the satisfaction of three basic psychological needs—autonomy, competence, and relatedness—is crucial for fostering motivation, enhancing well-being, and promoting optimal functioning in individuals (Broeck et al., 2016; Padilla-Angulo et al., 2024). Thus, satisfying basic psychological needs—autonomy, competence, and relatedness—is vital in enhancing employee motivation and performance within insurance agencies. Insurance agencies can improve employee satisfaction, reduce turnover, and ultimately enhance organizational effectiveness by fostering an environment that supports these needs.

Background of Study

The significance of basic psychological needs (BPN) contributes to improving individual well-being, motivation, and overall performance in diverse circumstances. Self-determination theory (SDT) posits that satisfying three essential psychological needs—autonomy, competence, and relatedness—is crucial for promoting intrinsic motivation and psychological well-being (Campbell et al., 2017; Ni et al., 2023). The notion of Basic Psychological Needs Satisfaction (BPNS) offers significant insights into the performance and well-being of personnel in insurance firms. In insurance companies, addressing the essential psychological needs—autonomy, competence, and relatedness—can profoundly influence employee motivation, job satisfaction, and overall organizational efficacy.

Autonomy is essential, enabling employees to exercise discretion and make decisions concerning client encounters, policy recommendations, and problem-solving approaches. When empowered to manage their tasks autonomously, employees are more inclined to exhibit initiative and dedication to their positions. Competence is crucial, as staff at insurance agencies must feel equipped to achieve performance objectives, manage intricate policy queries, and adjust to changing market dynamics. Comprehensive training programs,

resource accessibility, and constructive feedback are vital for cultivating a sense of competence. Relatedness is an essential requirement, as the nature of the insurance business frequently necessitates collaboration with colleagues, clients, and stakeholders. Establishing a friendly and interconnected workplace fosters employee appreciation and cultivates a sense of belonging, enhancing cooperation and trust.

Thus, disregarding these psychological needs can result in diminished employee morale, disengagement, and heightened turnover rates—factors that directly affect an agency's efficacy and client satisfaction. By tackling BPNS among their personnel, insurance firms can cultivate a more motivated, resilient, and high-performing team.

The Component of The Basic Psychological Needs

The Basic Psychological Needs Satisfaction (BPNS) paradigm is fundamental to Self-Determination Theory (SDT), highlighting the universal psychological needs vital for human development, motivation, and well-being. Autonomy, competence, and relatedness are essential for promoting healthy functioning in diverse areas of life, such as education, employment, athletics, and interpersonal relationships. When these demands are satisfied, individuals are more inclined to experience intrinsic motivation, increased engagement, and psychological well-being. Conversely, their displeasure or neglect may result in reduced motivation, stress, and maladaptive consequences. Consequently, BPNS has been extensively investigated as a theoretical framework for comprehending human behavior, with possible applications across various domains, including organizational development and employee performance.

Autonomy is the desire to feel in control of one's actions and decisions. It incorporates the aspiration for autonomy and the capacity to make decisions consistent with one's values and interests. Research suggests that individuals are more inclined to participate in intrinsically motivated activities when they have autonomy, which results in increased satisfaction and well-being (Avcı & Güngör, 2023; Yu et al., 2019). For example, Yu et al. (2019) Discovered that medical students who perceived their autonomy as being supported demonstrated increased motivation and engagement in their academic pursuits. Chen and Wu (2022) Also, emphasizes the importance of autonomy in developing mental health and psychological growth.

Competence is the desire to experience a sense of effectiveness and capability in one's endeavors. It entails the capacity to engage with the environment and the perception of mastery effectively. Research has demonstrated that the satisfaction of the competence need is associated with improved performance and reduced fatigue in various fields, such as education and sports (Sadoughi & Markoubi, 2018a). For instance, Li et al. (2019) research emphasizes that athletes who perceive themselves as competent are less susceptible to stress and exhaustion, emphasizing the significance of this requirement in high-pressure environments. Additionally, Sadoughi and Markoubi (2018b) discovered a negative correlation between academic exhaustion and competence satisfaction among medical students, suggesting that satisfying this need can alleviate feelings of inefficacy.

Relatedness concerns the necessity for social connections and the sense of being cared for by others. It indicates the aspiration to establish meaningful relationships and experience a sense of inclusion within a community. Klassen et al. (2012) Found that teachers who establish strong relationships with their pupils are more invested in their work, which implies that satisfying this need can improve professional satisfaction and effectiveness. Furthermore, Tian et al. (2018) Discovered that children's prosocial behaviors are substantially influenced by their satisfaction with a sense of relatedness at school, suggesting that satisfying this need promotes positive social interactions.

The interplay of these three requirements is essential for overall well-being. Those who report higher levels of life satisfaction and lower levels of psychological distress are more likely to report satisfaction in autonomy, competence, and relatedness (Šakan et al., 2020). In contrast, the frustration of these needs can result in adverse consequences, including burnout, melancholy, and increased anxiety (Britton et al., 2014; Liu et al., 2022). Britton et al. (2014) Have discovered that the satisfaction of basic psychological needs is inversely related to suicidal ideation in young adults, thereby emphasizing the protective role that these needs play in mental health.

In conclusion, agency performance is significantly affected by fulfilling the basic psychological needs of autonomy, competence, and relatedness, as delineated in the Basic Psychological Needs Satisfaction (BPNS) framework. Prioritizing and fulfilling these requirements within organizations or teams establishes a basis for enduring motivation, diminished stress, and adaptive performance. Conversely, disregarding these psychological needs may lead to less motivation, increased stress levels, and decreased agency efficacy. Consequently, cultivating an environment that addresses these core requirements is crucial for enhancing individual and collective performance, securing sustained success, and advancing well-being across several life domains.

Problem Statement

The absence of studies especially addressing Basic Psychological Needs Satisfaction (BPNS) within insurance firms constitutes a notable deficiency in the literature. Although an increasing number of studies investigate BPNS in fields like education and healthcare, the insurance industry is still inadequately examined in this regard. The disparity is troubling, considering the essential function BPNS serves in employee motivation, engagement, and general well-being. While numerous studies have examined psychological needs in professional settings, few have particularly focused on insurance companies. Wijerathna et al. (2023) Examine psychological elements affecting employee engagement in insurance companies; nevertheless, their research does not thoroughly explore the unique psychological needs identified by Self-Determination Theory (SDT). Moreover, Goodboy et al. (2017) Emphasize that workplace bullying might obstruct the satisfaction of basic psychological needs, resulting in diminished intrinsic motivation. Jones et al. (2020) Similarly illustrates that fulfilling these demands is a crucial determinant of professional well-being for early childhood educators. Weinstein et al. (2010) Also demonstrates that fulfilling basic needs is crucial for well-being in professional environments. However, without targeted research on insurance agencies, the distinct obstacles and potential for addressing these demands within this sector remain ambiguous.

The lack of empirical research on BPNS within insurance companies constrains the comprehension of how these demands affect employee results in this particular setting. Although research conducted by Collie et al. and Slemp et al. offers valuable perspectives on need satisfaction within educational and organizational contexts, it does not explicitly pertain to the insurance business (Collie et al., 2015; Slemp et al., 2018, 2021). Thus, it is essential to evaluate the Basic Psychological Needs Satisfaction (BPNS) to comprehend consumer behavior in the life insurance market, increase insurance penetration, and promote financial inclusion. Insurers can surmount obstacles such as mistrust or a lack of financial literacy, design products that are culturally sensitive and accessible, and cultivate a positive attitude toward life insurance by addressing these psychological needs. This can enhance Malaysia's financial system and contribute to its economic development by increasing the penetration rate. The insurance sector's long-term sustainability and broader societal engagement are guaranteed by the customization of policies to address these requirements.

Besides, the absence of focused research may result in insurance companies overlooking critical findings that could improve employee engagement and decrease turnover rates. Thus, the absence of research examining BPNS in insurance agencies constitutes a notable deficiency in the literature. Considering the significance of basic psychological needs for employee motivation and well-being, additional research is necessary to investigate how these needs are perceived and satisfied within the insurance sector in improved organizational processes and increased employee satisfaction and performance.

2. Insurance Agencies in Malaysia

Insurance agencies in Malaysia are pivotal in the financial sector, offering vital services that safeguard individuals and enterprises from diverse hazards. The Malaysian insurance business has grown substantially, propelled by governmental initiatives and heightened public awareness of the significance of insurance coverage. This response consolidates pertinent results and ideas from the literature to elucidate the present condition of the insurance sector in Malaysia, emphasizing service quality, efficiency, and the influence of psychological variables on consumers and providers.

The insurance sector in Malaysia significantly impacts the nation's economic framework, especially with its Gross Domestic Product (GDP). The correlation between insurance penetration and GDP growth is essential for

comprehending the nation's economic progress and financial stability. This response consolidates pertinent literature to highlight the significance of the insurance business in Malaysia's economy, emphasizing its GDP contribution, the problems encountered, and the prospects for future expansion. The insurance sector is essential to Malaysia's financial system, facilitating economic growth through risk management solutions and savings mobilization. Masud et al. (2019) Assert that the life insurance market is a burgeoning industry in Malaysia, substantially influencing the advancement of the overall financial system. The insurance penetration rate, the ratio of total insurance premiums to GDP, is a crucial indicator of the industry's impact on economic growth.

Fadun et al. (2023) assert that insurance penetration rates are directly linked to GDP development, indicating that the demand for insurance goods generally rises as the economy develops. This link highlights the significance of a strong insurance sector in advancing Malaysia's economic goals. The functioning of the insurance industry is intricately connected to overarching economic conditions. Bao et al. (2018) emphasize that competition in the insurance sector is escalating owing to globalization and technological progress, requiring Malaysian insurers to modify their goods and services to maintain competitiveness. Economic growth, indicated by GDP, affects consumer behavior and the demand for insurance goods, with elevated income levels generally resulting in heightened insurance consumption. The elasticity of insurance demand may fluctuate, with higher-income demographics exhibiting reduced sensitivity to income-level variations.

Thus, evaluating the psychological needs of insurance agencies in Malaysia is crucial for enhancing their contribution to economic growth and financial stability. As essential contributors to the nation's GDP via risk management and savings mobilization, these agencies must adjust to changing market dynamics, technological progress, and heightened competition. Recognizing and fulfilling their needs—improving service quality, promoting innovation, and satisfying consumer expectations- can enhance efficiency, boost insurance penetration, and meet Malaysia's economic goals. This strategy strengthens the industry's resilience and competitiveness and improves its ability to protect persons and businesses, reinforcing its essential function in the financial ecosystem.

Insurance Industry and Penetration Rate

The insurance penetration rate in Malaysia is a vital metric for assessing the industry's growth and the population's engagement with insurance products. Penetration rate is measured by the ratio of total insurance premiums to the country's Gross Domestic Product (GDP), indicating the extent and scope of insurance coverage in the economy. Comprehending the determinants of insurance penetration is crucial for refining market tactics and augmenting consumer involvement. Malaysia's insurance penetration rate is comparatively low against worldwide benchmarks. Bank Negara Malaysia reported that the overall insurance penetration rate was roughly 4.8% in 2020, below the global average of approximately 7% (Bank Negara Malaysia, 2024). This signifies a substantial chance for expansion within the sector. Contributing factors to this low penetration include insufficient awareness of insurance products, cultural perceptions of insurance, and other financial safety nets, such as government healthcare subsidies (Al-Sanaani et al., 2022).

Numerous studies have found critical elements influencing insurance penetration rates in Malaysia. Aliagha et al. (2014) Discovered that the penetration of flood insurance in Johor was affected by homeowners' risk assessment and socio-economic factors, with a documented penetration rate of 34% in specific regions. This indicates that subjective risk perception significantly influences consumers' insurance purchasing decisions. Al-Sanaani et al. (2022) Note that dependence on government healthcare subsidies results in low adoption of private health insurance, as many Malaysians perceive no necessity for supplementary coverage. The correlation between economic growth and insurance penetration is extensively demonstrated. Fadun et al. (2023) Observe that a country's GDP increases with a heightened demand for insurance products, resulting in elevated penetration rates. This association is especially pertinent in Malaysia, where increasing income and economic advancement may elevate the demand for diverse insurance products. Nonetheless, the elasticity of insurance consumption relative to income growth differs, with higher income brackets exhibiting reduced sensitivity to fluctuations in income levels (Shaifuddin, 2020).

Notwithstanding the potential for development, the Malaysian insurance business faces numerous hurdles. Inadequate financial literacy, societal views regarding insurance as an extraneous cost, and the intricacy of

insurance products impede penetration rates (Mandia et al., 2023). Nonetheless, there exists potential for enhancement. Educational programs to raise awareness of insurance advantages and product improvements customized for various demographic groups could substantially improve penetration rates. The diminishing insurance penetration rates in Malaysia for 2022 indicate a decline in industry performance (Figure 1). The total penetration decreased to 5.0% from 5.3% in 2021, with both life (-5.1%) and non-life insurance (-7.1%) sectors contributing to the decline. This downward trend indicates inadequate success in acquiring or maintaining policyholders, highlighting market expansion and customer involvement difficulties. Although somewhat exceeding the Asia-Pacific average, the diminished penetration rate highlights stagnation or inefficiency in enhancing coverage and boosting policy adoption, eliciting apprehensions over the sector's competitiveness and durability.

Figure 1: Insurance Penetration Rate for Asia-Pacific, 2024 (Source: Swiss Re Institute)

Country	2022 penetration rate			2021 penetration rate			2021-2022 evolution		
	Life	Non-life	Total	Life	Non-life	Total	Life	Non-life	Total
Macau	19.1%	1.8%	20.9%	6.4%	0.6%	7.0%	198.4%	200.0%	198.6%
Hong Kong	16.6%	2.4%	19.0%	17.3%	2.3%	19.6%	-4.0%	4.3%	-3.1%
Taiwan	8.3%	3.1%	11.4%	11.6%	3.2%	14.8%	-28.4%	-3.1%	-23.0%
South Korea	5.4%	5.7%	11.1%	5.8%	5.2%	11.0%	-6.9%	9.6%	0.9%
Singapore	7.4%	1.8%	9.2%	7.5%	1.8%	9.3%	-1.3%	0.0%	-1.1%
Japan	5.9%	2.3%	8.2%	6.1%	2.2%	8.3%	-3.3%	4.5%	-1.2%
Thailand	3.4%	1.9%	5.3%	3.4%	1.9%	5.3%	0.0%	0.0%	0.0%
Malaysia	3.7%	1.3%	5.0%	3.9%	1.4%	5.3%	-5.1%	-7.1%	-5.7%
Australia	0.9%	3.3%	4.2%	1.0%	3.5%	4.5%	-10.0%	-5.7%	-6.7%
India	3.0%	1.0%	4.0%	3.2%	1.0%	4.2%	-6.3%	0.0%	-4.8%
China	2.0%	1.9%	3.9%	2.1%	1.9%	4.0%	-4.8%	0.0%	-2.5%
New Zealand	0.8%	3.0%	3.8%	0.8%	4.0%	4.8%	0.0%	-25.0%	-20.8%
Vietnam, Philippines, Indonesia, Bangladesh	1.6%	0.7%	2.3%	-	-	-	-	-	-
Sri Lanka	-	-	-	0.6%	0.6%	1.2%	-	-	-
Asia-Pacific Average (1)	3.0%	2.0%	5.0%	3.2%	2.0%	5.3%	-6.3%	0.0%	-5.7%

Previous Studies on Basic Psychological Needs

Prior research on Basic Psychological Needs (BPNS) and their influence on business performance has highlighted the importance of satisfying these needs to improve employee motivation, engagement, and overall organizational efficacy. Studies conducted under the auspices of Self-Determination Theory (SDT) have consistently demonstrated that fulfilling employees' psychological needs for autonomy, competence, and relatedness enhances their performance and organizational commitment. This document presents a literature review of pertinent studies examining the correlation between BPNS and organizational performance.

Ngwenya and Pelser investigated the influence of psychological capital on employee engagement, job satisfaction, and performance within Zimbabwe's industrial industry. Their research revealed that personnel with elevated psychological capital—defined by resilience, optimism, and self-efficacy—demonstrated increased engagement and job satisfaction, enhancing their performance (Ngwenya & Pelser, 2020). This study highlights the significance of psychological needs in cultivating a motivated workforce that enhances organizational performance. Baluku et al. (2018) investigated the influence of psychological capital on entrepreneurial results, highlighting that elevated psychological capital among micro-enterprise proprietors in

East Africa improved business performance. The research emphasized that confidence, resilience, and optimism are essential for identifying and capitalizing on business possibilities, correlating with fulfilling basic psychological needs (Baluku et al., 2018). This study indicates that satisfying psychological needs can improve business success and organizational effectiveness. Mitchell et al. (2012) examined the influence of perceived organizational support, distributive justice, and motivation on responses to new information technology. Their research demonstrated that when employees' psychological needs are fulfilled, they are more inclined to interact constructively with new systems and continue utilizing them, resulting in enhanced performance outcomes (Mitchell et al., 2012). This study demonstrates how satisfying psychological needs might improve employee adaptation and performance throughout organizational transitions.

Madden et al. (2017) Investigated the correlation between psychological contracts and organizational performance in family enterprises. Their research indicated that when firms fulfill individuals' perceived commitments, it results in improved individual contributions to organizational performance. This supports the idea that fulfilling basic psychological needs is essential for cultivating favorable employee attitudes and behaviors that promote organizational performance (Madden et al., 2017). Poon et al. (2006) Investigated the correlations between self-concept traits, entrepreneurial inclination, and firm performance. Their research revealed that entrepreneurial orientation, encompassing innovativeness and proactivity, influences the connection between self-concept qualities and company performance. This indicates that satisfying psychological needs associated with self-concept can improve business performance by augmenting entrepreneurial actions (Poon et al., 2006).

Baard et al. (2004) examined a self-determination theory model that connects employees' need satisfaction to performance outcomes. Their research has shown that employees' views of managerial autonomy support forecasted the fulfilment of their intrinsic needs, which subsequently enhanced their performance assessments and psychological well-being (Baard et al., 2004). This study emphasizes the direct influence of BPNS satisfaction on organizational performance. Avey et al. examined the notion of psychological ownership and its correlation with job outcomes. Their research indicated that psychological ownership, intimately linked to fulfilling fundamental psychological needs, favorably affects organizational citizenship behaviors and overall performance (Avey et al., 2010). This suggests that cultivating a sense of ownership among employees can improve their dedication and performance.

Consequently, Basic Psychological Needs (BPNS) studies highlight their significant impact on agency performance. When agencies prioritize meeting employees' needs for autonomy, competence, and relatedness, they cultivate increased motivation, heightened engagement, and superior service performance. This alignment enhances staff satisfaction and retention while improving the agency's overall performance and competitiveness in the market. The examined literature on Basic Psychological Needs Satisfaction (BPNS) offers ideas for mitigating low insurance penetration rates by highlighting autonomy, competence, and relatedness in employee and consumer interactions. Research indicates that satisfying psychological needs boosts employee motivation, performance, and engagement, enhancing customer service and increasing trust in insurance products (Avey et al., 2010; Baard et al., 2004). Consumer-focused tactics, including intuitive platforms and culturally attuned product designs, might mitigate mistrust and financial illiteracy, promoting enhanced policy adoption (Madden et al., 2017; Mitchell et al., 2012).

Moreover, cultivating resilience, optimism, and creativity inside firms can result in customized products and compelling client engagements, addressing varied customer requirements (Ngwenya & Pelser, 2020; Poon et al., 2006). Aligning insurance operations with BPNS principles enables organizations to augment consumer involvement, trust, and satisfaction, dramatically enhancing penetration rates and fostering industry growth. Thus, subsequent research should investigate these dynamics in greater depth, especially within insurance firms, to enhance comprehension of how BPNS influences organizational effectiveness across diverse cultural contexts and industry-specific constraints. This emphasis might assist organizations in modifying tactics that guarantee continuous expansion and enhanced client results.

3. Research Methodology

This study's methodology encompasses a library search and an extensive review of existing material. References are solely derived from the SCOPUS database to guarantee elevated academic credibility. SCOPUS was chosen for its vast interdisciplinary coverage, rendering it one of the largest and most comprehensive databases of peer-reviewed literature. It indexes many periodicals, conference proceedings, and book series, guaranteeing access to varied and high-caliber sources. Moreover, SCOPUS offers sophisticated instruments for citation analysis, author monitoring, and research trend detection, facilitating a more profound assessment of the literature's significance and influence. Its worldwide scope and focus on quality render it an optimal selection for obtaining robust and representative data for this research.

The preliminary investigation concentrated on the principal themes of autonomy, competence, relatedness, and performance. To maintain relevance, the analysis was confined to journal papers within social sciences, business, management, and accounting. Nonetheless, a weakness of this study is the only dependence on SCOPUS, which may constrain the diversity of findings and viewpoints included in the research.

4. Summary of Selected Literature

Based on the data searching in Scopus, there are 144 documents found related to ‘autonomy' AND 'competence,' AND 'relatedness,' AND 'performance,' which are limited to 2014 until 2025. This paper has summarized the documents based on the following results:

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TITLE-ABS-
KEY (autonomy AND competence AND relatedness AND performance ) AND PUBYE
AR > 2013 AND PUBYEAR < 2026 AND ( LIMIT-
TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "BUSI" ) ) AND ( LIMIT-
TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) )
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Table 1 encompasses previous research papers completed from 2014 to 2025. Despite comprehensive studies in sectors such as education, sports, healthcare, and corporate performance, there is a significant deficiency of studies about the insurance industry. Current research on motivation, including studies on frontline employees (Jung et al., 2023) and gamification in education (Lampropoulos & Sidiropoulos, 2024), demonstrates restricted relevance to the distinct challenges faced by insurance agencies, such as elevated employee turnover, fierce competition, and sales-oriented settings. Although research on leadership and organizational success offers significant insights, Moore et al. (2024) and Spieler (2024) seldom examine the unique dynamics of insurance agencies, including agent motivation and client relations. This study gap presents an opportunity to investigate customized incentive models, the satisfaction of Basic Psychological Needs (BPNS), and ways to enhance organizational performance in the insurance sector, especially in areas such as Malaysia with low market penetration rates. Thus, addressing this study gap may yield significant insights for enhancing human capital within the insurance sector.

Table 1: Summary of selected review from 2014-2024 (Source: SCOPUS)

AUTHORS	YEAR	AREA OF STUDY	FIELD/ INDUSTRY
ANNAMALAI ET AL. (2025)	2025	Higher student motivation in using ChatGPT in English learning.	Education
PEAT ET AL. (2024)	2024	Venture obsession with agentic relationships.	Entrepreneurial
TOMER ET AL. (2024)	2024	MAC-based intervention on athletes.	Sport psychology

TRIEBNER ET AL. (2024)	2024	High levels of stress and related mental health problems among medical students.	Medical
AVAKYAN ET AL. (2024)	2024	Flipped classroom (FC) effect on basic psychological needs and self-esteem.	Medical
ALTURKI ET AL. (2024)	2024	Affective learning involvement.	Education
RAO ET AL. (2024)	2024	Online video interview training program.	Job seekers
JUNG ET AL. (2023)	2024	Motivational orientation and service climate/ strength.	Frontline employee
DENG ET AL. (2024)	2024	Adoption on an e-learning platform (ELP)	Education
VISHWAKARMA ET AL. (2024)	2024	Workplace bullying	Professionals in education
KIAMOURI ET AL. (2024)	2024	Self-determined motivation and achievement goals.	Sport
GAO (2024)	2024	Motivation, mutually supportive, and functional event.	Gamification
POUPORE (2024)	2024	Learner engagement and directed motivational currents (DMCs).	Education
WANG ET AL. (2024)	2024	Informal English learning.	Education
	2024	Facilitating the effective execution of middle managers'	Firm performance
LAMPROPOULOS ET AL. (2024)	2024	Influence of gamification on students' learning outcomes and academic *performance*	Education
RAYA ET AL. (2024)	2024	Pre-match meetings	Sport
MOORE ET AL. (2024)	2024	Personal strengths at work in the morning are associated with different *performance* types throughout the workday.	Firm performance
DONNELY ET AL. (2024)	2024	The direct and indirect effects of coach transformational leadership (TL) on the current lives of socio-economically	Sport

Figure 2 depicts the annual trend in the quantity of documents generated or managed from 2014 to 2025. Between 2014 and 2016, the quantity of documents remained consistently low and stable, subsequently experiencing a significant surge in 2017. From 2018 to 2021, the pattern exhibits mild changes while maintaining relative consistency. Between 2022 and 2024, there is a notable rising trend, reaching a zenith in 2024 with the maximum quantity of documents. Nonetheless, 2025 exhibits a significant decrease, indicating an abrupt reduction in document production or management since it is the beginning of the year. This chart highlights phases of expansion and contraction over the years.

Figure 2: Number of papers published in Scopus from 2014 to 2025

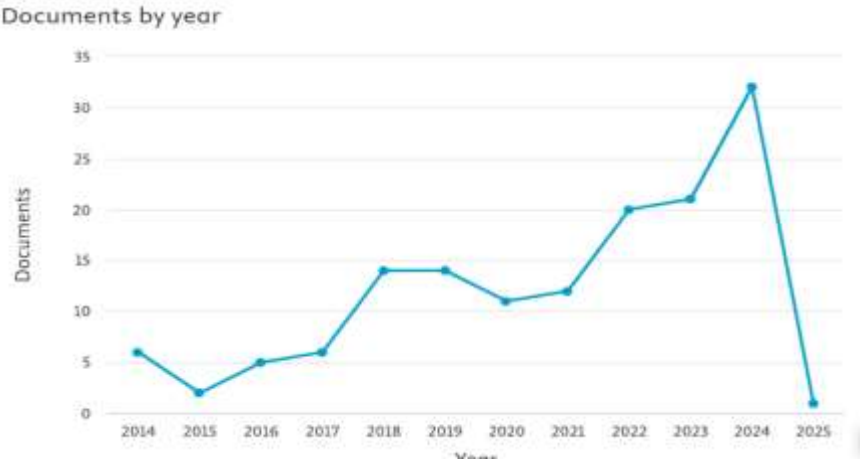


Figure 3 depicts the allocation of materials among different academic fields. The predominant share, 37.8%, is ascribed to Social Sciences, succeeded by Business and Management at 18.1% and Psychology at 12.8%. Additional significant contributions encompass Computer Science (8.7%), Arts and Humanities (4.9%), and Health Professions (3.5%). Medicine constitutes 3.1%, whilst Decision Sciences, Economics, and Engineering each provide lesser proportions, varying from 2.4% to 1.7%. The residual 5.2% is classified under the "Other" category, denoting less significant topics. This distribution underscores a significant concentration on Social Sciences, Business, and Psychology while exhibiting a more subdued emphasis on alternative disciplines.

Figure 3: Allocation of documents by subject area

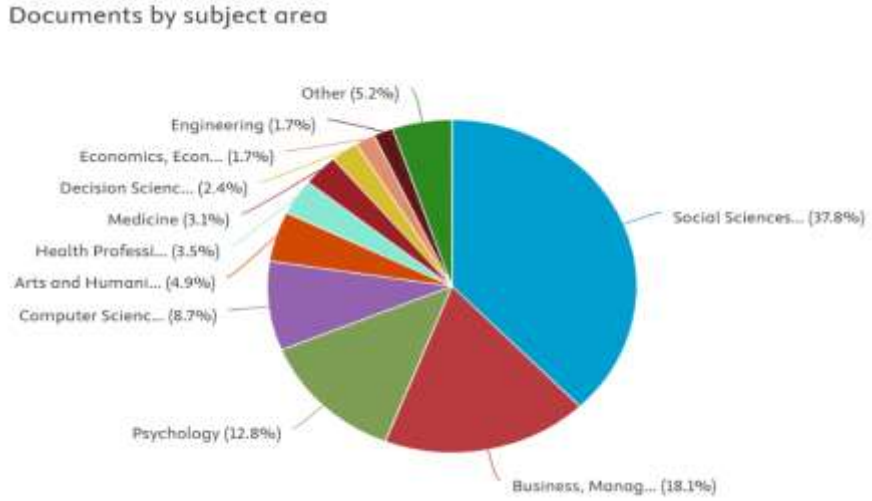
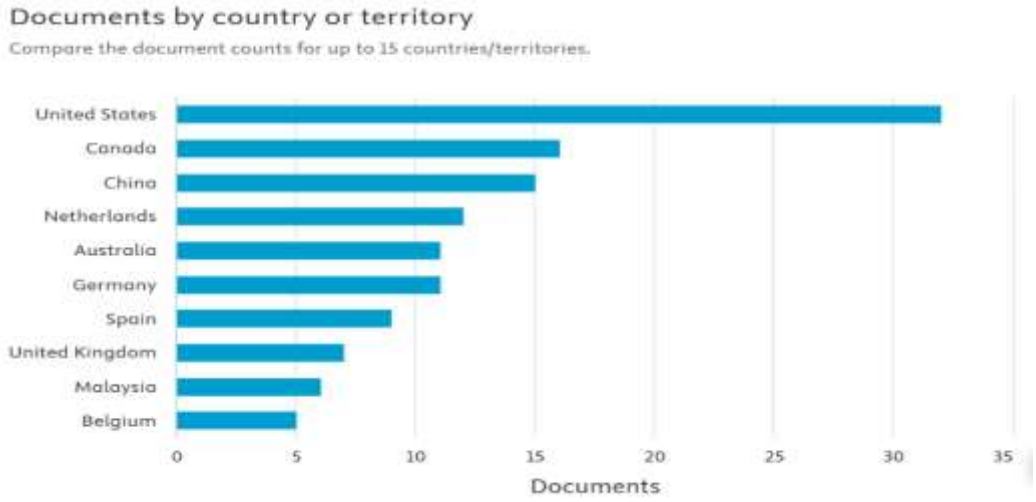
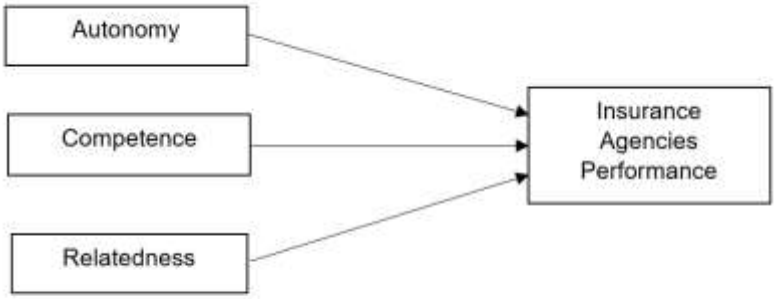


Figure 4 depicts the distribution of documents released by country or territory. The figure compares the quantity of papers generated or managed across different countries or territories. The United States dramatically surpasses others with the most significant number of documents, whereas Canada and China own comparable but lesser quantities. The Netherlands, Australia, and Germany constitute the subsequent tier, exhibiting moderate contributions. Spain, the United Kingdom, Malaysia, and Belgium provide fewer documents, completing the list. This distribution underscores the United States as a principal provider, with significant involvement from Canada and China, whereas other nations offer smaller but substantial amounts.

Figure 4: Distribution of documents released by country or territory



The Conceptual Framework of Basic Psychological Needs and Insurance Agencies Performance



The Basic Psychological Needs Theory

5. Conclusion

This study demonstrates that satisfying Basic Psychological Needs—autonomy, competence, and relatedness—are essential factors influencing employee motivation and organizational success in insurance companies. By fostering an environment that fulfills these psychological needs, insurance companies may reduce high turnover rates, enhance employee satisfaction, and bolster their competitive standing in the market. The findings demonstrate that BPNS satisfaction is essential for individual well-being and is a strategic instrument for improving organizational effectiveness. Research across diverse domains, such as education, sports psychology, business, and medicine, underscores the influence of BPNS on motivation, engagement, and performance. Research on student motivation and workplace bullying indicates that satisfying psychological needs might enhance participation and yield better outcomes (Annamalai et al., 2025; Vishwakarma et al., 2024). Implementing these concepts in insurance companies can promote employee performance, improve customer service, and increase consumer satisfaction and trust in insurance products. For insurance agencies in Malaysia, resolving BPNS helps mitigate industry difficulties such as low penetration rates and restricted consumer engagement. Insurers can provide more tailored and engaging products by emphasizing consumer competence, autonomy, and relatedness, enhancing penetration rates.

Future Research

This paper concentrates only on the theoretical part of the studies. Therefore, future research consists of empirical data and requires analysis to determine their relationship. Besides, basic psychological needs are important in the insurance industry as they will boost productivity and enhance the performance of the insurance agencies. Other than that, future studies should investigate tailored interventions that address

psychological needs in diverse organizational settings to enhance performance and maintain long-term sustainability in the insurance industry.

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Unlocking the Role of Digital Capabilities in the Resilience of Malaysian Small and Medium Practices (SMPs)

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Abstract: The current business environment is characterized by significant volatility and unpredictability due to technological breakthroughs, political dynamics and societal changes. These dynamics significantly affect both large corporations and small and medium enterprises (SMEs). In the current dynamic business environment, SMEs face numerous issues requiring resilience for survival and success. Key challenges SMEs face include insufficient financial resources, lack of skilled personnel and inadequate technological infrastructure**.** For SMEs to remain resilient, employers and employees must reach a certain technological competence and expertise. Therefore, this study aims to explore the relationship between digital capabilities and resilience of Malaysian small and medium practices (SMPs) as the impact of digital skills on the survival of the accounting sector is rarely studied. A total of 255 owners and managers of accounting firms registered in the Malaysian Institute of Accountants (MIA) database participated in the online survey. The results show a positive and moderate correlation between small accounting firms' resilience and digital capabilities' characteristics (human, collaborative, innovative and technological skills). The existence of small accounting firms in Malaysia depends primarily on their innovation capabilities. The findings suggest that digital capabilities are essential for the resilience of small accounting firms as they not only facilitate survival but also encourage development and innovation in times of crisis. It also transforms accountants' workflows and improves their efficiency, cost-effectiveness, accuracy and competitiveness. This finding implies that it is crucial for SMEs, to invest in digital capabilities to survive but also to remain competitive and growth potential during periods of disruption.

Keywords: *Digital capabilities, Digitalization, Small and Medium Practices (SMPs), Small and Medium Enterprises (SMEs), Resilience*

1. Introduction

In today's rapidly changing business landscape, small and medium enterprises face many challenges that require them to be resilient to survive and thrive. Resilience, which generally refers to the ability to adapt and bounce back from adversity, is a critical factor in determining the long-term success of SMEs. The resilience of small and medium enterprises is a critical factor in the economic prosperity of many countries, including Malaysia. In Malaysia, SMEs accounted for 38.2% (RM512.8 billion) of Malaysia's total Gross Domestic Product (GDP) representing 97.2 percent of all enterprises in the year 2020. The largest type of SME is micro-enterprises at 78.4%, followed by small enterprises at 20% and the least medium enterprises at 1.6%. In Malaysia, SMEs account for a significant portion of the business landscape, contributing to employment and economic growth (Halim et al., 2019). However, the global business environment poses numerous challenges for Malaysian SMEs, as they navigate issues such as business discontinuity, survival struggles, and the need to compete effectively in a globalized market. Despite their importance, Malaysian SMEs have faced challenges in making a significant impact on the national GDP, with their contribution declining from 34.6% in 2015 to 34% in 2016 (Yumboris et al., 2020) - a concerning trend that highlights the need for effective policies and support to enable SMEs to grow and innovate.

SMEs accounted for 96.9% (1,101,725 companies) of all businesses in Malaysia in 2023. This represents a decrease of 1.1% compared to 2022 and revealed a significant reduction in the registering average growth rate of 2.5% per annum during the period 2015-2023 (Department of Statistics Malaysia, 2023), The decline numbers of SMEs led to the issue of the resilience and survivability of Malaysian SMEs. While focusing on resilience is critical, it is also important to consider that not all SMEs may have the same capacity to adapt, as

some may struggle due to limited resources and support systems (Abdul Rahman et al., 2024).

According to a recent study, funding was the largest obstacle for about half of the SMEs surveyed, and a staggering 60% of them were unaware of the digital options available to them (Yuen & Baskaran, 2023). Additionally, the belief that implementing digital technologies is cost-prohibitive has deterred many SMEs from embracing these innovations, despite the potential long-term benefits (Yuen & Baskaran, 2023). While Malaysia has experienced significant advancements in connectivity, this has not yet translated into a widespread increase in web presence for businesses across most economic sectors. However, the services sector has demonstrated a stronger digital adoption compared to the rest of the economy, with over 30% of enterprises in this sector utilizing the Internet and experiencing substantial growth in their online presence since 2015. This suggests that SMEs in the wholesale and retail sectors have implemented a moderate level of technology to remain functional, indicating a gradual shift towards digital transformation.

Smaller accounting firms, also known as Small Medium Practices (SMPs), one of the categories under SMEs, are the most trusted advisers to small businesses - and they are a vital lifeline to a sector that is prone to business failures and poor governance. SMP firms offer services related to accounting, tax and other legal obligations. Due to the lack of knowledge, include advisory and consultancy services to meet the business needs of SMEs in an ever-changing business environment (Hasnah Haron et al., 2010). In Malaysia, the majority of SMEs and SMPs are micro-enterprises (almost 90.5%), and the majority of the country's revenue comes from these enterprises (Aziz et al., 2017; Han et al., 2018). The International Federation of Accountants (IFAC) (2016, p. 10) concluded that "SMPs are themselves SMEs and therefore share the same characteristics as other SMEs, such as limited resources, lack of staff and non-financial objectives of owners and employees (e.g., work-life balance)".

According to Dynamic Capability Theory (DCT), the core of the concept of dynamic capabilities is the ability of an organization to integrate, expand and reconfigure internal and external competencies to deal with rapidly changing circumstances (Teece et al., 1997). In other words, dynamic capabilities refer to an organization's ability to respond appropriately and quickly to a changing environment (Rozak et al., 2021). DCT argued that for businesses to be more successful, they need to implement competitive strategies, expand to new markets, develop unique talent, and internationalization (Arend, 2013). DCT emphasizes an organization's ability to adapt, integrate and reconfigure internal and external resources to respond to a rapidly changing environment. Studies show that SMEs and other companies that utilize dynamic capabilities (e.g. ambidexterity in operations and strategy) are better equipped to build resilience during economic crises (Iborra et al., 2020).

The resilience of SMEs is an important area of study, especially in emerging economies such as Malaysia where these firms face several unique challenges. Despite recognizing resilience as a key factor for organizational sustainability, the literature on the specific resilience strategies of SMEs in Malaysia is sparse. The bibliometric study from the SCOPUS database by Saidi et al., (2023.) on the survival and resilience of SMEs in an economic crisis revealed that only 22 publications from a total of 201 articles published worldwide on SME survival strategies during economic crises were published in Malaysia in 15 years between 1998 and 2023. This analysis highlights the gaps in existing research and emphasizes that further research in this area is needed. The continuous study on resilience is essential as being resilient is a fundamental quality of entrepreneurs that propels their output and enables them to continue operating in the face of adversity (Santoro et al., 2021). Therefore, from an economic perspective, more research on resilience is still required (Lisdiono et al., 2022; Parker & Ameen, 2018).

The existing literature on firm resilience has primarily focused on large organizations and sectors such as manufacturing, retail, technology, and finance (Herbane, 2013), with limited attention to small professional service firms. SMEs of different sizes and financial limitations have different challenges that contribute to increased vulnerability to disaster (Zighan & Ruel, 2021; Yi, 2020) as different firms adopt different business practices to sustain their performance (Haron & Hashim, 2015). Yi (2020) report on the COVID-19 effect on Malaysian SMEs revealed different experiences during the COVID-19. Larger SMEs may have excess cash reserves, while micro-enterprise SMEs struggle with shorter timeframes due to a lack of savings. Additionally, younger businesses are more likely to fail than more established ones, and the larger a company is, the more likely it is to experience distress (Abdullah et al., 2019). Thus, the main objective of this study is to deepen the

understanding of the relationship between digital capabilities, one of the dynamic capability elements and resilience in Malaysian small accounting firms (SMPs).

The next section covers the literature review followed by the research methodology of this study. The discussion of research findings and conclusion with the identified limitations and suggestions for future research are presented in the subsequent sections.

2. Literature Review

Digital capabilities are believed to significantly improve the resilience of accounting firms, enabling them to adapt and thrive in adverse circumstances. The use of digital tools and processes increases agility, optimizes decision-making and promotes knowledge sharing, which is essential for overcoming crises. Studies show that digital capabilities, such as human, collaborative, innovative and technical competencies — play a crucial role in strengthening organizations' risk management and ensuring business sustainability (Taib et al., 2024). In addition, digital transformation not only increases operational efficiency but also alleviates financial constraints and bridges the digital skills gap among SMEs (Yang & Ming, 2024). Digital capabilities have become a critical factor in strengthening the resilience of small and medium enterprises (SMEs), especially in the Malaysian environment where small businesses form the foundation of the economy.

Small and Medium Enterprises (SMEs) and Small and Medium Practices (SMPs) Resilience

In the dynamic and constantly evolving business landscape, SMEs face a multitude of challenges that jeopardize their survival and success. As the backbone of many economies, SMEs must cultivate their resilience, i.e. the ability to withstand and adapt to adverse circumstances. Robert et al., (2010) define organizational resilience as "the ability of an organization to maintain or recover an acceptable level of functioning despite disruptions or failures". The definition is further expanded to include "the dynamic nature of resilience as an interaction between the organization and the environment" (Williams et al., 2017, p.20). From this perspective, resilience means a skillful response to adverse events, not only after they have occurred, but also before, during and after. For example, Duchek, (2020) proposed three successive phases of the resilience process and claimed that resilient organizations respond not only to the past (reactive action) or current concerns (simultaneous action) but also to the future (anticipatory action).

Meanwhile, Zighan and Ruel (2021) define organizational resilience as the short- and long-term capabilities that organizations develop to face adversity, crisis, and uncertainty. These capabilities should also help organizations visualize and make decisions about their risks, as well as absorb change and persist over time. Overall, definitions of organizational resilience focus on responding to a current crisis and anticipating a potential threat. In the context of SMP resilience, this study adopts the definition of resilience (Saad et al., 2021,p.13) as "adaptability to disruption, growth (positive performance) and the ability to take advantage of business opportunities in a challenging business environment".

Furthermore, Yoo et al., (2018) believe that organizational and community resilience are inextricably linked. Consequently, organizational resilience is an important component of a society's ability to prepare for, respond to and recover from emergencies and crises. They added that organizational resilience can also be a source of competitive advantage and a driver of cultural adaptability. In other words, a significant problem for SMEs in emerging markets is their capacity to sustain resilience (Craighead et al., 2020). Prastian et al., (2022) considered business performance, sales and marketing strategy and adaptation, market adaptation strategies, digital impact experience in financial terms and digital impact experience in non-financial terms as indicators of resilience. Nevertheless, despite the significance of resilience, minimal study has concentrated on the surroundings of SMEs in developing nations (Saad et al., 2021).

Small accounting firms are referred to as SMPs in the accounting industry. SMPs seek to understand their client's businesses by using their accounting skills and business acumen (Perry & Coetzer, 2009). SMPs provide numerous professional services to SMEs: audit and assurance, accounting, tax counsel, and consulting services (IFAC, 2021). However, professional accountants are required to adhere to strict ethical requirements. Portraying this client's business must be within the established standards. SMP's survival may be jeopardized if they do not follow established standards (Malo et al., 2024).

Historically, the SMP-SME relationship has been viewed as being based on the requirement for SMEs to undergo statutory audits, and this necessary relationship has served as the foundation for future advice and support. Competency, trust, and proximity are key aspects of a healthy SMP-SME connection (Blackburn and Jarvis, 2010). SMPs can provide value-added services to their SME clients because they have such in-depth knowledge and understanding. On the other hand, SMEs rely on SMPs for advice and support. SMPs primarily advise SMEs on financial management, and the relationship between SMP-SME is influenced by important variables such as competence, culture, trust, and communication (Blackburn & Jarvis, 2010; Gooderham et al., 2004). As a result, SMPs' provision of specialized services (accounting and non-accounting) can be an important success factor, with many of these accounting practices focusing on specific industries and services.

To date, there is little empirical evidence on the resilience of Malaysian SMPs. The argument for SMPs' resilience is probably due to the size of the firms, as large firms can exploit economies of scale in production more effectively than smaller firms (Mittelstaedt et al., 2003). Smaller firms, on the other hand, are unlikely to be able to afford the investment required to compete with larger firms and therefore have to limit themselves to niches that are more suited to their capabilities (Garmestani et al., 2006). Analysis of data from the September 2021 Rosenberg survey, which spans two decades, shows that larger accounting firms are more successful because they have the staff, support systems and management support to offer a value proposition and service mix that is attractive to larger clients. Considering that the majority of Malaysian accounting firms are small, this study attempts to suggest some dynamic capability variables that can enhance the resilience of SMPs in today's environment. As SMPs play an important role as business advisors to their SME clients by providing them with continuous advice, helping them to remain solvent, connecting them with government programs, offering emotional and practical support, and otherwise advancing their efforts to stay in business. Given the importance of SMPs to SMEs as their chosen source of business support services, it is critical for SMPs to thrive (Ambilichu, 2017).

The problem of SMP resilience can be observed worldwide. It appears that small business management has not yet grasped the concept of enterprise risk and risk management. Some small businesses are unable to recognize the external business risks involved and have not developed a risk management system to manage these business risks (Kurniawan et al., 2021). Blackburn and Jarvis (2010) contend that the accountancy profession is transforming due to shifts in the market and regulatory landscape across various jurisdictions. Nevertheless, SMPs may require adjustments to their competencies, methodologies, and referral frameworks. The study by Ortiz et al., (2024) examines the critical function that SMPs can provide in the European sustainability framework, demonstrating that SMPs are equipped to undertake this new role, necessitating substantial retraining. Furthermore, SMEs tend to prefer engaging SMPs with extensive experience, as these professionals possess a superior understanding of sustainable practices and can provide suitable guidance to their SME clients.

The COVID-19 pandemic has shone a spotlight on the critical need for SME and SMP resilience. SMEs, with their limited resources compared to larger corporations, have been particularly vulnerable to the disruptive impacts of the crisis. However, some SMEs have managed to stay resilient and even find new opportunities amidst the chaos, often through the strategic use of digital technologies (Zighan & Ruel, 2021). Based on the previously mentioned arguments, it is time to investigate the acceptance of digital capabilities to the resilience of small accounting firms in Malaysia. Nonetheless, research on business resilience is highly desirable as there is an urgent need to study the unstable conditions under which small and medium enterprises (SMEs) operate (Ismail et al., 2022).

Digital Capabilities

Organizational capabilities are the various skills, processes, technologies, and human capabilities that make up an organization. They are usually developed internally and are therefore difficult for others to imitate. Bharadwaj (2000) extended the traditional concept of organizational capabilities to the information technology (IT) function of an organization and defined IT capability as "the ability to mobilize and deploy IT-based resources in combination or jointly with other resources and capabilities" (p. 171). It is assumed that digital technology promotes and facilitates service innovation. Since an effective competitive strategy is particularly important for service firms, they need to align their service innovation strategy with their business strategy to achieve better business performance. Mobilizing IT thus has significant implications for the economy's survival

as a whole, forcing firms to modernize and adapt to new rules of competition.

The IFAC Global SMP Survey 2018 revealed a worrying finding: more than a third (36%) of SMPs in Malaysia reported that they had not made any technological advances. This figure is higher than the regional average of 25% and the global average of 26% and could affect the competitiveness of Malaysian SMPs, especially as the digital economy and IR4.0 gain momentum. Previously, the KPMG report (*Annual Report 2018*, 2017) claims that digitalization will bring major changes to all businesses, but real-time reporting, cloud computing, or complex Big Data analytics are yet to play a major role for most businesses.

However, given the recent pandemic situation, all stakeholders need to change their current face-to-face way of working to working from home. The situation requires employers and employees to achieve a certain level of technological innovativeness. Napisah et al., (2024) studies indicate that digitalization significantly alters accounting methods, particularly in enhancing efficiency, transparency, and data accuracy. Therefore, with the adoption of new digital skills and technologies, digital transformation is taking place and business resilience is supported by digital transformation (Fitriasari, 2020). A sound digitalization strategy is crucial for achieving business goals and increasing the competitiveness of SME goods and services. Cultural diversity, diversity and social incentives all contribute to competitive advantage. A close examination of the digital infrastructure is essential during the digital transformation process. Consequently, with the help of an appropriate system resilience technology, a company can complete its digital capability and build digital resilience.

Previous studies have shown some relationship between digital capabilities and SME resilience. Copestake et al., (2024) posit that companies in more digitalized sectors incur lower revenue losses during economic downturns, implying that digital competencies bolster general economic resilience across diverse businesses, potentially including accounting. Digital capability substantially improves business resilience by positively influencing knowledge search, which partially mediates the connection between digital capability and resilience (Chen et al., 2023). In the accounting industry, Rumasukun, (2024) findings indicate that auditors' strategies to implement diverse adaptive practices, such as incorporating data analytics and advanced technologies, adopting risk-based auditing methodologies, and employing scenario planning techniques, have improved audit quality, efficiency, and effectiveness by identifying patterns, prioritizing audit procedures, and evaluating financial resilience.

In this study, four variables are proposed for digital capabilities, namely human capabilities, collaborative capabilities, technical capabilities and finally innovation capabilities (Khin & Ho, 2019); Nasiri et al., 2023). Digital-related human capabilities refer to the set of capabilities, knowledge and skills that employees need to drive digitalization (Nasiri et al., 2023). Consequently, the application of human capabilities practices can support digital transformation by providing the tools and processes required to adapt appropriately to new technologies (Zhang et al., 2024).

On the other hand, SMEs need to look for opportunities to collaborate with partners, complementing their existing capabilities with those of their partners (Chan et al., 2019). The complicated nature of digitalization makes it impossible for single actors to reach competitive advantages (Kohli & Melville, 2019). Modern accountants therefore need to develop collaboration skills that go beyond traditional teamwork skills. Meanwhile, digital-related technical capabilities denote an accumulation of technical skills that enable the execution of digitalization within organizations (Nasiri et al., 2023). Digital abilities are among the most sought-after technical competencies for accountants, and they must demonstrate proficiency in utilizing accounting software, for instance.

Innovation capability is a key value-creating capability that drives organizational performance and as such is currently a hot topic, especially in emerging economies (Le et al., 2020). Innovation capability is described as an organization's capacity to change (Calantone et al., 2002). Basically, it encompasses the processes and organization of new ideas for products and services that lead to unprecedented growth dynamics in the economy, more employment and profits for innovative companies (Taleb et al., 2023). SMPs are therefore expected to be more innovative to remain competitive and sustainable in the market.

3. Methodology

Sample and research design

This study focuses on small accounting firms in Malaysia; therefore, the online questionnaires are distributed to the owners of accounting firms registered with the MIA. A total of 255 respondents from 341 sample sizes participated in this study. The sample size was determined based on Krejcie and Morgan, (1970). Since the population of Malaysian accounting firms is spread across fourteen states, a stratified random sample is used in this study. According to Singh and Masuku, (2014), stratified random sampling is a useful method for data collection when the population is heterogeneous, and the selection of strata varies by area and local conditions. Therefore, to determine the number of samples, the number of samples for each state is calculated by dividing the total number of companies by the total population of companies and multiplying by the estimated sample size.

Measurement

The questionnaires were designed to capture demographic information from respondents as well as information on the variables. The instruments of digital capabilities and organizational resilience were adapted from the previous study as follows.

Table 1: Source of Variables

Variables	Dimensions	Authors
Digital capabilities	Human capabilities Collaborative capabilities Technical capabilities Innovation capabilities	Nasiri et al., (2023);El Sawy et al., (2020); Amit & Han, (2017); Parida et al., (2015)
Resilience	Resilience ethos Adaptive capacity Management of keystone vulnerabilities Situation awareness	He et al., 2023); (Lee et al., 2013); McManus, (2008)

In this questionnaire, a Likert scale is used to explore a person's perceptions, attitudes and views on current phenomena to measure the statement of each variable. Respondents' answers are rated on a seven-point Likert scale (1=strongly disagree and 7=strongly agree). Data analyses were done by SPSS version 28.

4. Findings and Results

The Statistical Package for Social Science (SPSS) 28 was used to analyze the collected data. The correlation and regression analysis were conducted to indicate the characteristics of the respondents and to determine the relationship between digital capabilities and non-financial resilience.

Reliability Analysis

The Statistical Package for Social Science (SPSS) was used to analyze the collected data. The correlation and regression analysis were conducted to indicate the respondents' characteristics and determine the relationship between digital capabilities and resilience.

Table 2: The Reliability Analysis

Variable	Alpha
Human capabilities	0.870
Collaborative capabilities	0.914
Technical capabilities	0.957
Innovation capabilities	0.929
Resilience	0.968

Table 2 shows the overview of Cronbach's Alpha for all the variables of this research. Cronbach's Alpha is a test that determines how reliable instruments are. Nunnally, (1978) suggests that with Cronbach's Alpha value of

greater than 0.6, all items in the surveys are reliable and can be used for further analysis. Similarly, the variables were found to be good and reliable ($0.8 \leq \alpha < 0.9$) concerning Hair et al., (2006).

Analysis of respondents' profile

The demographic data indicate that the majority (86.3%) of owners and management partners participated in the study, with 64.3% of respondents being male and 35.7% female. Although the proportion of women among registered MIA members is greater (55%), male owners appear to be more cooperative in participating in this survey. Most respondents were in the 40-50 age group (44.7%). This data is consistent with the MIA source, which indicates that the majority of registered MIA members are in this age group. Chinese (51.8%) are the main ethnicity of small accounting firm owners. Implicitly, it shows that although the number of Bumiputera accounting graduates in Malaysia has increased significantly, their presence in the profession remains limited

The relationship between digital capabilities and the non-financial resilience of small accounting firms in Malaysia

The first objective of this study is to determine the level of digital capabilities in Malaysian SMPs. Based on the respondents' responses, a descriptive analysis of the variable is conducted to determine the mean values. Descriptive analysis was applied to show the mean values exposing the level of digital capabilities in Malaysia SMPs, thereby enabling a clear understanding of the data. Pimentel & Pimentel, (2019) defined the level of mean score of seven Likert Scale, which is summarized in Table 3 below.

Table 3: Interpretation of mean value

Likert Scale	Ranking/mean values	Interpretation
1	1.00-1.85	Extremely dissatisfied
2	1.86-2.71	Very dissatisfied
3	2.72-3.57	Dissatisfied
4	3.58-4.43	Neither satisfied nor dissatisfied
5	4.44-5.29	Satisfied
6	5.30-6.15	Very satisfied
7	6.16-7.00	Extremely satisfied

(Source: Pimentel & Pimentel, 2019)

Table 4: Mean Score for Digital Capabilities Variables

Digital Capabilities Item	Mean	Std. Deviation
Human	5.73	0.970
Collaborative	5.25	1.22
Technical	5.59	1.09
Innovation	5.42	1.13

A more detailed analysis of the level of digital capabilities in Malaysian SMPs is conducted by categorizing their responses into three levels: low, medium and high. It is common practice in research studies to categorize the seven-point Likert scale into low, medium and high to gain an understanding of the distribution of responses. Using this method, it is possible to gain a better insight into the distribution of responses and provide a more nuanced interpretation of the Likert scale data. The authors followed the calculations of Alqatawenh, (2018); Noor et al., (2012) and Ur Rehman et al., (2023), according to which the seven-point Likert scale can be divided into three levels, e.g. 3 for low, 3.1 to 4.99 for medium and 5 to 7 for high. This allowed the authors to interpret the results more accurately and draw more meaningful conclusions accurately and draw more meaningful conclusions.

Table 4 shows that, among the four different factors studied, human capabilities have the highest mean score (5.73), followed by technical capabilities (5.59) and innovation capabilities (5.42), while collaboration recorded the lowest score (5.25). The range of mean score is between 5.25 to 5.73 which indicates that the level of digital capabilities is high in Malaysian SMPs. The result shows that Malaysian SMPs have adequate knowledge of the digital tools needed in the accounting sector. It is in line with the work of MIA Digital Technology Blueprint, which seeks to direct accountants to create suitable action plans for their surroundings. Accountants are to be very important players in digital transformation.

The second objective of the study is to determine the relationship of digital capabilities with SMP resilience. Therefore, the Pearson correlation was conducted to measure the strength of the linear relationship between resilience (non-financial) and four criteria in digital capabilities which include human, collaborative, technical and innovative. Table 5 shows the summary of the Pearson Correlation between independent variables which indicates the relationship between resilience and the four independent variables. Hair et al., (2006) emphasize that correlation only indicates the strength and direction of a linear relationship and not causality, with a value of $r > 0.7$ indicating a strong positive correlation, $0.3 < r \leq 0.7$ indicating a moderate positive correlation, while an R-value of ≤ 0.3 and 0 indicates a weak and no correlation respectively.

Table 5: Summary of Pearson Correlation between independent variables and non-financial resilience

Variables	Pearson Correlation
Human capabilities	0.434**
Collaborative capabilities	0.466**
Technical capabilities	0.512**
Innovation capabilities	0.558**

**. Correlation is significant at the 0.01 level (2-tailed).

The findings show that there is a moderate positive and significant relationship ($0.3 < r \leq 0.7$) between all variables, human, collaborative technical and innovation capabilities with non-financial resilience. The result is somehow consistent with Sulastri et al., (2023), who established that digital transformation, collaboration capability, and innovation substantially impact the resilience of SMEs. Similarly, the findings support Nasiri et al., (2023) who found that the business process is influenced by technical, human and innovative capabilities, while the market offerings are influenced by technical, human and innovative capabilities.

The result also shows a certain similarity with the previous study, which confirms that the variables of digital capabilities significantly influence the resilience of SMEs. In terms of human capabilities, Alnor, (2023) finds that investments in human capability development have a positive impact on business performance, especially when these investments are made in conjunction with organizational capability development. Strategies include training and development activities that promote employee engagement and innovation, thereby strengthening the overall resilience of the organization (Anggadwita et al., 2021). Furthermore, investing in the development of employees' skills and capabilities increases productivity, improves innovation, reduces costs, promotes customer loyalty and satisfaction and provides the organization with a competitive advantage. In addition, digital human resource practices have a significant impact on digital transformation, innovative work behavior and productivity (Zhang et al., 2024) and thus contribute to the survival of the company. Nasiri et al., (2023) show a significant relationship between technical and other capabilities. With regard to the digital business process, technical skills indirectly support digital innovation. Human skills are enhanced by technical skills, and this leads to the continuity of digital business processes.

Similarly, the ability to collaborate exerts a direct, positive and significant influence on the resilience and adaptability of SMEs (Saputra et al., 2022). Collaboration served as a mediating factor for the link between leadership and adaptability. To withstand disruptive change, SME owners and managers need to adopt a pro-social approach to governance while cultivating collaborative competencies to enhance resilience. According to Hanaysha et al., (2022), among innovation capabilities, both service and product innovation significantly improve business sustainability. The results also show how important process innovation is for the long-term survival of companies.

Table 6: The most influencing factor of digital capabilities towards non-financial resilience

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.419	.289		8.364	.000
Human Capabilities	-.010	.079	-.011	-.130	.897
Collaborative Capabilities	.088	.061	.117	1.434	.153
Technical Capabilities	.121	.087	.144	1.387	.167
Innovation Capabilities	.312	.066	.382	4.697	.000

a. Dependent Variable: Resilience (non-financial)

The third objective of the study is to determine the most influencing factor of digital capabilities towards SMPs resilience. To determine factors that significantly contribute to non-financial resilience, multiple linear regression was used. Table 6 compares each factor's strength, which provides a more comprehensive understanding of the factors influencing the outcome variable. The finding shows that only one significant variable concerning non-financial resilience is innovation capability (Sig=0.000). Meanwhile, the other three independent variables; human, collaborative and technical capabilities were insignificant in this study.

The result is probably identical to earlier investigations. Olaleye et al., (2024) emphasizes that innovation capabilities are crucial for business sustainability in SMEs and points out that developing these capabilities can improve business resilience. This enables SMEs to adapt to digital disruption and capitalize on opportunities in a dynamic environment. According to Awad and Martín-Rojas, (2024), digital technologies facilitate organizational learning and innovation, which in turn increases the resilience of SMEs. At the same time, the findings suggest that the digital transformation of firms has a profound impact on the frugal innovation and resilience of SMEs in emerging economies (Al Omoush et al., 2025). Interestingly, Zhang et al., (2024) discovered that innovative work behavior positively impacts work productivity, highlighting the essential importance of creative thinking and problem-solving skills.

Generally, it shows that digital capabilities are leading to changes in accounting business models from traditional to modern accounting. Schiavi et al., (2020) assert that accounting has started on a traditional path toward digital innovation, so highlighting the quality and value that technology-related solutions may produce a greater outcome to the firm. Furthermore, the ability to innovate has a positive impact on sustainable business performance and thus is beneficial for ensuring business sustainability (Somwethee et al., 2023).

5. Conclusion, Limitations and Recommendations

The study hopes to make some useful contributions by identifying the level of digital capabilities and its relationship to resilience in Malaysian SMPs specifically and SMEs, in general, to gain and maintain a competitive advantage and survive the economic disaster. The findings indicate a moderate positive and substantial association among all variables (human, collaborative technical, and innovation skills), with innovation being the most significant element contributing to the resilience of SMEs. Nevertheless, the study offers significant insights to businesses, accountants and professional accounting bodies on the adoption and application of digital skills in small accounting firms in their business. In addition, the findings have contributed to the knowledge that dynamic capabilities are the leading theory used to explain and assess a firm's resilience.

The evidence of higher digital capabilities among Malaysian SMPs suggests that accounting education has provided sufficient knowledge and skills on the importance of digital competencies in the accounting workspace. Furthermore, as innovation was analyzed as the most influential factor for business resilience, this suggests that innovation capability helps entrepreneurs in SMEs to sustain their businesses and improve their competitiveness.

In contrast, while digital capabilities are critical to resilience, some SMEs struggle with this due to limited

resources or resistance to change, highlighting the need for tailored support and strategic planning to effectively improve these capabilities. This finding implies that SMEs must invest in digital capabilities to survive but also to remain competitive and have growth potential during periods of disruption

This study has some limitations. Firstly, the data is from a specific group of SMPs SMEs in Malaysia, which may limit the applicability of our conclusions to SMEs in other sectors or locations. Future research should endeavor to expand other sectors and the geographical area covered by data collection to gain a more comprehensive understanding.

Secondly, the data only assesses the degree, relationship and most influential factors of one variable in the dynamic capabilities' environment, namely digital capabilities. Therefore, to deepen the understanding of the factors that impact SMEs resilience, future research should consider various other factors such as network capabilities, entrepreneurial leadership capabilities and risk management capabilities.

In addition, this study is also limited by the disadvantages of using online surveys. Unfavorably chosen dissemination channels can lead to skewed data, low response rates and several other potential problems. Future research could utilize a different survey method to increase the reliability of the data.

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A Theoretical Framework on the Relationship between Network Governance and Audit Pricing in Malaysia

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Abstract: The appointment of senior civil officials (SCO) to boards of directors of publicly traded firms, which distinguishes Malaysia from other countries, has prompted questions regarding SCO's credibility as the board of directors. The study's goal is to investigate the impact of network governance as depicted by senior civil officials from the audit committee (SCOAC) on audit prices. The theoretical foundation is based on social network theory and network governance. Quantitative methods will be used with data from publicly traded companies' annual reports in Bursa Malaysia. The study's findings are likely to add to the existing literature on network governance, SCOAC, and audit pricing. Furthermore, the study's findings are expected to serve as a useful reference for regulatory authorities as they draft and evaluate related policies. This will be the first study to present empirical evidence on the relationship between SCOAC and audit pricing in Malaysian public listed companies.

Keywords: *Civil officials, audit committee, audit pricing, network governance, social network theory, Malaysia*

1. Introduction

Malaysia has a distinctive feature from other countries due to the appointment of senior civil officials (SCO) to the boards of directors of publicly-traded companies. These ties derived from the introduction of the New Economic Policy (NEP) in 1970 and the expansion of government bureaucracy in corporations or so-called government-linked companies (GLCs) in the 1980s, which were triggered by the inequality in the distribution of capital between different ethnic groups in Malaysia (Tee, 2019). The selection of SCOs as board members of publicly traded companies may be influenced by their close connection with the government and legislators (Wong & Hooy, 2020).

An example of the appointment of SCO as the board of directors includes the nomination of the former Inspector General of Police Malaysia as the board of directors and Vice Chairman of Genting Berhad, an entertainment and gaming company (Hamid, 2011). Another example includes the appointment of the Director of the Centre of Excellence: Pelan Induk Terengganu Sejahtera (Pitas) related to the Terengganu State Government Secretary's Office as the board of directors of Golden Pharos Bhd, an industrial product and services company (Yatim, 2021). Furthermore, a former Chief of Defence of Malaysia's Armed Forces has been appointed as the chairman of the board of directors and a member of the audit committee for Ajinomoto, a food processing company. These appointments of civil officials to the boards of directors of publicly traded companies can be best described through the network governance characteristic.

Network governance is a set of mechanisms that help and preserve liaison among participating organizations to increase the probability of attaining a predefined set of outcomes (Alvarez et al., 2010). Scarlett and McKinney (2016) characterize network governance as a non-formal setting that includes two or more people and/or organizations gathering to exchange thoughts, develop interconnections, recognize mutual concerns, consider alternatives for collaborating effectively, power-sharing, and resolve mutual interest issues. Manit et al. (2019) stated networked governance as a cooperative network involving individuals related to the government and companies, who might be affected by the consequences of any policy implementation.

The existence of network governance was supported by Social Network Theory (Jones et al., 1997; Den Ouden, 2015; Turyahikayo et al., 2017). In this course, Social Network Theory explained the influence of the board establishment and structure on a company (Bjørnåli & Gulbrandsen, 2010). Based on pre-existing relationships, Social Network Theory reflects the expected route to obtaining company resources. For instance, companies need to have multiple social links such as ties to civil officials to stay competitive in the market and

have access to multiple crucial resources, such as knowledge and scarce information (Wu & Chen, 2012). Through social networking, a company can resolve problems in terms of poor entrepreneurial organization resources by forming a network exchange structure for critical resource suppliers.

The current study expected that the presence of network governance by senior civil officials from the audit committee (SCOAC) as a board member would reduce the audit pricing due to the knowledge distribution and information gathered by social networks. Network governance reduces transaction costs through social mechanisms or social networks (Park et al., 2020). Accordingly, monitoring costs are part of transaction costs (Kettunen, 2013). Consequently, audit pricing is categorized as a monitoring cost under transaction cost (Evana et al., 2019). This has triggered the issue of network governance played by SCOAC with multiple crucial resources received through the social network that may help auditors work, thus reducing audit pricing. Nevertheless, it is unknown whether their nomination as board members would help in reducing audit work and lowering audit pricing due to limited studies conducted related to SCOAC. Therefore, the current study via SCOAC will examine the network governance relationship with audit pricing in public listed companies in Malaysia, which to the best of the researcher's knowledge, has not been tested in the audit pricing model.

The study's primary objective is to investigate the influence of network governance on audit pricing in Malaysian public-listed companies. Therefore, the research objectives are listed below:
RO1: To investigate the relationship involving senior civil officials and audit pricing.
RO2: To investigate the relationship involving senior civil officials of the audit committee and audit pricing.

Significance of the Study
The study findings will have both theoretical and practical (policy) ramifications.

Theoretical Contribution: The study's findings will add to the theoretical contribution by providing more literature on network governance, senior civil officials of the audit committee (SCOAC), and audit pricing. Furthermore, the study will discuss the implications of senior officials serving on audit committees by explaining the variation in audit pricing charged by companies.

Practical Contribution: The study's findings can be used by regulatory authorities to establish and evaluate applicable regulations. This is due to the lack of a specification for the characteristics and numbers of senior officials required to follow the Malaysian Board of Public listed firms' regulations. Finally, the study will shed light on the profession of accounting in Malaysia by giving factual evidence on the structure of audit service prices from an outside perspective.

The following section shall be presented as follows. Section 2 sets out a review of the literature. Section 3 discusses the research design. Section 4 provides the theoretical framework and variables definitions, and the final section discusses the conclusion and recommendations.

2. Literature Review

Generally, network governance is related to governance because governance occurs within networks of complex relationships between public and non-public entities (Wang & Ran, 2023; Sørensen & Torfing, 2018; Klijn & Koppenjan, 2016). The term "governance" covers a broad concept that includes network governance (Kapucu & Hu, 2020). A complete overview of network governance comprises terms such as "persistent", "select", "structured", "implicit and open-ended contracts" (Jones et al., 1997; Scarlett & McKinney, 2016). The term "select" refers to network members who exchange information with one another but rarely with strangers. Thus, network members do not represent the entire industry. Meanwhile, the "persistent" explained that the network members collaborated over time. As a result, network governance functions as an active process unit rather than a static one. Furthermore, the term "structured" refers to exchanges between network members that have been developed instead of accidental or regular. Finally, the term "implicit and open-ended contract" refers to adapting, organizing, and safeguarding transactions that are not based on authorities or legally binding agreements. However, legally binding agreements may exist with a few members but do not apply to all members. Table 1 presents the terminologies and definitions of network governance proposed by previous scholars.

Table 1: Terminologies and Network Governance Description

Network Governance Description	Terms	Scholars
Networks	In the long-term recurring interactions that build interdependence rely on combinations of responsibilities, requirements, public image, and mutual interest.	Dubini & Alrich (1991)
Social networks	An organized group of people who trade solely via common standards of integrity.	Liebeskind et al. (1996)
Network Governance	Select, persistent, and organized set of independent companies and non-profit entities involved in creating products or services based on tacit and unrestricted contracts for unpredictable environmental adaptability and secure exchanges.	Jones et al. (1997)
Network organizational forms	In the long term, recurring interactions that develop reliance rely on various combinations of responsibilities, standards, public image, and mutual interest.	Larson (1992)
Network-based organizational structures	Mutual communication channels, independent resource flow	Powell (1990)

Source*: A General Theory of Network Governance: Exchange Conditions and Social Mechanism (Jones et al., 1997)*

The development of network governance is crucial because it incorporates social network theory and transaction cost economics (TCE) (Jones et al., 1997; Turyahikayo et al., 2017). The transaction cost postulates that the existence of network governance thrives on four exchange conditions consisting of 1) environmental uncertainty, 2) task complexity, 3) frequency and 4) asset specification (Turyahikayo et al., 2017). Three exchange conditions under the TCE perspective consisted of uncertainty, asset specification and frequency, identifying which governing structure is effective.

For example, environmental uncertainty occurs due to the environment being unusually stable and unpredictable. Adaptation has arisen because of environmental uncertainty, which is the "central problem of economic organization" (Williamson, 1991). Miles et al. (1978) stated that this uncertainty was caused by competitors, suppliers, customers, financial markets, and regulatory agencies. In addition, tax complexity means a variety of specialized inputs must be accomplished for a product or service such as expanding the scope of activities, the number of business functions required, the number of products produced, or the number of different markets supplied resulting in various specialists and input (Killing, 1988). Next, frequency is important for numerous reasons (Williamson, 1985). First, it helps the transmission of implicit information via specialized exchanges, especially for tasks or knowledge. Second, frequent encounters under defined conditions for relational and influenced structure efficiently laid the groundwork for a social mechanism to adapt, govern, and preserve exchanges. Third, utilizing a specialist network governance structure resulted in cost savings through frequent interaction. However, complications of adaptation, managing, and safeguarding need to be highlighted effectively for a governance system to occur and develop (Williamson, 1991). Therefore, Jones et al. (1997) moved beyond TCE by adding complex task conditions that triggered the emergence of network governance.

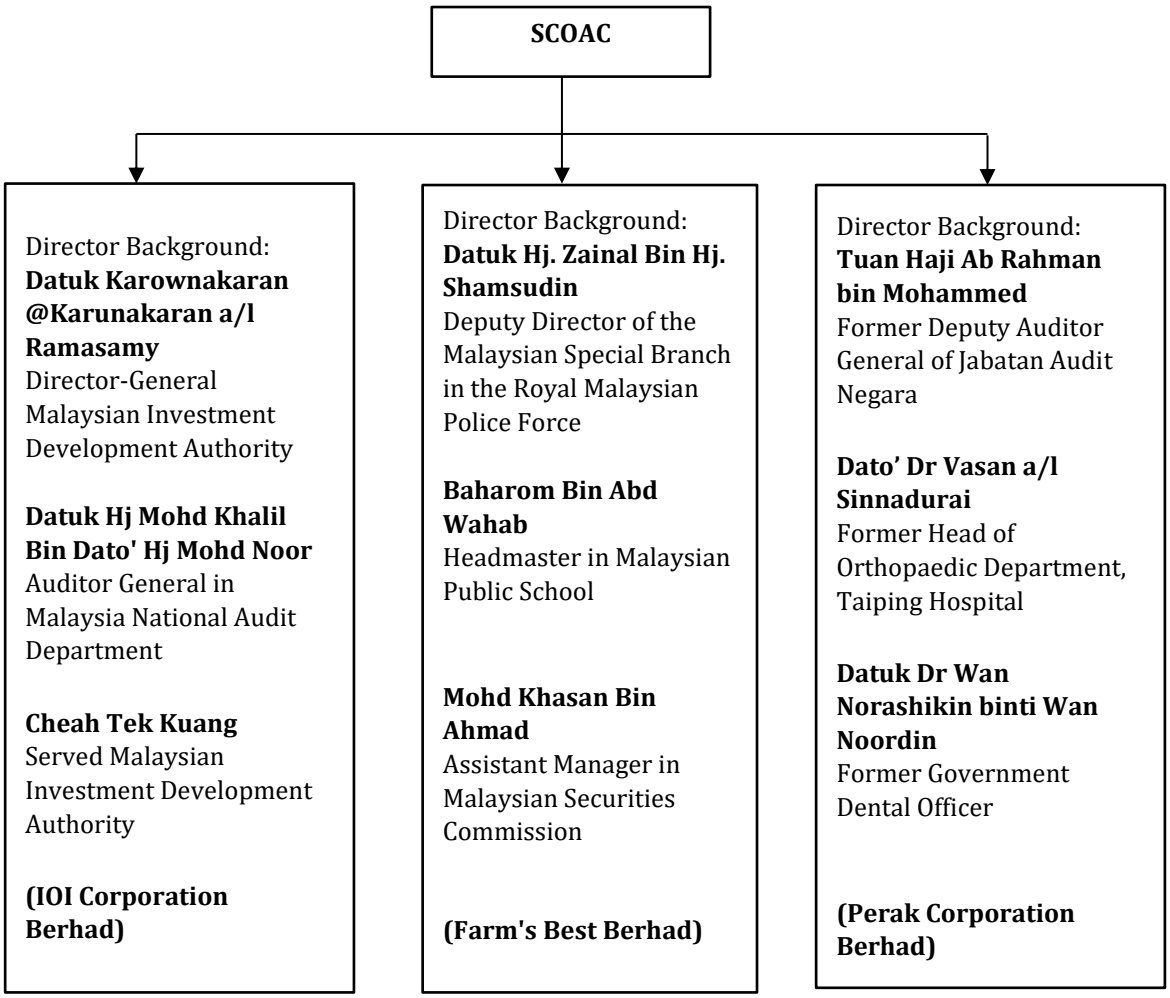
The unique social environment and volatility of the Bumiputra corporate agenda resulted in the implementation of the NEP in 1971, the Industrial Coordination Act (ICA) in 1975, followed by the formation of GLCs reflected in Malaysia (Hamid, 2011). The implementation of NEP, ICA, and GLCs to support Bumiputra in business prompted the establishment of network governance in Malaysia. Besides, the enactment of Treasury Circular No. 3, Guidelines on Appointment and Roles of the Government as Chairman, Chief Executives and Board of Directors of Public Companies, Government Companies and Government-Owned Companies (Public Service Department, 1985) provides a declaration from the government.

Moreover, the Securities Commission Malaysia (2021) released the Malaysian Code on Corporate Governance, which stated that all board of directors, including civil officials, should be appointed based on qualifications and have equivalent authorized responsibilities, as is the foundation of network governance in Malaysia. The study identifies SCO following Article 132 (1) of the Federal Constitution that states "public services are (a) the armed forces; (b) judicial and legal services; (c) the general public service of the Federation; (d) the police force; (e) (Repealed); (f) the common public service referred to in Article 133; (g) the public service of each State; and (h) educational services".

Article 133 specified (1) A joint service, for the joint use of the Federation and one or more States or, at the request of the States concerned, for two or more States, may be established by federal law. (2) If a member of any public service is employed: (a) partly for federal purposes and partly for State purposes; or (b) for two or more States, then the proportion of its remuneration, if any, payable by the Federation and the State or States concerned or, as the case may be, by each State concerned, shall, subject to federal law, be determined by consent or, if there is no consent, by the Commission whose jurisdiction extends to the member (Federal Constitution of Malaysia, 1963).

The selection of SCO as director exemplifies the characteristics of network governance built on their close ties to the authorities or lawmakers. Several studies have been conducted on SCO. Ang et al. (2013) found that companies with former civil officials on their board of directors have higher company values because of better governance practices in Singapore. Meanwhile, Wu and Dong (2021) stated that China's civil servant independent directors improve company performance due to attainable public resources. In Malaysia, board of directors among former civil servants are considered a stable connection and associated with higher companies' performance as they are not linked to a particular politician, are more professional and have better governance (Wong & Hooy, 2018). Further, no significant results were found in the market reaction to the former civil servant board of directors during the general election and the change of leadership in Malaysia for similar reasons (Wong & Hooy, 2020). Hamid (2011) investigated the relationships between SCO and performance, where the results showed that SCO contribution enhances performance more in non-GLCs than in GLCs. The study will go more deeply by looking into SCO, which is also a member of the audit committee in companies, particularly its links with audit prices. Figure 1 below shows further instances of SCOAC appointments to boards of directors.

Figure 1: Companies with senior civil officials as the audit committee board information



Similarly, an audit committee, according to Sultana et al. (2015), is a subcommittee of the board of directors that handles audit, internal control, and financial reporting responsibilities. Audit pricing is better understood from both the supply and demand viewpoints. The participation of corporate governance in improving operational controls contributes to the lower level of potential risk observed by auditors (Urhoghide & Emeni, 2014). This represents a supply-side viewpoint, in which audit pricing is viewed as a component of an auditor's evaluation of general audit risk. A strong corporate governance process leads to high-quality accounting information. If good corporate governance can become a substitute for external auditing, a negative relationship between audit pricing and governance mechanisms is expected to reduce audit pricing (Saputra & Yusuf, 2019). A supply-side perspective or the lack of demand-side effects implies a negative relationship between corporate governance and audit pricing (Urhoghide & Emeni, 2014).

Conversely, the demand-side viewpoint of audit pricing suggests a positive relationship resulted from corporate governance and audit pricing (Johl et al., 2012). In this case, the presence of corporate governance contributes to higher audit pricing. For instance, further monitoring by institutional investors encompasses an increasing request for audit efforts of auditors to enhance the quality of financial reporting (Tee et al., 2017). Companies with outstanding corporate governance procedures, which include independent, quality, and competent boards, tend to have greater audit pricing as a result of a high-quality audit. Previous scholars have undertaken considerable research on audit prices. However, there are fewer studies on network governance and no previously published research on SCOAC and its relationship with audit pricing. The study explains the emergence and importance of network governance (SCOAC) that will reduce transaction costs (audit pricing).

3. Research Design

The data for the study will primarily come from Malaysian publicly traded companies' annual reports. The years 2014, 2019 and 2023 will be selected because it was the year after the Malaysian General Election, which provided the stability of the information for SCO. The study's data is mainly derived from annual reports of companies. Following previous studies, banking and financial industry companies will be left out of the total sample, as the regulation and scope of these companies differ substantially from those of non-financial companies (Johl et al., 2012; Kikhia, 2015).

Also, companies with insufficient financial information data and inadequate annual reports will be excluded from the study. As an alternative source, the DataStream database will be used for the missing data. A regression model will be used to investigate the link between senior civil officials on the audit committee and audit pricing. In addition, the study will extend and imitate the well-established audit pricing model (see Simunic, 1980; Che-Ahmad et al., 2006; Abdul-Wahab et al., 2015; Tee et al., 2017; Harymawan et al., 2020). For the purpose to analyze the data, the study will use the ordinary least square (OLS) due to it being extensively used in audit pricing literature (see Simunic, 1984; Abdul-Wahab et al., 2013; Truong et al., 2018; Tee, 2019). Furthermore, additional studies will be undertaken to investigate the sensitivity of the results using various measurements such as senior civil officials from the audit committee in the Big 4 auditor sample and non-GLCs with the audit pricing.

4. Theoretical Framework

This study proposes a theoretical framework using Social Network Theory in network governance. SCO preferred to be selected as corporate managers and directors because of their involvement and connection to the government. SCO's close ties with the government are regarded as an important tool for the company's development, as their connections and reputation encompass the resources necessary for their businesses. The SCO could supply the corporation with lucrative contracts, potential customers, expertise, and information. Using network governance, the study discusses the link between SCOAC and audit prices.

According to Ziggers et al. (2010), Social Network Theory in network governance discusses social structures and claims that companies within a network intermingle as a result of dissociation, subletting, and constant repositioning of professionals between companies. This situation binds the corporations together and establishes a network that accepts information, guidelines, and mutual understanding. In other words, network governance encompasses public and private institutions working together in a network of organizations to manage resource distribution (Kapucu & Hu, 2020). Effective network governance or functioning co-administration is capable of lowering transaction costs through efforts in a group of social networks, such as the organization of information movement, legal matters, resource exchange, and so forth (Scarlett & McKinney, 2016). As an outcome, such a network may provide an opportunity for the organization to enhance its performance and, as a result, decrease the transaction costs, which the study recognizes as lowering the audit pricing.

The study identifies SCOAC as an individual, who has previously or currently held the position of a senior officer in the government sector as well as positioned as a company's audit committee. The study proposes that SCOAC uses its government ties to reduce transaction costs (audit pricing). As mentioned earlier, some of the SCOs were selected for their appointment as board members based on their good merit and seniority reputation previously in the government department (Hamid, 2011). Boards with SCO were argued to incorporate better governance practices and regulations based on the close ties and compliance of the government and top officials (Ang et al., 2013). SCO may entail providing companies with guaranteed investment prospects and resources linked to the government (Jamaludin et al., 2015). As a result, it is reasonable to infer that SCOAC represents the government through effective monitoring governance and solid ties with important elected officials. The study implies that the presence of SCOAC gives knowledge and insights to the auditor and assures that adherence to the company's regulations will help contribute to the decrease in audit inspection, therefore reducing audit costs. The research framework and summary variables are illustrated in Figure 2 and Table 2 below:

Figure 2: Theoretical Framework

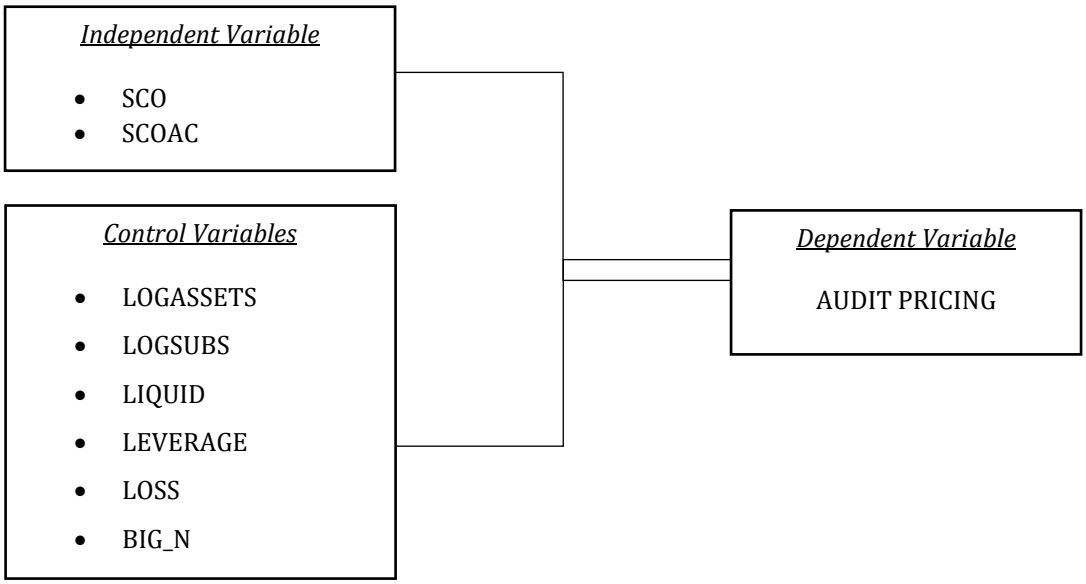


Table 2: Summary Variables

No	Variables Name	Variable Type	Data Assessment	Data Required
1	Audit Pricing	Dependent	Logarithmic change in Ringgit Malaysia's audit prices paid out to the auditor	Income Statement, Notes to the Financial statement
2	Senior Civil Officials of the Audit Committee	Independent	The ratio of total senior civil officials as audit committee over total audit committee	Total number of senior civil officials serving in audit committees
3	Auditee Size	Control	The natural logarithmic of total assets	Balance sheet
4	Auditee Complexity	Control	The natural logarithm of the overall number of consolidated subsidiaries	Notes to the Financial statement
5	Liquidity	Control	The ratio of total current assets over total current liabilities	Balance sheet
6	Leverage	Control	The ratio of total debt over total assets	Balance sheet
7	Profitability	Control	The ratio of earnings before interest and tax over total assets, Dummy variable, 1 for loss in the previous year and 0 otherwise.	Balance sheet, Net income
8	Auditor	Control	Dummy variable, 1 for Big Four auditors and 0 otherwise	Corporate information
9	Busy season	Control	Dummy variable, 1 for fiscal year end in December and 0 otherwise	Balance sheet

5. Conclusion and Recommendations

The study's main purpose is to investigate the relationship involving senior civil officials on audit committees and audit prices in Malaysian publicly traded companies. The study's sample includes Malaysian companies

that were publicly traded in 2014, 2019, and 2023. Senior civil officials on the audit committee analyzed in the study are expected to have a detrimental impact on audit prices. The study also anticipates that additional analyses using senior civil officials in the sample of publicly traded companies, senior civil officials of the audit committee in the Big 4 auditor sample, and non-GLCs will yield detrimental outcomes. The reason is that senior civil servants on the audit committee utilized their close bond with the government to help minimize audit work, resulting in lower audit prices. According to the Public Service Department (1985), an appointed government officer needs to ensure that general government policy, NEP and corporate objectives are achieved by the companies.

It is expected that the lower audit pricing with the audit committee's association ended up not being from their preference for non-Big 4 auditors who provide lower audit quality, but instead from network governance demonstrated by the audit committee's senior civil officials. This could be attributed to the influence of network governance in reducing audit pricing. Besides, the enactment of Treasury Circular guidelines introduced by the government provided the prospect for those companies to have government officers as board members, which represented network governance that contributed to the reduction in audit pricing.

The study will add to the corpus of knowledge and understanding about the interaction involving network governance (portrayed by SCOAC) and audit pricing. To the best of the researcher’s knowledge, studies related to SCOAC have not been tested in the audit pricing model, therefore, this contribution will provide a deeper understanding of how SCOAC will influence the audit pricing. In addition, the study will also provide useful insight that the regulatory bodies might use to develop and evaluate more transparent policies based on the findings since there is no specification on the characters and numbers of SCOAC in the Malaysian Board of public listed companies' regulations. Furthermore, the findings of this study could benefit the Malaysian accounting profession by giving empirical information on the structure of audit service prices from an outside perspective. This detail is useful since reduced audit pricing usually occurs by preferred non-Big 4 auditors, which leads to lower audit information quality.

The study does have certain drawbacks. First, the study's sample of SCOAC is based primarily on the yearly reports available on the Bursa Malaysia web pages. Therefore, future studies can replicate the study through other methods, such as interviews and survey measurement. Future research, for example, may take a perceptual approach by conducting interviews with firm stakeholders about their views on SCOAC's relationship with audit pricing, as the study will only follow a theory-driven method. Furthermore, while the study only used secondary data as its main source, future research may incorporate primary data obtained from auditors and other respondents, such as through questionnaire dissemination. Aside from that, future studies could do the same research in a different corporate setting (or country).

Next, because there is insufficient and limited empirical information on SCO, future research might want to look into the influence of SCO on various elements of committee members and the quality of the audit. In addition, the results, while specific to Malaysia and the 2013, 2018 and 2023 GE, can serve as a reference for other countries and elections. The study recommends further investigation on the influence of SCO at regional ranges, as well as the use of different institutional variables, for instance, politics and culture, to identify the varying influences of SCO throughout countries.

Lastly, future studies could investigate whether SCOs in Malaysia are valued beyond the audit price, such as access to financing and grants. The study thus provides useful information for policymakers looking to develop strong official frameworks that allow for transparent governance procedures for appointing SSC as board members. Finally, the study focuses mostly on SCOs listed on Bursa Malaysia, with recommendations for further research in non-listed government-controlled enterprises and private companies.

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The Interplay between Risk Management and Internal Control Towards Corporate Tax Aggressiveness

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Abstract: Corporate tax aggressiveness has become a major issue in the international business environment as they exploit the loopholes of legitimate tax avoidance. Although these techniques can increase revenues, they are viewed critically by regulators and society. Due to the reputational and fiscal impact associated with aggressive tax planning, effective measures are required to manage the risks and ensure compliance with tax laws. In addressing the issue of corporate tax aggressiveness, this paper examines the role played by risk management and the effectiveness of internal controls. Based on agency theory, tax aggressiveness often represents an agency problem between agent and principal. Therefore, effective risk management provides a systematic approach to recognizing and mitigating the potential pitfalls of aggressive tax strategies. Meanwhile, robust internal controls ensure compliance and align tax practices with governance standards. This study underscores the critical need for companies to view tax aggressiveness not just as a financial strategy, but as a governance challenge that requires robust risk mitigation and control systems. Although it can bring financial benefits and competitive advantages, it also carries financial, reputational, and regulatory risks that may jeopardize long-term value. Hence, companies should pursue a balanced approach to tax planning that harmonizes profitability targets with social expectations and regulatory standards.

Keywords: *Tax Aggressiveness, Risk Management, Internal Control, Corporate Governance*

1. Introduction

Corporate tax aggressiveness involves strategies employed by companies to minimize their tax liabilities, ranging from legal tax avoidance to illegal tax evasion. Corporate tax aggressiveness has received significant attention in accounting, finance, and corporate governance, as it raises critical issues related to ethical practices, regulatory compliance, and societal impact. Examining the factors that impact corporate tax aggressiveness is crucial for key stakeholders, including investors, regulators, and the broader public. According to Lymer and Oats, (2009), taxation is a mandatory charge levied by a government or other tax-collecting authority on income, expenditure, or capital assets, for which the taxpayer receives no particular benefit. Tax planning should be executed within legal boundaries to advantage the taxpayer by reducing tax obligations without contravening tax regulations, as excessive tax aggressiveness may lead to unlawful activities such as falsifying returns or failure to report income, and both constitute tax evasion. Aggressive corporate tax strategies, frequently driven by advanced tax evasion techniques, can significantly reduce government revenue reserves.

Several accounting scandals have shown that companies can use tax shelters to increase earnings and reduce taxable income, often through aggressive tax planning techniques. This finding was evident in the case of Transmile Group Berhad, where income was inflated through deferred tax and invoicing, endangering the accuracy of financial data, and misrepresenting the true financial condition and business performance. Similarly, companies such as Enron and Tyco that used high-risk tax strategies without adequate internal monitoring or controls faced dire consequences, resulting in their demise and underlining the dangers of uncontrolled aggressive tax positions.

As a result, strong internal controls ensure a comprehensive assessment of the tax strategy, thus reducing the possibility of adopting an overly aggressive approach that could threaten the financial stability of the organization. Conversely, companies that lack adequate internal controls face a higher risk of error, non-compliance, and misjudgment. This result can increase the adverse effects of aggressive tax methods, including regulatory penalties, reputational damage, and costly litigation. Therefore, effective risk management and

internal control are essential elements in business operations and governance (MCCG, 2021). A study by Ali and Nasir, (2018) also claimed that risk management is an additional important component of corporate governance, especially based on the Malaysian Code of Corporate Governance 2012 (MCCG 2012).

Klassen and Ruiz, (2022) also suggest that robust internal controls ensure that proactive tax measures are implemented in a compliant and controlled manner, while efficient risk management facilitates the identification of possible risks. Companies may take an overly aggressive tax strategy without considering the risks associated with it, which may result in errors, non-compliance, and legal penalties due to improper risk management and internal controls. The implementation of robust governance and risk management systems allows firms to balance avoiding the negative consequences of tax evasion, including regulatory penalties and reputational damage, with the pursuit of tax efficiency.

Previous studies, such as those performed by Muhmad et al. (2020) and Nasir et al. (2024) mostly focused on firm characteristics and tax planning, with limited attention given to the importance of risk management and internal control systems in this context. This oversight fails to account for how risk management and robust internal controls can reduce opportunistic behavior that contributes to tax aggressiveness, potentially leaving a critical gap in the literature. Accordingly, it is important to study the relationship between the organization's risk management and internal control system and corporate tax aggressiveness.

2. Literature Review

Corporate Tax Aggressiveness

Corporate tax aggressiveness includes a range of tax-saving practices, from legitimate tax planning to approaches bordering on tax evasion. Hanlon and Heitzman, (2010) define tax aggressiveness as a controversial form of tax planning that aims to minimize explicit tax liability. Similarly, Richardson et al. (2013) characterize it as the extent to which companies exploit legal ambiguities to reduce tax liabilities. Companies often engage in aggressive corporate tax planning to take advantage of available tax incentives and benefits to minimize taxable income and reduce tax liability (Nasir et al., 2024). As a result, this aggressive tax strategy diminishes the state's tax income, and obstructs social advancement, and public skepticism toward large corporations. Consequently, aggressive business tax planning poses a significant issue for governments, as corporate tax constitutes the primary and greatest source of government revenue. This phenomenon underscores the necessity of adhering to tax regulations.

The 1990s saw a significant increase in self-aware financial reporting, driven by the Enron and Worldcom scandals. Simultaneously, a rise in tax avoidance was observed, indicative of the prevalent implementation of aggressive corporate reporting practices. Starbucks has faced criticism in recent cases involving multinational firms for employing aggressive tax planning strategies that lead to reduced tax liability. This corporation has faced criticism from people and consumers for its negligible tax contributions relative to its substantial profits. Recent academic research indicates that aggressive company tax planning negatively impacts the overall quality of the corporate information environment, resulting in heightened opacity of corporate information. The relationship between changes in corporate taxes and economic growth remains a controversial topic in academic and policy discussions (Halim & Rahman, 2022). As a result of aggressive tax planning, grey areas will emerge, which in turn offers opportunities for illegal tax evasion (Jaffar et al., 2021). Similarly, Septiawan et al. (2021) point out that tax avoidance, a component of tax planning, poses a challenge to government tax collection efforts, regardless of its legal status.

Tax aggressiveness frequently corresponds with lower effective tax rates (ETR) that also serve as a proxy for a company's tax strategy in empirical studies (Frank et al., 2009; Jaffar et al., 2021; Zainazor et al., 2023; Shamil et al., 2024; Nasir et al., 2024). Previous studies reveal that certain organizations are more motivated to get involved in aggressive tax planning than others. Zeng, (2018) studied the extent of the Effective Tax Rate (ETR) among organizations in 40 different countries and discovered that organizations reported a lower ETR compared to the Statutory Tax Rate (STR). This indicates that an organization's internal controls significantly impact the extent of its engagement in aggressive tax planning.

Corporate tax aggressiveness is a strategic tool that can provide benefits, such as better financial performance and competitive advantage, but it also carries significant risks. Chen et al. (2010) outline several advantages of corporate tax aggressiveness. It helps with tax savings which increases shareholder returns and allows managers to earn high salaries due to reduced tax liability for the firm. Therefore, aggressive corporate tax methods to minimize tax payments can increase profits and allow firms to allocate resources to innovation, research, and shareholder payouts.

Aggressive tax planning can lead to public condemnation, especially when perceived as unethical or contrary to societal ideals. Entities committed to corporate social responsibility may encounter increased examination of their tax approaches which could be viewed as inconsistent with their public commitments. This reputational damage can result in diminished consumer loyalty, reduced employee morale, and decreased investor confidence (Lanis & Richardson, 2012). Conversely, corporations must proactively foresee and evaluate the potential dangers and consequences of aggressive tax planning strategies. The risks arise from the increased probability of a discrepancy between the company's filed tax return and the real tax owed to the authorities (Ftouhi & Ghardallou, 2020). Corporations are exposed to increased regulatory scrutiny as a result of aggressive tax planning, and this includes tax audits and investigations. As such, profits can be reduced by penalties and fines for noncompliance.

The Relationship between the Risk Management Framework and Corporate Tax Aggressiveness

The association between risk management frameworks and corporate tax aggressiveness is a significant area of research that examines how corporations address the intricacies of tax planning while mitigating the related risks. The integration of risk management frameworks and corporate tax aggressiveness is crucial for corporations wishing to enhance their financial performance while mitigating potential tax-related issues. According to MCCG 2021, the board must implement a thorough risk management and internal control framework to enhance risk management and maintain organizational accountability. An effective risk management framework enhances the oversight of tax-related activities, facilitates the identification of inconsistencies, and ensures proper documentation. The study by Menchaoui and Hssouna, (2022) demonstrates that tax risk assessment in the risk management framework is crucial for aligning tax strategies with the organization's risk appetite and operational goals. Menchaoui and Hssouna, (2022) assert that good risk management is essential for supervising tax risk management techniques and ensuring adherence to tax legislation.

A risk management framework is essential for minimizing uncertainties and risks, but many managers consider it too expensive and ineffective (Kwak & Stoddard, 2004; Mikes, 2009). This perception often arises because they feel that the costs and efforts required to implement such a framework do not yield immediate or visible benefits. However, Li et al. (2023) argue that effective risk management can improve the accuracy and reliability of profit forecasts. A well-structured risk management framework promotes collaboration across corporate units, helping them identify opportunities, manage risks, and develop effective tax strategies. By integrating risk management systems, tax departments can access accurate, real-time information, which enhances the efficiency of tax planning and reduces tax-related risks. On the other hand, Gallemore and Labro (2015) suggest that while efficient risk management supported by high-quality internal information can improve decision-making, it may inadvertently facilitate tax evasion.

Speitmann, (2021) asserts that the relationship between risk management and corporate tax aggressiveness is complex, requiring organizations to use a holistic approach that considers both potential benefits and risks associated with tax strategies. By integrating tax risk management into an organization's overall governance framework, organizations can improve their ability to achieve optimal financial results while minimizing exposure to tax-related risks. Corporate tax planning can increase savings but poses a risk of breaking the law and becoming illegal tax evasion if not managed well. Therefore, organizations need to implement real-time monitoring and robust internal control systems. Employing the systems can assist organizations in accurately identifying risky practices and ensuring regulatory compliance while offering data for decision-making. Additionally, consistent audits and employee training on tax compliance can reduce regulatory scrutiny and protect an organization's reputation by fostering a culture of ethical tax planning and risk prevention.

The Relationship between the Appointment of the Risk Management Committee and Corporate Tax Aggressiveness

It is important to have a Risk Management Committee (RMC) that reports directly to the audit committee to ensure effective risk management and internal controls are in place. According to MCCG 2021, the board of directors is mandated to establish a risk management committee (RMC) consisting of many independent directors. The RMC will be responsible for overseeing the organization's operations and its risk management framework. The RMC has the objective of monitoring and mitigating various risks, including those related to tax strategy. Their role becomes more important when it comes to tax aggressiveness, which refers to techniques that take advantage of loopholes in tax legislation to reduce tax payments. Younas et al. (2020) and Jia and Bradbury, (2020) emphasized that RMC is an important corporate governance mechanism that reduces financial, regulatory, and reputational concerns to direct and supervise the company's tax planning. Establishing an RMC is essential in developing an organization-wide risk management strategy, particularly in dealing with tax-related risks, including non-compliance, regulatory changes, and possible legal consequences.

In addition, a study conducted by Aronmwan and Ogbaisi, (2022) claims that companies with effective RMC are less likely to use risky tax avoidance techniques-because the establishment of RMC in the organization helps in the reduction of financial risks and the improvement of the governance framework. In the same vein, Hsu et al. (2018) argue that companies often make decisions about tax without fully considering the tax consequences because they do not have enough knowledge about tax strategies. As a result, establishing the RMC improves coordination and communication, ensuring the tax department has the necessary resources to make sound judgments. RMC creates a cohesive risk management approach, promotes tax efficiency, and incorporates tax considerations into decision-making at all levels. This results in an informed, compliant, and strategically aligned tax practice.

Beasley et al. (2021) further illustrate that companies with enhanced board risk oversight display lower effective tax rates and less volatility. This shows that it is important for organizations to have RMC in the firm because the effectiveness of the company's tax planning is-influenced by robust corporate governance, through the RMC function. A well-managed business does not seek to avoid tax responsibilities in any way. Instead, they use low-risk tax tactics to reduce their tax liability and ensure the consistency of their tax decisions. This observation reflects RMC's strong interest in ensuring that tax strategies align with long-term goals.

The Relationship between the Internal Audit Department and Corporate Tax Aggressiveness

In addition, the internal audit department plays a significant role in supporting the board of directors and the audit committee by systematically improving the effectiveness of the internal control and governance framework, as stipulated by the MCCG 2021. The internal audit department will evaluate and improve the internal effectiveness of the company's internal controls, including those related to tax compliance and tax planning. Amri et al. (2022) claim that by evaluating the effectiveness of tax controls, internal auditors can assist management in developing strategies that minimize tax liability while ensuring compliance with tax laws. Amri et al. (2022) also indicate that internal audit departments facilitate the alignment of organizational tax practices with established standards, thus strengthening sustainable governance and ethical accountability.

Deslandes et al. (2019) highlight that audit committee characteristics, especially their independence and expertise, are significantly associated with tax aggressiveness. Their findings suggest that firms with more independent and knowledgeable audit committee members are less likely to engage in aggressive tax planning, as strong oversight mechanisms help reduce tax-related risks. Similarly, Niniek et al. (2018) emphasize that the supervisory role of the board of commissioners, including the independence of the internal audit committee, can influence tax aggressiveness. This finding underlines the importance of a robust internal governance structure in preventing aggressive tax strategies.

According to Wei, (2023), integrating the internal audit function with the tax management strategy is important to improve compliance and reduce tax-related risks. Wei, (2023) also pointed out that when tax management aligns closely with the internal audit process, it can lead to more effective oversight and stronger compliance with regulatory requirements. This highlights the important role that the internal audit department plays in ensuring compliance and shaping tax strategies that support corporate governance goals. Likewise, Rae et al. (2017) and Rakhmayani et al. (2024) argue that the success of an internal control system depends on the quality

of oversight provided by internal auditors. With their deep knowledge of an organization's culture, risks, and operational challenges, internal auditors are well-positioned to support good decision-making. In addition, Rakhmayani et al. (2024) emphasize that the internal audit function is key to identifying fraud, addressing tax discrepancies, ensuring regulatory compliance, and helping to reduce financial risk.

The Relationship between Internal Control Activities and Corporate Tax Aggressiveness

Internal controls are crucial for guaranteeing adherence to tax legislation, enhancing the accuracy of financial reporting, and mitigating risks related to tax planning. These factors are especially pertinent for aggressive tax methods, as companies may operate within the limits of legal tax avoidance. An essential function of internal controls is to protect the integrity of financial reporting, which is vital for precise tax compliance. Effective internal controls enhance the dependability of financial statements, thereby reducing the possibility of errors or misstatements that may promote aggressive tax strategies. Moreover, corporate tax departments are crucial in formulating tax planning strategies. Chen et al. (2020) assert that internal tax teams are fundamental to reconciling tax minimization efforts with efficient tax risk management.

A well-functioning tax department can enhance the effectiveness of internal controls by ensuring compliance with tax laws and regulations while identifying legitimate tax planning opportunities. Additionally, the effectiveness of internal controls can be affected by the level of disclosure regarding contingent tax liabilities. Shen, (2023) suggests that when companies share more details about potential tax risks, they may feel more confident in their strategies and engage in more tax avoidance. This highlights the importance of having strong internal controls, for managing tax strategies and effectively communicating tax risks to stakeholders.

These internal controls are crucial for lowering risks, maintaining operational efficiency, and coordinating corporate activities with strategic goals. Organizations with strong tax-related internal controls are more likely to engage in higher levels of tax avoidance, according to Bauer, (2016), because these controls make it easier to identify opportunities for tax savings while also guaranteeing compliance. This finding demonstrates how strong internal controls and governance frameworks may enhance a business's ability to use tax strategies and manage risks, ensuring operational integrity and financial optimization.

Effective internal control procedures, according to Oppong et al. (2024), are essential for carrying out management instructions, preserving legal compliance, and reducing hazards that impede corporate goals. Appropriate authorization, documentation, and independent verification among other controls help to lower risks connected to changes in tax laws, inadequate compliance, and tax computation errors. They help businesses to apply sensible, risk-aware tax policies and guard against penalties and damage to reputation. Strong internal controls ensure a thorough review of tax strategies, therefore lowering the risk of aggressive tax policies that can cause legal problems or noncompliance.

Internal controls help reduce the risks tied to aggressive tax planning by ensuring that tax practices meet legal and ethical standards through proper oversight and accountability. They also equip organizations with tools to monitor, evaluate, and execute tax plans effectively, allowing for assertive yet lawful tax strategies. This approach aligns with Jemaa, (2022), who highlights that companies with strong governance frameworks manage risks more effectively, making their tax avoidance strategies more sustainable while lowering the chances of penalties or reputational harm.

3. Agency theory as the Theoretical Lens for Corporate Tax Aggressiveness

The agency theory developed by Jensen and Meckling (1976) serves as a fundamental framework for analyzing the relationship between shareholders (principals) and managers (agents). It emphasizes how conflicts of interest and knowledge asymmetries between the two parties can lead to management decisions that do not consistently align with shareholders' views. According to Khatun et al. (2022), agency theory states that companies are controlled by a governing body entrusted by the organization’s owner with preparing financial statements, reviewing operational efficiency, and evaluating overall performance. This theory is particularly relevant for analyzing corporate tax aggressiveness, where the incentives and decision-making of management can be at odds with long-term shareholder value.

Managers often know the company's tax plans and the associated risks better than shareholders. This discrepancy allows them to engage in risky tax practices without sufficient oversight. These problems arise from the information asymmetry between managers and shareholders associated with the agency principle (Jensen & Meckling, 1976). Internal controls create a systematic framework to ensure compliance and mitigate the risk of aggressive tax planning. Organizations with effective internal controls can identify and prevent risky behaviors, reducing the negative impact of managerial discretion. Hence, robust internal controls and risk management frameworks are essential to reduce this disconnect and ensure that tax strategies are aligned with shareholder interests (Bauer, 2016).

Corporate tax aggressiveness is a strategic practice that increases after-tax returns to shareholders by potentially increasing a company's cash flow. Agency theory states that the company should increase its value. Companies want to optimize their probability of survival while minimizing transaction-related costs (Aljughaiman et al., 2023). Therefore, companies strive to reduce taxable income through effective cash flow management to achieve immediate and long-term goals.

This study uses agency theory to analyze the role of internal control and risk management in mitigating the principal-agent problem in the context of corporate tax aggressiveness. In particular, it analyses how these mechanisms alleviate information asymmetry, align management's behavior with shareholders' interests, and minimize the agency costs associated with tax practices. Integrating governance structures with proactive risk management enables companies to mitigate the negative effects of aggressive tax policies, thereby preserving shareholder value and public trust.

4. Proposed Conceptual Framework

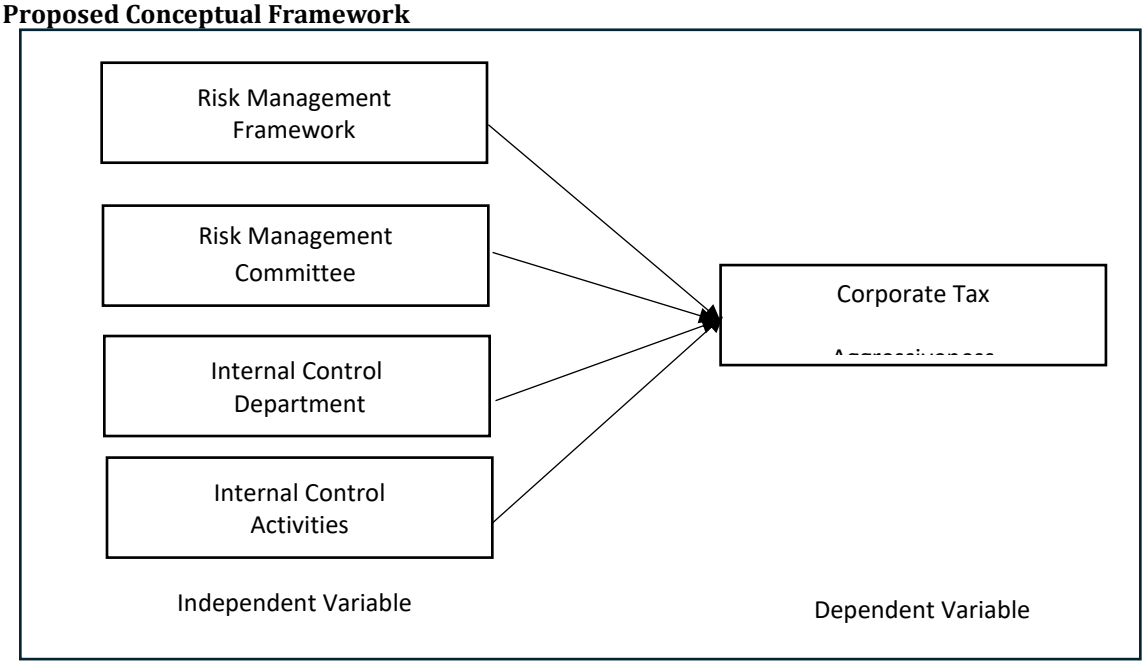


Figure 1 presents the proposed conceptual framework of this study, depicting the relationship between corporate tax aggressiveness as the dependent variable, and the four primary independent variables which comprise risk management framework, risk management committee, internal control department, and internal control activities. This framework illustrates the interaction of these components in shaping corporate tax behavior and determining the inclination toward tax aggression. The findings of the study help accounting academics and legislators to understand each other better and enable the development of focused policies to strengthen governance.

5. Conclusion

The scarce study investigating the relationship between risk management, internal control systems, and corporate tax aggressiveness highlights a significant gap in explaining how these variables affect corporate tax aggressiveness. This study examines the impact of risk management strategies and internal control structures on corporate tax aggressiveness. Although risk management and internal control systems are essential for minimizing organizational threats, their influence on corporate tax strategies has not been thoroughly examined. Tax aggressiveness, motivated by the minimization of tax obligations, can significantly impact financial transparency, legal adherence, and a company's reputation. The mechanisms by which risk management and internal controls affect such behavior remain poorly understood. This study aims to address this gap by deeply exploring the influence of internal governance systems on corporate tax aggressiveness.

The limited body of research examining the intricate interplay between risk management, internal control systems, and corporate tax aggressiveness underscores a critical gap in understanding how these factors collectively shape aggressive tax behavior. This study explores the influence of risk management practices and internal control frameworks on corporate tax decision-making. While risk management and internal control systems are fundamental in mitigating organizational risks, their specific impact on corporate tax strategies remains insufficiently explored. Tax aggressiveness, driven by reducing tax liabilities, can have significant implications for financial transparency, legal compliance, and a company's reputation. However, the mechanisms through which risk management and internal controls influence such behavior remain unclear. This study seeks to fill this gap by systematically analyzing the role of these internal governance structures in shaping corporate tax decision-making.

The proposed conceptual framework, which incorporates key components such as the risk management framework, risk management committee, internal audit department, and internal audit function, will serve as the foundation for the forthcoming empirical investigation. These components are essential in creating an environment that identifies and mitigates risks associated with aggressive tax practices, ensuring that tax strategies align with legal and ethical standards. Risk management frameworks provide the infrastructure to assess and address potential tax-related risks, while the risk management committee plays a pivotal role in overseeing the broader governance structure. Meanwhile, the internal audit department and its functions ensure transparency and accountability in the company's financial reporting, which can directly influence tax-related decisions.

The insights gained from this research can potentially guide companies, policymakers, and regulators in developing targeted strategies to mitigate tax aggression, enhance compliance, and foster responsible corporate governance. By addressing the complex relationship between risk management, internal control, and tax behavior, this research has the potential to not only contribute to academic literature but to inform practical solutions that enhance the overall integrity of corporate tax practices. The results could serve as a cornerstone for developing comprehensive corporate governance frameworks that prioritize ethical tax behavior while ensuring compliance with national and international tax regulations.

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Investigating Financial Reporting Fraud Intentions in Malaysian Small and Medium Enterprises (SMEs): A Proposed Framework

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Abstract: Fraud is widely regarded as the most important corporate problem in today's economic environment, and it is only becoming worse, especially in a tight-budget situation. Fraud in financial reporting refers to the intentional falsification of financial facts to mislead financial statement users. It undermines investors' trust in published financial statements. This study aims to identify the factors influencing intention for fraud in financial reporting in Malaysian Small and Medium Enterprises (SMEs). Hence, this study proposes a conceptual framework for financial reporting fraud intentions in Malaysian SMEs using the Theory of Planned Behaviour (TPB) as an underlying theory and supplemented by Rest's four-component model. The proposed framework comprises four main variables – attitude, subjective norm, perceived behavioral control and ethical judgment, while gender is treated as a control variable. This study enhances the current body of knowledge on unethical intention literature. It expands the applications of the TPB model in predicting intention for financial reporting fraud in the setting of small businesses. Additionally, the findings will contribute as a preventive safeguard against fraud in financial reporting.

Keywords: *Conceptual model, Intention for fraud, Fraud in financial reporting, Financial statement fraud, Small and Medium Enterprises*

1. Introduction

Fraud is a worldwide business issue that harms capital market players and poses serious ethical challenges for companies. Fraud is not tolerated by society as it represents a decline in people's moral beliefs and has led to significant financial losses. According to PricewaterhouseCoopers' 2020 Global Economic Crime and Fraud Survey, losses totalling USD 42 billion were reported in the last 24 months due to fraud. Major frauds committed by insiders are potentially far more damaging than offenses committed by outsiders; with 43% of reported incidents resulting in losses of USD 100 million or more being committed by insiders (PwC, 2020).

A report by PricewaterhouseCoopers (PwC, 2020) shows that misappropriation of assets ranks third in the overall frequency of fraud experiences (31%), after customer fraud (35%) and cybercrime (34%). Meanwhile, bribery and corruption (30%) and accounting/financial statement fraud (28%) rank fourth and fifth respectively. In a recent fraud survey report by the Association of Certified Fraud Examiners (ACFE, 2024), accounting fraud was the least prevalent category at 5% but caused the most damage with an average of USD 766,000 per case. This is a much higher figure than misappropriation of assets (89% of cases, with an average loss of USD 120,000 per case) and corruption (48% of cases, with an average loss of USD 200,000 per case).

Small and medium enterprises (SMEs) are currently growing rapidly and have a strong position in Malaysia's economic growth. In Malaysia, SMEs account for more than 98 percent of all business establishments and contribute to almost 40% of the country's Gross Domestic Product (GDP) (Abu Hassan et al., 2023; Han et al., 2018). It is therefore important to ensure that the contribution of SMEs remains on a sustainable growth path. However, this growth path may be destroyed by the increasing fraud rate in Malaysia. The Malaysian section of PwC's Global Economic Crime and Fraud Survey 2020 shows that although Southeast Asia as a whole reported a decrease in fraud levels (39% experienced fraud, down from 47% in 2018), Malaysian businesses still suffer from high levels of fraud (43% of respondents, up from 41% in 2018).

Asset misappropriation, corruption and financial statement fraud are the three main categories of occupational fraud (ACFE, 2024). Financial statement fraud is the intentional falsification of financial data to deceive users

of financial statements, thereby jeopardizing investor confidence in publicly available financial statements. Rezaee (2005) stated that accounting fraud is a deliberate attempt by companies to deceive users of public financial statements, especially investors and creditors, by preparing and disseminating materially misleading financial statements. Consequently, financial statement fraud is also referred to as financial reporting fraud. Fraud continues to be a growing problem, especially with limited budgetary resources and is considered a major concern for companies in the current business environment.

Elements of fraud in SMEs such as employee theft, corruption, misappropriation of assets and fraudulent financial statements have been discussed in detail in previous studies. For example, Kennedy's (2018) research on misappropriation of assets in small businesses shows that companies that do not employ a Certified Fraud Examiner (CFE) report different rates of theft compared to companies that do employ a CFE. In certain cases of fraud, a CFE can be just as effective as the initiatives of business owners, managers and other personnel. A recent study by Talib et al (2024) shows that opportunity, rationalization and collaboration are significantly correlated with cases of asset misappropriation in Malaysian SMEs. Meanwhile, Aris et al. (2015) assess the possibility of financial statement fraud in a small to medium-sized automotive company in Malaysia and show the presence of high-risk areas that require additional scrutiny by management. Consequently, SMEs are recommended to establish an internal audit function to ensure the integrity of their operations, the accuracy of financial reporting and compliance with legislation.

Research on fraudulent financial statements has made extensive use of the Fraud Triangle Theory (Isahak et al., 2023), which was the first theory to explain the factors that lead to fraud (Herbenita et al., 2022). The Fraud Triangle Theory includes three variables as major factors for fraud: pressure, opportunity and rationalization (Cressey, 1953), of which the presence in the organization increases the risk of fraud (Kanjanapathy et al., 2022). Cressey's (1953) Fraud Triangle Theory was expanded by Wolfe and Hermanson (2004) to include an additional capability element, the so-called Fraud Diamond Theory (Matei & Bulau, 2024). However, Awang et al. (2020) note in their study that the Fraud Triangle Theory may inadequately address the distinct challenges of small businesses, such as limited resources, economic pressures and advancing technology, which can impact fraud motivations and detection methods differently than in larger organizations. In addition, small businesses often do not have the necessary resources to set up comprehensive fraud detection systems, which limits their ability to effectively combat the elements of 'opportunity' and 'rationalization' (Sánchez-Aguayo et al., 2022).

As financial statements are considered a trustworthy tool for investment decisions and one of the most important sources for stakeholders' assessment of a company's financial performance, numerous corporate scandals linked to financial fraud have raised concerns, particularly because of their damaging impact on global capital markets and investor confidence. Since the early 2000s, several financial scandals, bank failures and unexpected business bankruptcies have raised serious concerns about the independence, value and purpose of auditing and the accounting profession (Cheliatsidou et al., 2023). The collapse of one of the five largest auditing firms in the world, Arthur Anderson, was also due to fraud in financial reporting. Financial statement fraud is also the reason for most of the lawsuits filed by bankrupt clients. For example, Deloitte was sued for USD 7.6 billion for failing to detect fraud at one of the largest private mortgage firms that collapsed during the US housing crash (The Star, 2011). The loss of public confidence in the financial report can lead to significant economic and public welfare problems.

This study focussed on small and medium-sized enterprises (SMEs), as fraud has a particularly detrimental effect on these businesses. Similar to several developing nations, Malaysia is also heavily dependent on SMEs and their collapse could have a negative impact on the overall economy (Sow et al., 2018). According to ACFE (2024), the size of the organization matters. Smaller organizations, i.e. those with less than 100 employees, have disproportionately higher average losses from fraud compared to larger organizations, amounting to USD 150,000, highlighting the vulnerability of smaller businesses.

Global economic pressures expose corporate actors and decision-makers to risk that leads to financial statement fraud (Kukreja et al., 2020). Since fraud is initiated by people, it is almost impossible to develop laws and regulations that would eliminate fraud altogether. Those who want to commit fraud will find possible alternatives to manipulate the rules to achieve their goals. However, fraud may be prevented through various mechanisms, namely an effective control system, embedding an ethical culture in an organization and

identifying factors that may influence the propensity to commit fraud. Therefore, the main objective of this study is to propose a conceptual model to investigate the correlation between personal factors and the intention to commit fraud in financial reporting.

Fraudulent financial reporting poses a critical threat to the credibility and integrity of corporate financial statements, particularly in the context of SMEs where resources and oversight may be limited. Despite its pervasive impact on investor confidence and economic stability, there is limited understanding of the psychological and behavioral factors that drive the intention to commit fraud in financial reporting, especially in the Malaysian SME sector. A previous literature review shows a lack of studies on fraud in SMEs, suggesting research expansion in this area to promote SME growth (Zainal et al., 2022). Existing frameworks for predicting unethical behavior have not specifically been applied in this area to identify important influencing factors such as attitude, subjective norms, perceived behavioral control, ethical judgment, and demographic factors such as gender. The present study fills this gap by proposing a conceptual model based on the TPB to investigate these factors and provide insights that contribute to fraud prevention and ethical decision-making in SMEs. In particular, this proposed study aims to examine the individual factors of attitude, subjective norms and perceived behavioral control in line with the TPB, which assumes that these three constructs influence behavioral intention (Ajzen, 1991). An additional variable, ethical judgment incorporates Rest's four-component model, which states that ethical judgment is antecedent to ethical intention (Rest, 1994). The examination of these interactions is significant for SMEs in developing a mechanism to ensure the integrity of their operations as it provides valuable insight into the factors that influence the intention to commit fraud in financial reporting in SMEs.

2. Literature Review

This section of the literature review builds on earlier scholarly research to offer theoretical and empirical justification for the current study.

Fraud in Financial Reporting

Fraud is a significant ethical dilemma for businesses and the most serious business problem in today's business environment. Occupational fraud falls into three categories: Asset misappropriation, corruption and financial statement fraud (ACFE, 2024). Although financial statement fraud was the least prevalent category with 5% of fraud cases, it caused the most damage with an average of USD 766,000 per case, which is significantly higher than that of asset misappropriation and corruption (ACFE, 2024).

Financial statement fraud or financial reporting fraud is an intentional offense committed by a company to deceive or mislead users of published financial statements through manipulation of material financial transactions, material intentional misstatements and manipulation of accounting practices (Rezaee, 2005). Capital market participants, including investors, creditors and analysts, rely on published financial statements to make economic decisions. As the prime source of reference, financial statements are expected to be reliable, transparent and comparable. Attempts to falsify financial reports may be detrimental to these stakeholders. They affect the reliability of financial reports and pose a serious threat to stakeholders' confidence in financial information. There are various techniques of financial statement fraud. Examples include improper or unauthorized recognition of revenue, the inappropriate accrual of expenses, the overstatement of assets other than accounts receivable, the understatement of expenses/liabilities and the misappropriation of assets. It also involves inadequate or inappropriate omissions or disclosures, lack of provisions for bad and doubtful debts, inconsistent application or interpretation of accounting policies or standards, fictitious and premature sales, and the reversal or utilization of unjustified reserves (Beasley et al., 1999; KPMG, 2009, 2013; Lundelius, 2011; Rezaee, 2002).

The pressure on management to meet profit targets motivates them to manipulate figures in their financial reports, leading to fraud in financial reporting. Financial reporting fraud is also committed to improve or maintain a company's financial position, which facilitates embezzlement and stock issuance (Green & Calderon, 2011). Other driving factors include personal gain, ego, greed for an excessive lifestyle and personal financial pressures coupled with lax controls within organizations (KPMG, 2009, 2013; Mung-Ling et al., 2008; Rockness & Rockness, 2005). This shows that there is a need to explore further the behavioral aspects of individuals

working in finance and finance-related functions. Therefore, this study focuses on fraud in financial reporting as an attempt to prevent or deter its widespread occurrence.

A study conducted by Sow et al. (2018) examined 126 Malaysian SMEs from various industries and found that these companies were exposed to a variety of fraud tactics. Despite this exposure, the study showed that few SMEs have taken sufficient measures to combat fraud. This indicates a significant vulnerability in this sector. Small and medium-sized enterprises are also vulnerable to fraudulent activity, with figures suggesting that organizations with fewer than 100 employees experience more incidents of fraud than those with more employees (ACFE, 2024).

Theory of Planned Behaviour

The current study proposes to adopt the Theory of Planned Behaviour (TPB) as the framework to guide the study mainly because TPB (and its original theory, Theory of Reasoned Action - TRA) are regarded as the most well-known theory for assessing ethical intention (Leonard et al., 2004). The social psychology theories of TRA and TPB have been widely applied in behavioral intention studies.

Perceived behavioral control is an extra measure included in TPB (as compared to TRA), which is held to affect both behavior and intention (Ajzen, 1991). According to Ajzen and Fishbein (1980), the foundation of TPB is:

The assumption is that human beings are usually quite rational and make systematic use of the information available to them…(and) that people consider the implications of their actions before they decide to engage or not engage in a given behavior (5).

TPB suggests attitudes toward the behavior, subjective norms, and perceived control over the behavior all have an impact on intention, which is the primary explanation of behavior. Attitude is "the person's judgment that performing the behavior is good or bad, that he [sic] is in favor of or against performing the behavior," (Ajzen & Fishbein, 1980: 6). Perceived behavior control is a person's assessment of the difficulty in carrying out an intention, whereas the subjective norm is a person's opinion of whether other people who are significant to them believe a specific behavior should be carried out (Ugrin, 2008). Behavioral intention is an individual's subjective probability whether to engage or not to engage in a particular behavior (Ajzen, 1991). It acts as a proxy for behavior (Buchan, 2005). The degree of behavioral intention determines the likelihood that a behavior will be carried out - the more strongly an individual intends to carry out behavior, the more likely they are to do so.

Ethical Judgment

The actual occurrence of financial fraud cases such as Enron, WorldCom and Xerox, which attracted international attention, serves as evidence of ethical deficits. Public confidence in published audited financial statements was affected by these cases, which made international headlines. In Malaysia, cases such as Renong, Perwaja Steel and Malaysia Airlines were documented as accounting scandals during the 1997-1998 financial crisis (Suhaily et al., 2008).

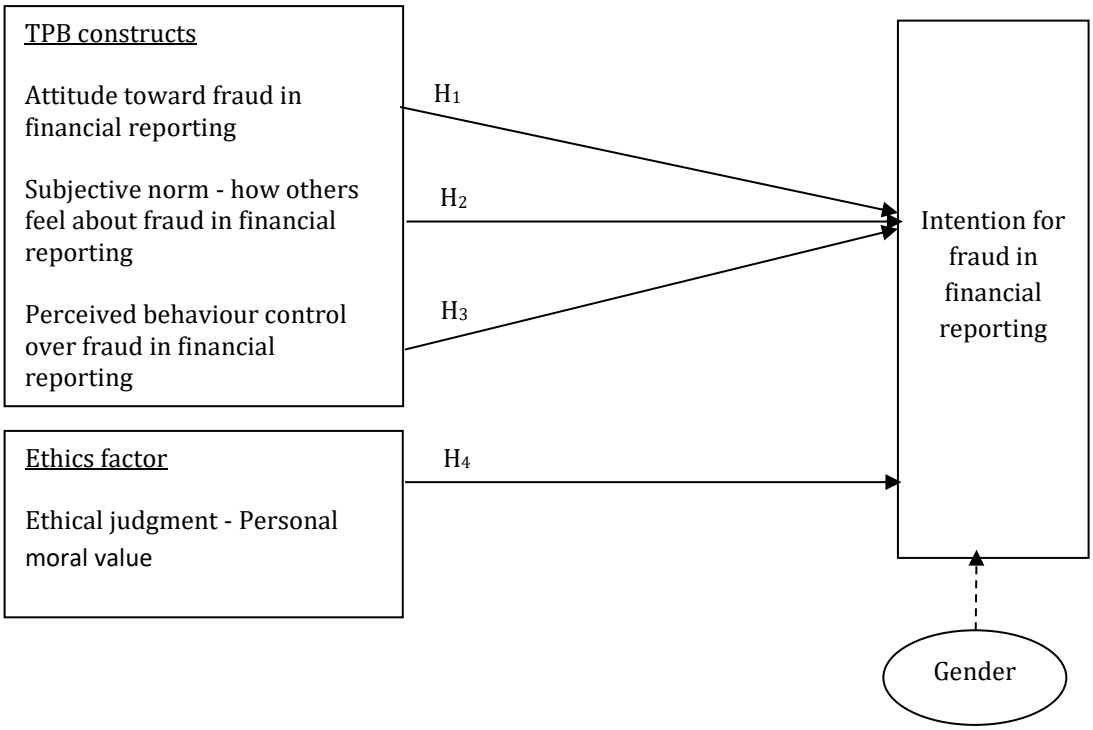
Ethical judgment is associated with ethical failure. According to O'Fallon and Butterfield (2005), ethical judgment is the process by which a person decides which course of action is morally right. People who make poor decisions in ethical dilemmas end up making unethical decisions. Ethical judgment is influenced by various factors such as individual variables, organizational variables and the characteristics of the ethical dilemma (Karassavidou & Glaveli, 2006).

Since behavioral intention and ethical judgment are often presented as key components of the ethical decision-making process, this study examines the impact of ethical judgment on fraud intention in financial reporting. According to Rest's four-component model, ethical judgment comes before ethical intention (Rest, 1994). Similarly, Treviño, Weaver and Reynolds (2006) agree that ethical judgment precedes ethical intention and ethical behavior.

3. Proposed Conceptual Framework

Based on the foregoing discussions, this study aims to present the relevant hypotheses and proposes a conceptual framework as guidance for the current study.

Figure 1: Proposed Conceptual Framework



This study aims to investigate how the intention for financial reporting fraud among preparers of financial reports for SMEs is influenced by attitude, subjective norms, perceived behavioral control, and ethical judgment. Gender is included as a control variable. The following part outlines the development of the hypotheses in accordance with the suggested research framework.

4. Hypotheses Development

In this study, the intention for fraud in financial reporting among preparers of financial reports forms the dependent variable, while the independent variables are TPB constructs (i.e. attitude towards behavior, subjective norm, and perceived control behavior) and ethical judgment. Additionally, gender is included as a control variable. Guided by the analysis of theoretical and empirical literature influencing behavioral intention, specific hypotheses developed on the relationship between the independent variables and dependent variables of this study.

Attitude, Subjective Norm and Perceived Behavioural Control

TPB states that all three fundamental factors of attitude, subjective norm, and perceived behavioral control influence behavioral intention. A shift in behavioral intention should be the outcome of factors that affect each of these determinants (Ajzen, 1991). According to the TPB, each of these factors and behavioral intention are positively correlated (Carpenter & Reimers, 2005).

First, prior research suggests that behavioral intention is significantly predicted by one's attitude toward behavior (e.g. Ajzen & Fishbein, 1980; Buchan, 2005; Syed Shah et al., 2011). According to Fishbein and Ajzen (1977), if a person believes that engaging in a certain behavior is beneficial, they are more likely to plan to engage in that behavior. Attitude is found to be a significant predictor of the behavioral intentions of individuals

to commit digital piracy (Liao et al., 2010; Phau & Ng, 2010; Syed Shah et al., 2011; Yoon, 2011). Similar findings in students' intentions to perform academic dishonesty behaviors such as cheating and lying (Alleyne & Phillips, 2011; Hsiao & Yang, 2011) and, in students' intentions to violate confidentiality and charge personal expenses (Alleyne et al., 2014). An individual is more inclined to engage in unethical behavior if they believe that the reward, not the penalty, will follow from their actions (Carpenter & Reimers, 2005).

Recent studies have applied TPB to understand fraudulent financial reporting intentions. For instance, Yuniarwati et al. (2022) found that attitudes significantly influence the intention to commit financial reporting fraud. In their study, they found that the differences in an individual's intention to create false financial statements are mostly determined by their attitude. According to Baridwan and Subroto (2024), a person's attitude might influence them to commit financial reporting fraud, which makes financial reporting unreliable since the company loses a lot of money due to fraudulent activity, which significantly lowers its revenue.

In relation to fraud in financial reporting, if an individual's attitude is positive or in favor of violating generally accepted accounting principles and committing fraudulent financial reporting, it is most likely that his or her decision intentions are biased in that direction. Thus, the proposed hypothesized that:
H_1: There is a significant positive relationship between attitudes and the intention for fraud in financial reporting.

Second, the behavioral intention and subsequent behavior are perceived to be influenced by the subjective norm or referent group, with significant others in organizations—particularly superiors—having a major impact on behavior (Smith et al., 2007). An individual is more likely to engage in the behavior in question if the subjective norm anticipates that they should, and vice versa (Syed Shah et al., 2011). Similarly, it is determined that unethical behavior is influenced by the social network of interactions at work as well as individual traits, problems, and organizational settings (Brass et al., 1998). According to TPB's prediction, an individual is more likely to plan to engage in a behavior if they are certain that referent groups believe that they should (Fishbein & Ajzen, 1977). For example, the subjective norm has a positive and significant impact on Malaysian students' purchasing behavior when it comes to pirated software (Syed Shah et al., 2011). Peer and societal influence also have a significant impact on Taiwanese college students' intention to pirate textbooks (Hung-Jen et al., 2011). According to Alleyne et al. (2014), the subjective norm also plays a substantial role in forecasting accounting students' propensity to act unethically, such as violating confidentiality and charging personal expenses.

According to Carpenter & Reimers (2005), a person is more likely to violate a generally accepted accounting principle and commit financial reporting fraud to meet earnings projections if they believe that their referent group would support or condone the violation (i.e., fraudulent financial reporting). The TPB, which contends that real behavior is the result of psychological drives and is subjective for each individual, is supported by the findings of Zulaikha et al. (2021), which shows that subjective norms in direct testing had a favorable effect on the intention for fraud. The hypothesis of the proposed study is that:
H_2: There is a significant positive relationship between subjective norms and the intention for fraud in financial reporting.

Perceived behavioral control, the third TPB construct, measures the perceived level of ease or difficulty in performing a certain behavior. Two aspects of perceived behavioral control are, firstly, the degree of control an individual has over their behavior and, secondly, their level of confidence in their capacity to carry out or refrain from performing such behavior (Syed Shah et al., 2011). According to TPB, a person's intention to carry out a specific behavior will be stronger if they have more control they perceived over their behavior (Carpenter & Reimers, 2005). This implies that people's behavior is highly impacted by how confident they are in their capacity to perform the behavior. People's behavioral intention increases with how strongly they believe they have control. According to earlier research, for instance, people's intentions to engage in digital piracy (Liao et al., 2010; Yoon, 2011), academic dishonesty and cheating (Alleyne & Phillips, 2011; Hsiao & Yang, 2011), and breaches of confidentiality and personal expense charges (Alleyne et al., 2014) are all significantly influenced by their perceptions of behavioral control.

Regarding financial reporting fraud, the more strongly the individual feels that he or she has control over the decision to violate generally accepted accounting principles; the stronger is his or her intention for violating these principles or making an unethical and fraudulent financial reporting decision. Therefore, the proposed study postulates that:
H_3: There is a significant positive relationship between perceived behavioral control and the intention for fraud in financial reporting.

Ethical Judgment
The two main components of the ethical decision-making process are ethical judgment and behavioral intention (Ferrell & Gresham, 1985; Ferrell et al., 1989; Hunt & Vitell, 1986; Jones, 1991; Rest, 1994; Treviño et al., 2006). According to Rest's four-component model, the factor that determines ethical intention is ethical judgment (Rest, 1994).

According to earlier studies, a person's behavioral intention toward ethical issues and their ethical judgment are strongly correlated. For example, among marketers, the intention to intervene in an ethical issue is primarily determined by ethical judgment (Hunt & Vasquez-Parraga, 1993). While the moral intention to pursue illegal behavior of software copying for personal use is primarily determined by ethical judgment (Thong & Yap, 1998), sales managers' intentions to reward or punish sales force behavior are found to be primarily determined by their ethical judgments (DeConinck & Lewis, 1997). Additionally, public practice accountants exhibit consistent patterns of reasoning in a variety of contexts (Buchan, 2005).

In a similar vein, someone with a better degree of ethical judgment selects the course of action that will have the least negative impact on the people involved. People with strong ethical judgment are less likely to purposefully deceive creditors and shareholders with fraudulent financial reports because they take into account how their actions may affect other people (Uddin & Gillett, 2002). The study by Awang and Ismail (2018) reveals that ethical judgment, albeit important, exerts the least influence on the desire to engage in unethical financial reporting among accounting professionals. In addition, the tendency for accounting fraud is significantly impacted negatively by the ethical value variable, indicating that employees are less likely to engage in financial reporting fraud when moral principles and high ethical standards govern their behavior (Pradipta & Bernawati, 2019). Therefore, the proposed study postulates that there is a negative correlation between unethical intention and ethical judgment. Those who exhibit higher levels of ethical judgment express a lower intention to commit financial reporting fraud than those who do not. Thus, the hypothesis of the proposed study is:
H_4: There is a significant negative relationship between ethical judgment and the intention for fraud in financial reporting.

Gender as a Control Variable
A control variable is introduced to support the interpretation of the relationship between the variables (Cooper & Schindler, 2011). Sekaran and Bougie (2010) define a control variable as "any exogenous or extraneous variable that could contaminate the cause-effect relationship, but whose effects can be controlled through a process of either matching or randomization" (p. 437).

Control variables are included in the study to address issues related to the potential threat of alternative explanations (Troy et al., 2011) and to ensure that the results are not skewed by their exclusion (Cooper & Schindler, 2011). The control variable may be a demographic or personal variable such as age or gender that needs to be “controlled" to determine the actual effect of the independent variable on the dependent variable (Creswell, 2009). Since gender is one of the most studied individual-level variables in the business ethics literature, it was included as a control variable in the research framework of this study. Previous data show that men are statistically more likely to commit fraud offenses than women, who account for approximately 72% of incidents. In addition, fraudulent acts committed by men tend to cause greater financial losses, with median losses being about twice as high as for women (ACFE, 2024). The study uses a dummy variable coded 1 (male) and 0 (female) to measure gender, but gender is not specifically predicted, nor is the expected sign of gender assigned.

5. Conclusion and Recommendations

In this study, a conceptual framework is proposed to determine the factors that influence financial reporting fraud in SMEs. Building on the Theory of Planned Behaviour (TPB) as a theoretical framework and extending to include another variable, ethical judgment, based on Rest's four-component model, this study attempts to investigate the four variables of attitude, subjective norms, perceived behavioral control and ethical judgment that influence financial reporting fraud in SMEs, with the inclusion of gender as a control variable. By examining the aforementioned variables, this study not only adds to the current body of knowledge but also provides insights into the factors that influence financial statement preparers in their intention to commit financial reporting fraud.

Theoretical Implications

Theoretically, this study expects to contribute to the current unethical intention literature, particularly concerning the intention to commit fraud in financial reporting. It also draws attention to the paucity of research on SMEs' ethical perspective. The results of this study expand the applications of the TPB model in predicting intention for financial reporting fraud. In a similar vein, this study supports Rest's four-component model stance regarding the connection between ethical judgment and ethical intention.

Additionally, this study addresses a critical research gap regarding the ethical perspectives model on SMEs, which are often under-regulated in comparison to larger firms. It will also provide empirical evidence that expands the understanding of unethical decision-making within the SME sector. Financial reporting fraud is a growing concern in corporate governance, but most of the literature on unethical intentions has focused on large corporations rather than SMEs.

Practical Implications

This study aims to provide a number of useful insights. Firstly, the results will serve as a preventive safeguard against fraud in financial reporting. In addition, as failing to detect existing fraud in a company's financial statements is costly to the audit firm (Carpenter et al., 2002), determining the elements that contribute to fraud in financial reporting may help reduce some of the potential litigation costs and improve the reputation of the profession (Uddin, 2000). The findings will provide a better understanding of the actual intentions of those involved in engaging in unethical financial reporting in SMEs.

Concisely, through a comprehensive investigation of the proposed variables, the findings of this study will provide a better understanding of the factors influencing the intention to commit fraud in financial reporting. The results will also have important implications for deterring fraud in financial reporting. This study is expected to contribute to and extend previous research by presenting a new framework for financial reporting fraud intentions within the SME environment.

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A Conceptual Analysis of the Relationship Between Environmental Strategy and Financial Performance

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Abstract: The resource-based view (RBV) is emerging as the dominant paradigm for comprehending the interaction between strategic management and the natural environment. Based on the RBV perspective, effective environmental strategies require more resources and capabilities. Firms with more resources can build environmental capabilities more easily as it allows them to invest in technological leadership and gain a competitive advantage. In addition, companies that actively integrate the environment into their business strategies possess sustainable competitive advantages. This paper outlines the concept to investigate the correlation between environmental strategies and financial performance. From the RBV's perspective, environmental strategies are valuable, rare, difficult to imitate, and capable of enhancing firms' competitive advantage and financial performance. Consequently, firms that adopt environmental policies are poised to elevate their image and reputation among stakeholders, customers, and shareholders, augmenting their competitive advantage and performance. This study's findings are expected to enhance the literature on corporate environmental strategies by offering additional information regarding the impact of applying such strategies on financial success. The findings of this study are also anticipated to encourage corporations to adopt environmentally friendly practices.

Keywords: *Environmental strategy, resource base view, eco-efficiency, environmental management, energy efficiency.*

1. Introduction

Climate change, biodiversity depletion, air, water, and soil pollution, and resource scarcity are significant environmental challenges of the 21st century. Climate change, sometimes known as global warming, represents the most significant environmental peril humans encounter. How we respond to this crisis will greatly impact both current and future generations and other species. Environmental problems that result from extreme utilization of energy and consumption of non-renewable natural resources such as fuel due to industrialization, economic growth and an increasing population have posed significant problems for most developing countries, including Malaysia (Wang & Azam, 2024a). Tiwari et al. (2024) suggested that one of the barriers among countries in developing sustainability is over-dependence on fossil fuels and exploitation of natural resources like oil and gas. They concluded that primary energy usage is anticipated to rise by 1.6 percent per year from 2009 to 2030. Moreover, employing unclear production processes and using materials that are unfriendly to the environment cause more environmental hazards and issues in developing countries (Ma & Zhu, 2024).

At present, there is an increase in awareness among companies on the need to be responsible for sustainability issues within their operations. Sustainability can be defined as employing resources to fulfill the current needs without compromising the ability of future generations to satisfy their own needs (Challoumis, 2024). Sustainable development emphasizes the evolution of human society to prioritize environmental stewardship and natural processes, rather than solely focusing on economic responsibility. Moreover, sustainable development systems, when driven by political will and grounded in ethical and ecological principles, will establish connections among environmental preservation, financial performance, and societal well-being. As such, to counter environmental sustainability challenges, an increasing number of companies have started or are planning to switch to more sustainability-oriented business models by implementing proactive environmental strategies (Gazzola et al., 2024). In other words, many businesses have switched from a reactive to a proactive approach to deal with environmental challenges. Consequently, environmental strategies have emerged as a critical component of strategic management to address sustainability issues.

The purpose of this research is to examine the relationships between environmental strategies and financial performance via the lens of the resource-based view (RBV) theory as the differentiator from other studies. The

RBV has emerged as a predominant framework for elucidating the relationship between strategic management and the natural environment. According to this theory, firms that implement proactive environmental strategies as one of their business strategies are able to gain and maintain their competitive advantage (Alkaraan et al., 2024).

This paper is divided into four sections. The introduction provides readers with a comprehensive overview to enhance their knowledge of the issues examined. The literature review then elucidates the significance of this study through an examination of prior literature and theoretical frameworks to examine previous research on environmental strategies. This section also discusses the results of previous studies in relation to the impact of implementing effective environmental initiatives on financial success. Next, the third section explains the research methodology by delineating the procedure for gathering secondary data via content analysis through the utilization of annual reports. The methodology also outlines the selection of the sample. Finally, the conclusion, contributions, and recommendations for future research are addressed in the fourth section of this paper.

2. Literature Review

This section discusses the theoretical framework pertinent to the RBV theory. This study seeks to utilize the RBV philosophy as a foundational impetus for the adoption of environmental policies by companies. The following subsections further discuss environmental strategies and provide a comprehensive examination of pertinent literature regarding the correlation between financial performance and environmental strategies.

Resource Based View (RBV) Theory

Edith Penrose's RBV theory gained popularity in 1959. The theories propose that unique resources and capabilities are the main factors that influence firm performance relative to competitors (Malhotra et al., 2024). According to Rugman and Verbeke (2002), the RBV perspective can be divided into four main characteristics. Firstly, the primary aims of organizations that employ the RBV are to maintain market sustainability and improve firm performance relative to their competitors. Secondly, each company has a different number of resources. Therefore, to enhance profitability, a company's resources must be unique, valuable to customers, challenging for competitors to replicate, and non-substitutable; consequently, their competencies and capabilities will facilitate increased profits. The resources present within a corporation, along with new assets such as technological advances or product designs, will also boost organizational effectiveness. A study by Ahsan (2024) that was conducted through the lens of the RBV suggests that firm resources, which are resources owned and controlled by the company, are the main factor that helps a company to develop a sustainable competitive advantage. More specifically, to gain and maintain competitive advantage, the resources and capabilities that a company has should be valuable, rare, imitable, and non-substitutable (Bokhari et al., 2024). An example is an organization's capacity for change, which encompasses its leadership, culture, infrastructure, and systems. Furthermore, the RBV theory has been employed to ascertain how corporations effectively leverage their resources for operational management and meet their social and environmental responsibilities.

Environmental Strategy

Environmental strategy is defined as the extent to which an organization is involved in a wide range of organizational and managerial actions on environmental issues (Gunarathne et al., 2021). The primary objective of companies adopting environmental strategies is to decrease expenses and enhance financial performance to attract corporate stakeholders, while simultaneously improving environmental quality. Numerous studies have been undertaken to investigate the impact of adopting environmental strategies on corporate performance. In today's globalized world, the competitive landscape for businesses regarding environmental issues is ever-evolving. These scenarios arise from new legislation and standards, stakeholder pressures, and technological advancements. According to Wu and Tham (2023), companies implement specific strategies as part of their efforts to deal with this dynamic scenario. Based on previous literature, there are several types and classifications of environmental strategies, which have been proposed by adopting different perspectives.

Elrayah and Zakariya (2024) highlight three strategies, namely pollution prevention, product stewardship, and clean technology, as being needed to face the environmental sustainability challenge. Besides that, Palenychak

et al. (2024) proposed four types of competitive environmental strategies. They are eco-efficiency, beyond compliance leadership, eco-branding, and environmental cost leadership. Moreover, according to a study by Albitar et al. (2023), which focused on firms' responses to climate change, environmental strategies are classified into two dimensions: process level and organizational level. The option from these two dimensions can be further divided into the following strategies: enhancement of processes, development of products, novel product/market combinations, internal transfer of emission reductions, procurement of emission credits, and supply chain initiatives.

Furthermore, corporate environmental strategy is another business strategy that is implemented by firms to meet legal requirements, which includes other strategies that are adopted to control pollution (Awewomom et al., 2024). In demonstrating proactiveness, firms tend to implement strategies that not only meet legal requirements but also demonstrate good environmental practices, such as voluntary eco-efficiency that results in the reduction of materials used, good waste management, and reduction in energy usage (Meleddu et al., 2024). Hariadi et al. (2023) also concluded that to be more proactive, firms need to implement voluntary pollution prevention practices, which require innovation in production processes by using new technology and product innovations like green product design. This can help minimize the energy and material used at the source. Apart from that, innovation in product and process design and even business models are re-designed to be more environmentally friendly as well as minimize a firm's ecological footprint along the entire product life cycle (Cappelletti & Germani, 2024).

Based on the prior studies mentioned above, researchers have proposed many classifications of environmental strategies. Nonetheless, despite the proposal of many environmental plans, there remain notable resemblances among them. Generally, as suggested by the prevailing literature, environmental strategies can be classified as process-oriented or organization-oriented (Marei et al., 2024). This study, however, is based on a more comprehensive framework of the various environmental strategies identified in the literature review, which comprises four strategic approaches: process-oriented strategies, enhancement of material eco-efficiency, improvement of energy efficiency, and organization-oriented implementation of green management. Execution of sustainable supply chain management. The eco-efficiency approach is a method designed to reduce or eliminate resource consumption and waste in the production of a final product. Reducing energy use and using renewable energy sources are key components of the strategic approach known as energy efficiency. In environmental management, an organization-oriented strategy is considered a strategic approach that aims to create a comprehensive and methodical way to enhance a company's business and environmental performance. A green supply chain is a strategic approach designed to provide a systematic method and mechanism that enhances environmental sustainability throughout the entire supply chain.

Environmental Management

Environmental management comprises a range of approaches that are used by firms to enhance their environmental performance; in other words, they reduce the environmental impact of industrial processes, products and services (Cheng et al., 2024). The main objective of the environmental management approach is to operate, design, and develop business activities, produce environmentally friendly products and services that can reduce the impact on the environment, and improve a firm's financial performance by gaining competitive advantages (Ali et al., 2022). Environmental management practice is the application of strategies aimed at safeguarding the environment by prioritizing the mitigation of environmental consequences, including waste and emissions, to air and water, after product creation. On the other hand, the approaches that are used to prevent or minimize environmental impacts in the first place may result in business benefits in terms of cost savings, competitiveness, and market opportunities (Dorfman et al., 2024). From the RBV perspective, good environmental management is valuable to a company since it will enhance a company's performance (Baquero, 2024).

Green supply chain management

The green supply chain is an environmental strategy that can be implemented by firms to address environmental issues (Jum'a et al., 2024). Some studies have stated that to gain environmental sustainability, firms' focus should not be on the proactive implementation of a corporate environment alone; rather, they should also adapt and move towards green supply chain management as one of their strategies (Yang et al., 2023). Wiredu et al. (2024) defined green supply chain as an adoption or implementation of environmental

management principles to the whole set of activities from the entire customer order cycle, which encompasses design, procurement, manufacturing, assembly, packaging, logistics, and distribution.

Green supply chain management has emerged as a crucial method for enterprises to optimize profits and gain market share by mitigating environmental risks and enhancing ecological efficiency. Alkandi et al. (2024) stated that implementing green supply chain management as a firm's environmental strategy promotes efficiency and synergies among business partners and at the same time enhances the firm's economic performance. In addition to augmenting economic performance, it also contributes to boosting environmental performance, reducing waste, and conserving expenditures. Overall, the above-mentioned studies show that using a green supply chain as an environmental strategy will improve a company's environmental and financial performance.

Eco-Efficiency

Eco-efficiency, in simple terms, means doing more with less. Eco-efficiency can also be defined as using lower or less natural resources to produce more economic outputs and at the same time reduce environmental impact (Han et al., 2021). The concept of eco-efficiency itself focuses on the effects of economic performance and environmental impact. According to the World Business Council for Sustainable Development (WBCSD), eco-efficiency means:

"Being achieved by the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resources intensity throughout the life cycle, to a level at least in line with the Earth's estimated carrying capacity" (WBCSD, 1992; WBCSD, 2000a, p. 4).

A study by Sáez de Guinoa Sentre et al. (2024) used the concept of eco-efficiency as one of the instruments or mechanisms that can help businesses make and support their decisions for alternative investments and production strategies. Accordingly, this concept can help a business contribute to sustainable development because it has a positive impact on firm competitiveness and improved environmental performance. Additionally, implementing eco-efficiency as an environmental strategy will not only result in benefits to the financial performance but at the same time reduce environmental issues such as consumption of energy, materials and water and the emission of greenhouse gases and ozone-depleting substances (Savitri & Nik Abdullah, 2023). Nikolakis et al. (2024) proposed that companies implementing eco-efficiency as their environmental strategy should focus on the reduction in the utilization of resources to produce their final output. In their study, eco-efficiency was measured based on the reduction of environmental performance key indicators, such as reduction in water usage, material use, resource use, and production waste recycling. Minimizing the usage of resources will lead to enhanced firm performance by reducing production costs. In other words, material saving and low wastage of materials by efficient consumption of firm resources will enhance firm productivity (Wang & Azam, 2024b). Minimizing the utilization of resources is one of the ways for firms to conserve natural resources (Wang & Azam, 2024b). This strategy can be applied not only to a firm's raw materials, water, and energy but also to natural resources.

Energy efficiency

Energy efficiency refers to any behavior or approach implemented by a corporation to decrease or conserve energy consumption. Energy efficiency is a strategic technique employed by organizations to minimize energy consumption or utilize renewable energy sources. A strategic approach may involve the implementation of new technologies that conserve energy or innovations in the production process; in other words, energy efficiency refers to the utilization of technology that demands less energy to achieve the same function. Companies should focus on long-term energy strategies and policies to build energy sustainability and use energy sufficiently to meet the needs of today and the future (Bakhsh et al., 2024). In addition, Abbas et al. (2024) stated that to achieve energy sustainability, companies should also invest in the research and development of advanced technologies to produce conventional energy sources, encourage the use of alternative energy sources, and promote sound environmental policies.

The energy efficiency strategic approach is important because irresponsible usage of energy not only results in environmental harm through pollution through increases in greenhouse gas (GHG) emissions; it also directly influences the profitability of firms (Olarewaju et al., 2024). The use of energy will affect a firm's financial

performance because if the firm is not efficient in its energy consumption, this will increase production costs and reduce profits (Ebire et al., 2024). Thus, the consideration of such market processes may have important implications for the efficiency of environmental policies concerned with energy use. Pavel et al. (2024) stated that efficiency in the usage of energy is recognized as one of the more effective and less costly mechanisms to reduce GHG emissions by decreasing the amount of energy required to accomplish the actual energy service. Hence, if a firm implements energy efficiency as one of its business strategies, it will enhance the firm's profits by reducing production costs and reduce the firm's environmental impact (Fan et al., 2017).

Environmental Strategies and Financial Performance

Certain research has sought to examine the impact of environmental strategies on financial performance. Managers must prioritize environmental considerations in their decision-making processes, attend to ethical and social values that the company should uphold, and secure a competitive advantage in ensuring future stability and sustainability. Commitment to the natural environment has become a strategic issue within the current competitive scenario. A study by Hidayat et al. (2024) suggests that environmental management may be a tool or one of the strategies that a company can use to help improve its competitiveness. Hendijani and Saeidi Saei (2024) concluded that the influence imposed by environmental strategies on firm performance may be a result of the positive impact on firm cost and differentiation levels. If firms have good environmental strategies to prevent pollution, this may enable them to save and control costs, input, and energy consumption as well as to reuse material through recycling (Ardini & Fahlevi, 2024). Consequently, by adopting effective environmental measures, a corporation can enhance its financial performance. Proactive environmental strategies may help a firm reduce environmentally dangerous processes, redesign its existing product system to reduce life cycle impact, and develop and design a new product with lower life cycle costs (Ahmed et al., 2021).

Additionally, implementing good environmental management as a strategy can improve firm revenue. The implementation of an environmental management system could also increase a firm's value-added by increasing demand and improving productivity (Jiang et al., 2024). Decreases in pollution through pollution prevention strategies also enhance a firm's value-added. Therefore, a positive effect between environmental strategies and financial performance could be obtained by increasing demand through improving customer loyalty and enhancing the firm image (Tan et al., 2022). In other words, firms will gain a competitive advantage by implementing an environmental strategy.

3. Methodology

This study intends to investigate the relationship between environmental strategies and firms' financial success. The study intends to utilize secondary data to ascertain the relationship between independent and dependent variables. Data will be gathered from the annual reports of Malaysian listed companies for the years 2020 to 2024, concentrating on environmental policies that corporations employ in their companies. The data will be analyzed using the Statistical Package for Social Science (SPSS) software. Annual reports will be used to collect data about the environmental strategies that firms adopt (Reid et al., 2024). This study will also employ content analysis of annual reports to determine whether a corporation has decided to embrace environmental strategies. Annual reports are the primary communication mechanism between the organization's management and its stakeholders (Reid et al., 2024). Consequently, this study will assess environmental policies by analyzing the Annual Report Texts, which encompass the Letters to Shareholders, Company Report, and Management Discussion and Analysis of the firms. This study will analyze the relationship using samples from Malaysian-listed businesses on the main board for the years 2020 to 2024. Such a sample will be chosen largely due to convenience as Bursa Malaysia requires the PLCs to disclose CSR information in their annual reports.

However, only environmentally sensitive industries will be chosen for this study as their activities have a significant impact on the environment. Huang and Ge (2024) stated that companies with a high risk of environmental impact from their activities are considered more sensitive. Based on past studies, sensitive industries include mining, oil and gas, chemical, construction and building materials, forestry and paper, steel and other metals, electricity, gas distribution and water (Huo et al., 2025). Alternatively, Cormier et al. (2011) chose to examine the industries deemed as sensitive that have attracted investors' concern with respect to 48

environmental issues. The industries include consumer goods and services, manufacturing, water, energy, chemicals and drugs distribution, food and beverages, high technology, and heavy industries. This is because, within the environmental context, the suppliers of high-quality products consistently originate from such businesses. Furthermore, these businesses are associated with greater air, land, and water pollution compared to other sectors. Consequently, according to Bursa Malaysia's classification, the industries identified as sensitive include industrial products, consumer products, construction, plantations, and infrastructure project companies (IPCs).

4. Conclusion and Recommendations

This paper proposes a theoretical framework for the impact of implementing environmental measures on enterprises' financial performance. This study will employ the RBV theory to analyze the relationships between environmental strategies and financial success. This theory posits that to execute a successful environmental strategy, corporations require additional resources and competencies that are uncommon, non-substitutable, and challenging for competitors to replicate. This finding is grounded in the RBV perspective, which posits that environmental strategies constitute a unique and inimitable capability of a firm. By implementing effective environmental strategies, a firm can distinguish itself from competitors and bolster its reputation among stakeholders, thereby augmenting its revenue and performance. Furthermore, implementing environmental measures can decrease production costs by minimizing material consumption and reducing energy usage, among other factors. Consequently, decreases in production costs will augment business revenue.

This study's findings will enhance the literature on corporate environmental strategies by offering additional information regarding the impact of applying such strategies on financial success. This study illustrates the effect of implementing environmental policies on firm performance, offering valuable insights for Malaysian companies to assess the necessity of beneficial changes to their environmental practices. The study has the potential to encourage corporations to voluntarily adopt improved environmental strategies rather than merely engaging in environmental activities to comply with legislation and evade fines and penalties.

This study offers valuable insights to regulatory agencies in advancing environmental initiatives and enhancing business transparency. Additionally, authorities may consider the results beneficial for informing their decisions to establish or amend requirements concerning environmental issues, to promote ethical business practices among corporate entities, and to mitigate their environmental impact. Moreover, acknowledging resource limitations may assist environmental policymakers in formulating more efficacious pollution control strategies.

Future Direction

This study will utilize content analysis as a research tool, while direct interviews with firm managers will provide a deeper understanding of their engagement in environmental responsiveness activities and the role environmental practices play in enhancing a firm's financial performance strategies. Moreover, the researchers may opt to conduct in-depth interviews with corporate managers to attain a more profound comprehension of the subject matter. Furthermore, while the samples for this study will be confined to sensitive businesses, recommendations for future research will incorporate additional sectors as samples to conduct a comparative analysis between sensitive and non-sensitive industries.

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Flexible Work Revolution among Accountants in Malaysia: Challenges and Benefits

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Abstract: The importance of flexible work arrangements is growing due to its numerous benefits to employees and organizations. However, the accounting profession faces challenges in implementing this innovative working environment. Therefore, the main aim of this paper is to theoretically review various factors that influence the effectiveness of flexible work arrangements among accountants in Malaysia. Drawing on a comprehensive analysis of prior literature, this paper provides valuable insights into the relevance of work flexibility in the accounting profession and the internal and external organizational factors that play a crucial role in enhancing work-life balance, job satisfaction, technology integration and employee performance. The extant literature highlights that organizational culture, top management support, organizational policies, and competitive pressure are among the factors that significantly impact the successful implementation of flexible work arrangements. Despite the thorough review conducted, this paper lacks empirical data to substantiate the previous findings documented in the literature. A survey can be employed to secure valuable data that can establish the relationships between the factors discussed in the paper. While still in the realm of theory, the paper has explored several important determinants that could help organizations in any policy changes in implementing flexible work arrangements effectively.

Keywords: *Flexible work, work-life balance, job satisfaction, competitive pressure, organizational structure*

1. Introduction

The global workforce is undergoing a significant transformation, with flexible work arrangements becoming increasingly prevalent across various industries. This shift, accelerated by the COVID-19 pandemic, has led to a re-evaluation of traditional work models, emphasizing the importance of work-life balance, employee autonomy, and technological integration. The concept of flexible work is not new; however, its adoption has surged in recent years. A global survey by Randstad revealed that 83% of employees prioritize work-life balance in their current or future jobs, surpassing other factors such as job security and compensation. This trend is particularly pronounced among younger workers, especially those in Generation Z, who value the ability to harmonize their professional and personal lives.

In the United Kingdom, remote working remains prevalent, with two in five employees working from home at least one day a week. Office occupancy has gradually increased, reaching 60% of pre-pandemic levels. Companies have adopted various approaches, from enforcing office attendance to embracing hybrid models. The British government supports remote working, viewing it as beneficial for motivation and productivity. Academic studies present mixed results regarding productivity in remote work, with variations depending on industry and worker roles. The International Labour Organization (ILO) has also highlighted the benefits of flexible working, noting that more adaptable work schedules and shorter hours can improve work-life balance and enhance company productivity.

In Malaysia, the adoption of flexible work has gained momentum, influenced by both global trends and local regulatory frameworks. The government has taken proactive steps to encourage the adoption of flexible work. The Ministry of Human Resources published the Guidelines for Implementation of Flexible Work Arrangement on December 5, 2024. The accounting profession in Malaysia also has not been immune to the global shift towards flexible work. In the context of the accounting profession, flexible work can include options such as flexible working hours and remote work. These arrangements enable accountants to manage peak periods, such as audit seasons, more effectively while maintaining a healthy work-life balance. Flexible work can significantly enhance job satisfaction. It allows employees to manage their professional and personal responsibilities better, resulting in improved well-being and productivity. However, the implementation of flexible work in the accounting sector also presents challenges. Ensuring data security and confidentiality,

maintaining effective communication, and managing client expectations are critical considerations. Firms must invest in robust technological infrastructure and establish clear policies to address these challenges.

Problem Statement

The adoption of flexible work among accountants in Malaysia presents significant challenges despite its potential benefits in enhancing work-life balance, employee satisfaction, and talent retention. The COVID-19 pandemic accelerated the global shift toward flexible work, including remote work, flexible hours, and hybrid models, yet many Malaysian accounting firms continue to struggle with effective implementation. Several key barriers hinder the widespread adoption of flexible work within the accounting profession, necessitating a deeper exploration of the underlying issues.

One of the main challenges in implementing flexible work among Malaysian accountants is the lack of technological infrastructure and digital literacy. Nordin, Rahman, and Omar (2016) identified insufficient research and awareness as key barriers, while the World Bank (2023) noted that many firms struggle to balance flexibility with productivity and financial stability. Organizational culture also plays a role, with many firms emphasizing in-office presence. Randstad Malaysia's (2024) survey found that 52% of employees face stricter office requirements, and two in five would resign if denied remote work. Additionally, regulatory compliance remains a major concern, as accountants must adhere to strict reporting, confidentiality, and ethical standards. Nordin et al. (2016) reported that Malaysian employers lag in flexible work adoption due to compliance concerns. These challenges highlight the need for technological investment, cultural shifts, and regulatory adaptations to implement flexible work effectively in Malaysia's accounting profession.

As employee well-being and work-life balance are often cited as key benefits of flexible work, it can also become an area of concern if not managed effectively. Improper implementation of flexible work may lead to increased workloads, employee isolation, and blurred boundaries between work and personal life. Randstad Malaysia's (2024) survey found that while 86% of Malaysian employees prefer working from the office at least three days a week, many still prioritize flexible options to maintain a balance between professional and personal responsibilities. If firms fail to address these concerns adequately, flexible work may result in unintended negative consequences, diminishing their intended benefits.

The talent retention crisis in the Malaysian accounting profession further underscores the importance of addressing these challenges. Manabat (2023) emphasized that flexible work options are critical for retaining accountants~~,~~ as professionals increasingly prioritize work-life balance in their career decisions. Furthermore, the Association of Chartered Certified Accountants (ACCA) Malaysia (2024) reported that the country remains far from its 2030 target of 60,000 accounting professionals~~,~~ despite efforts to attract and retain talent through increased salaries and benefits. The ongoing shortage suggests that current retention strategies, including flexible work, may not be sufficiently appealing or well-executed to meet industry demands.

The Technology-Organization-Environment (TOE) framework provides a structured perspective for analyzing the factors affecting the implementation of flexible work in the Malaysian accounting sector. This theory suggests that technological, organizational, and environmental factors collectively influence the adoption of new workplace practices, including flexible work models. Therefore, the objective of this study is to examine whether organizational culture, top management support, policies, and competitive pressure have a significant influence on the implementation of flexible work among accountants in Malaysia. Applying the TOE framework allows a comprehensive understanding of how technological capabilities, internal organizational dynamics, and external environmental pressures collectively shape flexible work adoption. Addressing technological gaps, fostering cultural shifts, and adapting to regulatory requirements are critical steps for Malaysian accounting firms to successfully implement flexible work and enhance workforce sustainability in the long run.

2. Literature Review

Flexible Work

Flexible work encompasses various practices that provide employees with flexibility regarding when, where, and how they perform their work tasks. These arrangements include telecommuting, flexible working hours, compressed workweeks, job sharing, and part-time schedules. The primary objective of flexible work is to offer

employees greater autonomy over their work schedules and locations, promoting a balance between professional and personal commitments.

The adoption of flexible work within the Malaysian accounting sector has been gradual. A study by Amirul, Mail, Amirul, and Dasan (2017) highlighted that despite increasing awareness of flexible work among accounting firms, actual implementation remains limited. The study identified that only a minority of firms had formally adopted flexible work policies, with most adhering to traditional work structures. This cautious approach is often attributed to concerns over maintaining productivity and ensuring compliance with regulatory standards. Further research by Ramakrishnan and Arokiasamy (2019) indicated that the limited adoption of flexible work in the accounting sector is influenced by organizational culture and management attitudes. The study found that firms with a more progressive outlook and supportive leadership were more likely to implement flexible work, recognizing the potential benefits in employee satisfaction and retention.

Several factors have been identified as influencing the adoption of flexible work in the Malaysian accounting profession such as technological infrastructure, organizational culture, management support, regulatory compliance and employee demand. The availability and robustness of technological tools are critical for effective flexible work implementation. Firms with advanced IT infrastructure can support remote work and flexible schedules more efficiently. However, smaller firms may lack the necessary resources to invest in such technologies, hindering flexible work adoption (Nordin et al., 2020). Amirul et al. (2017) emphasized the need for adequate technological support to facilitate seamless communication and access to accounting systems remotely. The next factor is organizational culture where the organization values flexibility and trusts employees to manage their responsibilities and is more likely to implement flexible work successfully. Traditional hierarchical structures and a preference for in-person supervision can impede the adoption of flexible work practices. Ramakrishnan and Arokiasamy (2019) noted that firms with rigid organizational cultures were less inclined to offer flexible work, fearing a loss of control over employees' work processes.

Leadership commitment also plays a pivotal role in the implementation of flexible work. Managers who recognize the benefits of flexibility and champion such initiatives can drive organizational change, whereas managerial resistance can stifle flexible work adoption. A study by Subramaniam, Overton, and Maniam (2015) found that supportive management was a significant predictor of flexible work implementation, as leaders set the tone for organizational policies and practices. The need to adhere to industry regulations and maintain data confidentiality can deter accounting firms from adopting flexible work. Concerns about meeting compliance standards in a remote work environment may lead firms to favor traditional work arrangements. Amirul et al. (2017) highlighted that the stringent regulatory framework governing the accounting profession necessitates careful consideration before implementing Flexible work to ensure compliance and maintain professional standards. The growing demand for work-life balance among employees, especially younger professionals, is also a pressure for firms to offer flexible work. Organizations that fail to provide flexible options risk higher turnover rates and difficulties attracting talent. Ramakrishnan and Arokiasamy (2019) observed that firms responsive to employee needs for flexibility experienced higher job satisfaction and loyalty, suggesting that accommodating flexible work can be a strategic advantage in talent management. Finally, while there is a growing recognition of the benefits associated with flexible work, the challenges that persist in their widespread adoption within the accounting sector also need to be considered. A study by Alqasa and Alsulami (2022) examined the Saudi education sector and identified cultural norms, technological limitations, and managerial resistance as significant barriers to flexible adoption. These findings underscore the importance of contextual factors in the successful implementation of flexible work.

Organizational Culture

The organization's culture significantly influences the adoption of flexible work arrangements, especially the perceptions of coworkers. O'Reilly and Chatman (1996) describe organizational culture as a set of standards and values that create expectations on appropriate attitudes and behaviors within a group. To enhance employee trust, top management must actively foster a culture that emphasizes flexibility and communicates the benefits of flexible work arrangements to employees (Shuo, Jumbulingam, Fadel, & Mimaki, 2022). Furthermore, Chatzoglou (2024) asserted that employees must receive sufficient and pertinent knowledge and skills through job training to enhance their work performance. The organization can achieve this by fostering a positive relationship with its employees (Tsui, Pearce, Porter, & Tripoli, 1997).

Dung (2024) indicated that company culture significantly influences employee performance. They stated that flexible work arrangements facilitate an effective balance between employees' personal and professional lives. This observation aligns with the research conducted by Gasic and Berber (2023), which examines the correlation between flexible working arrangements and turnover intentions, revealing that employees having access to such arrangements and a sense of engagement in their work are less likely to consider resignation. Gasic and Barber (2023) pointed out that organizational culture that creates an innovation culture where employees are supported and encouraged to share their ideas, even in a virtual environment, can neutralize the negative impact of flexible work. Establishing trust and transparent communication within the firm enables the employees to/allows the employees to feel at ease while discussing ideas, irrespective of their work arrangements.

Moreover, Alias (2021) and Bataineh (2019) emphasize that flexibility fosters employee motivation, hence enhancing productivity and effectiveness. They note that extended working hours and substantial workloads can adversely affect productivity and disturb the work-life balance. Nevertheless, transparent communication regarding flexible work arrangements can mitigate resistance, promoting a supportive organizational culture that emphasizes employee well-being and success. However, Shaari and Amirul (2023) emphasize that specific professions have significant challenges in attaining workplace flexibility. They note that in the audit field, clients frequently face stringent reporting deadlines and unforeseen time limitations, complicating auditors' ability to uphold a flexible timetable. Lee, Lee, and Suh (2016) also claimed that the emergence of an "always-on" work culture interferes with employees' personal lives, obscuring the distinctions between personal and professional time and further impeding the effective execution of flexible work arrangements.

Top Management Support

Support from top management is essential to the successful adoption of flexible work arrangements (Clarke & Holdsworth, 2017; Hammig, 2017). This support includes psychological and practical support from supervisors and helping employees properly balance work and family duties (Meguella, Khalil, Ahmad, Nor, & Yusoff, 2017). White, Lockett, and Currie (2020) and Yu, Burke, and Raad (2020) emphasize that supervisors must have strong expertise to effectively guide teams, make informed decisions, and achieve organizational objectives. They also highlight the need for excellent people skills and the ability to identify and address key support needs to ensure employees receive the necessary resources and encouragement to perform at their best.

Kossek, Hammer, Kelly, and Moen (2014) specified four attributes of supervisory support that facilitate employees in balancing work and family responsibilities. They include emotional support, instrumental support, dual-agenda support, and role-supportive behaviors. These qualities collectively foster a conducive workplace environment that enhances employee satisfaction and organizational commitment. Alias (2021) and White et al. (2020) posited that when top management openly supports and promotes flexible work arrangements, it cultivates a positive environment and encourages employees to adopt them without fear of criticism. Managers who meticulously implement these policies and highlight their benefits can cultivate trust and confidence among employees.

Rathi and Lee (2017) highlighted those proficient supervisors are essential in resource management, offering structural incentives and generating possibilities to improve job satisfaction and fulfill employee demands. Likewise, Azar, Khan, and Van Eerde (2018) noted that employees who engage in flexible work arrangements exhibit heightened organizational commitment. They suggest that flexible work arrangements foster trust and autonomy, hence enhancing employees' affiliation with the workplace. Bainbridge and Townsend (2020) emphasized that flexible work arrangements can decrease turnover by enhancing work-life balance and cultivating employee loyalty. Williams (2019) discovered that such agreements may also elevate turnover intentions, as they provide employees with the flexibility to pursue alternative job options.

Policies

Top management should establish clear, flexible work arrangement policies in the company because well-implemented policies are essential to encourage the adoption of flexible work arrangements. Angelucci, Angrisani, Bennet, Kapteyn, and Schaner (2020) suggest that top management should provide a write-up that details flexible work arrangements as part of a comprehensive policy as a reference to employees. When policies outline the guidelines, benefits, and expectations of flexible work arrangements, they provide

employees with the confidence to use them. Angelucci et al. (2020) also indicate that those policies need to be communicated to all employees and supported with mentoring and training as demanded. Policies that are easy to understand and accessible ensure that every one organ their options and how to apply for flexibility.

Hoffman, Garner, Koong, and Woodward (2020) suggest that a clear and consistent strategy for flexible work arrangements is essential for organizational performance. Consistent implementation of these policies throughout all organizational levels fosters confidence, establishing flexible work arrangements as a normative aspect of the workplace rather than an anomaly. Furthermore, Hoffman et al. (2020) point out that flexible work arrangements typically require streamlining office supplies and equipment, allowing organizations to eliminate some expenses associated with space, resources, or other items. Therefore, a flexible work strategy enables organizations to utilize resources more efficiently and engage in long-term growth initiatives.

Moreover, a recent study by Faruque (2024) investigating flexible work arrangements in small enterprises identified a positive association between flexible work arrangements and elevated satisfaction and engagement levels. Similarly, Galanti, Guidetti, Mazzei, Zappala, and Toscano (2021) observed that small enterprises are progressively implementing flexible work arrangement policies, motivated by technological improvements, changing labor preferences, and an increased demand for flexibility. Therefore, well-designed policies are essential for the effective implementation of flexible work arrangements, as they establish a clear framework that benefits both individuals and companies, promoting a culture of trust, productivity, and work-life balance.

Competitive Pressure

Competitive pressure is a critical external force that compels organizations to modify their strategies, structures, and operations to maintain or enhance their market position (Mohtaramzadeh & Ramayah, 2018). This pressure arises from various sources, including market competition, client demands, technological advancements, and regulatory changes, which shape organizational decisions and drive firms toward innovative work models. In the accounting industry, firms facing heightened competition are employing flexible work arrangements to improve efficiency and meet evolving client expectations. As the accounting industry progresses, flexible work arrangements will remain a critical tool for firms seeking to maintain their competitive edge. The relationship between competitive pressure and the implementation of flexible work arrangements in accounting firms is multifaceted.

Several studies demonstrate a predominantly positive relationship between competitive pressure and flexible work arrangement implementation in accounting firms. Firms facing greater market pressures are more likely to adopt flexible work models. The need to attract top talent, enhance client service, and optimize operations has driven firms to implement flexible work arrangements as a strategic response to competition. Henderson, Sheetz and Trinkle (2012) observed that high competition pressures lead firms to imitate competitors' adoption decisions, including transitioning to flexible work arrangements. Furthermore, firms experiencing high levels of competition are more inclined to implement flexible work arrangements to maintain their market standing. According to Smith and Roberts (2018), competitive labor markets have pressured firms to offer flexible work options to attract top talent. Younger professionals, particularly Millennials and Gen Z accountants, show a strong preference for work flexibility (Miller & Clark, 2022). Accounting firms offering flexible work options were more successful in recruiting and retaining skilled professionals, as these arrangements aligned with the growing demand for work-life balance. Similarly, Jones, Smith, and Williams (2019) noted that integrating digital tools in accounting practices enabled firms to transition to remote work and flexible schedules, thereby enhancing service efficiency and responsiveness to client needs.

As globalization expands the operational scope of accounting firms, competitive pressure to manage cross-border operations efficiently has intensified. Firms now engage with international clients operating across multiple time zones and cultural contexts, requiring adaptable work models (Smith, Johnson, & Peters, 2020). Lee and Kim (2023) explored how firms serving global clients adopted flexible work arrangements to accommodate these challenges, facilitating better communication and enhancing overall service delivery. Their findings suggest that firms leveraging flexible work arrangements gain a competitive advantage in an increasingly interconnected marketplace by improving responsiveness and operational flexibility. Brown and Taylor (2020) further support this argument, emphasizing that accounting firms implementing flexible work models were perceived as more progressive and client-centric. The study suggested that flexible work

arrangements enabled firms to respond more agilely to market demands, thus strengthening their competitive positioning. The competitive nature of the accounting industry has driven firms to adopt flexible work arrangements as a strategic tool for talent management, client service, and operational efficiency.

3. Conceptual Framework

Figure 1 shows the conceptual framework for this study. The conceptual framework is developed using the Technology-Organization-Environment (TOE) framework, a widely recognized model for analyzing the factors influencing organizational innovation. The TOE framework, introduced by Tornatzky and Fleischer (1990), offers a structured approach to understanding how internal and external contexts shape adopting practices such as flexible work arrangements. The framework considers three dimensions: technological, organizational, and environmental factors. The TOE framework provides a comprehensive lens for analyzing flexible work adoption. It emphasizes the role of technology (policies and infrastructure), organizational (culture and leadership), and environmental (competition and market trends) in shaping organizational innovation. By examining these interconnected factors, the framework offers insights into the drivers and barriers to adopting flexible work in accounting organizations.

Dependent Variable: Implementation of Flexible Work
The dependent variable in this research focuses on implementing flexible work practices. These practices have gained prominence in response to changing workforce expectations and industry needs. Within accounting, flexibility can enhance productivity, job satisfaction, and retention, making it a strategic priority for many organizations.

Independent Variables
The key factors influencing flexible work adoption are categorized within the contexts of the TOE framework:

Organizational Context
- Organizational Culture:
A supportive organizational culture that values adaptability, innovation, and employee well-being is crucial for embracing flexible work practices. Companies with such cultures are more likely to view flexibility as a strategic tool for improving performance and fostering employee satisfaction. The TOE framework highlights internal readiness, suggesting that cultural alignment is essential for the effective implementation of innovative practices.
- Top Management Support:
Leadership plays a vital role in facilitating the adoption of flexible work arrangements. Senior managers influence this process by allocating necessary resources, formulating policies, and addressing resistance to change. The involvement of top management demonstrates organizational commitment, which is crucial for achieving buy-in from employees and other stakeholders.

Environmental Context
- Policies:
Policies provide the structural foundation for implementing flexible work. These may include guidelines on remote work, IT infrastructure, and security measures. Clearly defined policies help bridge the gap between strategic goals and operational feasibility, ensuring seamless transitions to new work models.
- Competitive Pressure:
Competitive pressure refers to external forces that drive organizations to adopt flexible work arrangements. These may include industry trends, client expectations, or competitive dynamics. According to the TOE framework, such environmental factors compel firms to adapt their practices to maintain their relevance and competitiveness in the market.

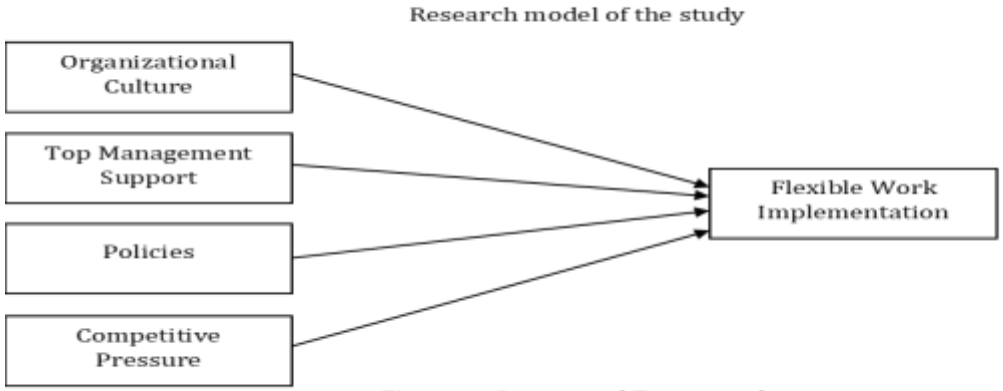


Figure 1: Conceptual Framework

Source: Developed for the research

4. Methodology

The method for this study will involve a quantitative research approach to examine the relationships outlined in the conceptual framework. Data will be collected through a structured survey targeting accountants in Malaysia, focusing on their perceptions of organizational culture, top management support, policies, and competitive pressure related to flexible work implementation. The survey will utilize a Likert scale to measure the variables, ensuring consistency and ease of analysis. A purposive sampling method will be employed to select respondents working in accounting firms, ensuring relevance to the research context. Statistical techniques such as regression analysis will be used to evaluate the significance and strength of the relationships between the independent variables (organizational culture, top management support, policies, and competitive pressure) and the dependent variable (implementation of flexible work). This approach will provide empirical insights into the factors influencing flexible work adoption in the Malaysian accounting sector.

5. Conclusion and Recommendations

Previous research has highlighted the significance of flexible work arrangements in enhancing employee satisfaction and performance. With a growing emphasis on work-life balance, adopting/employing a hybrid working environment is becoming increasingly necessary. This paper sheds light on the factors that contribute to the effective implementation of such organizational innovation, providing critical input for organizations seeking to adapt to evolving work environments. Theoretically, in general, organizational culture, top management support, organizational policies, and competitive pressure are identified as key contributing factors to organizational innovation and long-term survival.

An organizational culture that promotes a flexible working environment tends to produce highly motivated employees, who have improved work-life balance, job satisfaction, and performance. The effectiveness of a flexible working environment also relies on the readiness of top management to provide relevant support in terms of emotional and infrastructure support to employees. As mentioned, adequate organizational support fosters loyalty and commitment, reducing employee turnover. A detailed policy outlining flexible work arrangements is essential as a reference for employees. It is paramount that the policy is clear, easily accessible, and presented in a comprehensible format that is easy to understand. Finally, the tendency of organizations to adopt flexible work arrangements is also influenced by external factors such as global trends, client demands, and technological advancements. These factors drive organizations to adopt the new working environment to stay competitive in the increasingly hostile business landscape. Failing to emulate the practice of others puts the organization's competitive advantage at risk.

The paper only conceptualizes the connections between key variables influencing the shift toward flexible work arrangements, highlighting the need for future research to validate these connections. A questionnaire survey

is deemed practical for obtaining valuable research data as part of the empirical procedure to establish the relationships between the variables. Moreover, as a survey often comes with some inherent limitations, post-survey interviews can be conducted to confirm the connections further. Employing method triangulation is crucial for improving the validity of research results (Modell, 2015). This is possible as combining different research methods can overcome the weaknesses of a particular research method, thereby improving the overall analysis of the research findings.

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Strengthening Financial Inclusion in the Insurance Industry Post-COVID-19: Challenges and Solutions

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Abstract: Financial inclusion plays a crucial role in driving economic development by ensuring access to essential financial services such as credit, savings, insurance, pension plans and financial education. In the insurance sector, financial inclusion aims to extend insurance coverage to low-income groups and enable them to protect their health, assets and livelihoods through the savings and compensation mechanisms of insurance products. This study seeks to enhance the understanding of financial inclusion in the insurance sector by examining the challenges from both the perspective of the individual customer and the industry. From the customer's perspective, this study highlights whether insurance coverage adequately addresses their financial inclusion needs. From an industry perspective, this study addresses critical issues such as customer trust and perceived value, product customization and the impact of macroeconomic factors. In addition, this study proposes strategic solutions to address the identified challenges for both customers and the insurance industry. For individuals, it is recommended that insurance policies should be seen as a complement to savings and investment strategies and not as a substitute for them. For the insurance industry, it is suggested that insurance companies move beyond traditional sales roles and focus on developing products that are tailored to the needs of the market while remaining affordable. The industry should focus on maximizing value for customers. The findings are anticipated to provide crucial insights that can assist the insurance sector in improving customer financial inclusion and addressing current barriers to progress.

Keywords: *Financial inclusion, insurance, savings, Malaysia, Covid-19*

1. Introduction

Financial inclusion is widely recognized as a key factor in improving the lives of individuals, reducing poverty and promoting equitable and sustainable economic growth through improved access to financial services (Razak & Asutay, 2022). Access to transactional credit is a first step towards broader financial inclusion as it enables individuals to manage their money and engage in financial transactions. Wang & Zhang (2025) argue that comprehensive financial inclusion encompasses a range of services, including transactions, payments, savings, loans and insurance, all of which should be part of an individual's or organization's financial portfolio. Consequently, individuals should be encouraged to maintain a variety of financial accounts to facilitate wealth accumulation.

Transaction accounts serve as a gateway to a wider range of financial services, which is why the World Bank Group (WBG) has made it a priority to ensure global access to such financial instruments. According to the World Bank (2022), 1.2 billion adults worldwide gained access to a bank account between 2011 and 2017, representing significant progress in financial inclusion. In 2017, 69% of the world's population had a bank account. In addition, more than 80 countries have introduced digital financial services, with a particular focus on mobile-based solutions, some of which have seen significant scaling.

Financial inclusion encompasses a wide range of dimensions, applicable to both businesses and individuals (Lal, 2021; Ozili, 2024). Maintaining a single account for both savings and emergency funds, without diversifying through various financial instruments, is inconsistent with the principles of financial inclusion (Bester & Rosman, 2024). Badeeb, Wang, Zhao, Khan, Uktamov & Zhang (2023) have given an overview of the current components of financial inclusion and stated that availability, accessibility, and utilization of financial inclusion are necessary for multidimensional financial inclusion. Between 2017 and 2018, the global lending rate experienced a 5% increase, reaching 53%. Furthermore, more than half of respondents worldwide expressed concerns about their financial well-being. In particular, 74% of respondents were concerned about

insufficient retirement savings, 69% about covering monthly expenses, 64% about financing education and 82% about the financial challenges posed by the COVID-19 pandemic. The pandemic has also accelerated the global adoption of digital payments, with 64% of respondents stating that they accept digital payment methods. This shift can be partly attributed to the increased difficulty of offline transactions during the pandemic.

This study aims to enhance the understanding of financial inclusion in the insurance sector by examining the challenges from both the perspective of the individual customer and the industry. In addition, this study proposes strategic solutions to address the identified challenges for both customers and the insurance industry.

The remainder of this paper is organized as follows. Section 2 presents the literature review, followed by the discussion of challenges and solutions in section 3 and section 4 contains concluding remarks and recommendations.

2. Literature Review

Financial inclusion can be assessed in various ways, such as account management, account usage, and the prevalence of cash accounts (Omeje, Mba, Ugwu, Amuka, & Agamah, 2022). The indicator measures the performance of each indicator against a predetermined target. This means that the statistic for each indicator is separated by the value of the target, and the result is then divided by the amount of its weight. Each element has the same weight. The targets for the measures range from 40% for insured people to 95% for the number of people living in sub-districts with at least one access point.

Figure 1 below shows that three (3) types of dimensions can measure the performance of each indicator against a given target. This means that the statistic for each indicator is separated by the value of the target and the result is multiplied by the weight it has. The percentage of people living in the sub-districts with at least one access point and the percentage of the sub-districts with at least 2,000 inhabitants are the indicators used to assess convenient accessibility. The pie chart for both indicators shows that the percentages increased significantly in comparison between 2015 and 2011, in particular, the percentage of the sub-districts with at least 2,000 inhabitants that have at least one access point increased from 46% to 97%. This signifies that the number of access points for financial inclusion rose rapidly in 2015 (Finance & Markets Global Practice, 2017).

According to Pettinger (2024), a take-up rate calculates the proportion of qualified individuals who take up a particular good, service, or benefit. Deposit accounts, financial accounts, and life insurance are indicators examined using the take-up rate. This reflects the degree of participation in formal financial systems. All the variables examined in 2015 compared to 2011 show a decrease in the percentage of adults, suggesting that deposit accounts, financial accounts, and life insurance are less accessible and accepted.

The final dimension concerns the indicators of customers' responsible usage of the active deposits and managed financing accounts. The indicator 'Responsible Usage (% of Customers)' shows how successfully and reliably the consumers use financial services or products. Meanwhile, active deposits focus on how many people actively and sensibly manage their financing or accounts. A clear commitment to the financial system and proper account management is indicated by more active usage. It has been found that active deposits show improved participation in bank accounts, rising from 87% in 2011 to 92% in 2015.

Meanwhile, performing financing accounts is the percentage of customers who keep their financing accounts (credits or loans) in good standing by avoiding defaults and making regular, on-time payments. This shows how capable and committed customers are to meeting their financial obligations responsibly. Over time, repayment behavior and financial discipline improved, as evidenced by an increase in performing finance accounts from 97% to 98%.

Figure 1: Malaysia's Financial Inclusion Index.

Dimension	Indicator	2011	2015
1. Convenient accessibility	% of sub-districts with at least 2,000 population with at least one access point	46%	97%
	% of population living in sub-districts with at least one access point	82%	99%
2. Take-up rate (% of adults)	Deposit accounts	92%	91%
	Financing accounts	36%	25%
	Life insurance	18%	16%
3. Responsible usage (% of customers)	Active deposits	87%	92%
	Performing financing accounts	97%	98%

Source: Finance & Markets Global Practice (2017)

3. Discussion

Challenges

Currently, insurance companies have introduced many financial products to help people with their financing strategies. The number of intermediaries operating in the insurance industry increases with time (Siddharta, 2024). This is because the insurance industry has improved as people are aware of the importance of insurance and the fact that the insurance industry has introduced many financing options. However, financial inclusion still faces several challenges, both at the individual and industry levels, which require further investigation.

Financial inclusion challenges for individuals

According to Economics (2020), financial inclusion in insurance activities focuses on the use of products that enable low-income people to protect their lives, health, and possessions through the financial planning and claims reimbursement mechanisms included in insurance products. From customers' perspectives, each individual must put together their financial portfolios. The concept of a portfolio can differ depending on individuals' investment objectives, risk appetites, and financial situations. Fundamentally, a portfolio is a collection of financial securities that investors keep for a certain period of time, such as mutual funds, real estate, stocks, bank fixed deposits, and the like (Basnayake, Naranpanawa, Selvanathan, & Bandara, 2024). By holding multiple assets in individuals' portfolios, they can reduce risks associated with certain investments while maximizing their return over time.

A well-diversified investment portfolio should be structured across two dimensions: between asset classes and within asset classes. This approach aims to identify investment opportunities within asset-class sectors that are likely to perform favorably under different market conditions. In addition, the introduction of incentive mechanisms and control systems serves to mitigate ethical risks and prevent fraudulent activities. The regulatory framework often enforces specific consumer protection measures for microinsurance, including the

prohibition of caps or co-payments, to ensure policyholders' access to the benefits to which they are entitled (Economics, 2020).

In the absence of mechanisms such as insurance that facilitate the transfer of risk and provide compensation for losses, individuals and families can experience abrupt setbacks in the event of unforeseen hazards that significantly affect their livelihoods and assets (Trainar, 2004; Basnayake, Naranpanawa, Selvanathan, & Bandara, 2024; Kahn, Panjwani, & Santos, 2024). Insurance-related financial inclusion will focus on policy areas that can improve access and offer protection and compensation to more people (Howard, 2024). Therefore, this inclusive insurance is not only for low-income people but also for other mass-distribution mechanisms. This will also increase the demand for insurance as it provides other services, such as financial education, which will lead to high social and economic development. However, financial inclusion in the insurance sector is hampered by a number of important factors. These barriers can be divided into two categories, which are those related to the barriers that affect consumer demand for insurance and those related to the elements of insurance-service delivery (Economics, 2020).

Khan, Hassan, Yusof, Islam & Rahim (2024) have stated that ethical finance is critical to maintaining honesty and fairness in the financial industry as people engage in a variety of financial activities with each other. Insurance agents are expected to possess in-depth knowledge of the services they offer so that they can help their customers make well-informed decisions. They are usually systematically and continuously trained to develop a comprehensive understanding of the insurance products they represent. This enables them to provide their customers with expert advice so that they can understand the benefits and risks of the products in question. For any discerning consumer, it is essential to fully understand the terms and conditions of the insurance package they are taking out to ensure informed decision-making and optimized benefits. Ultimately, they are responsible for their choice of insurance. Engaging with an insurance agent requires the individual to proactively seek clarification and address any uncertainties they may encounter. Such an approach is crucial to achieving a thorough understanding of the insurance product and its terms and conditions.

Financial inclusion challenges for the insurance industry

Being inclusive means offering all goods and services that are commonly needed or expected (Okello Candiya Bongomin, Mpeera Ntayi, & Akol Malinga, 2020). Financial inclusion is achieved when the insurance sector offers individuals access to a wide range of financial instruments. Every insurance company in Malaysia is bound by the Insurance Act 1963 and Bank Negara Malaysia (BNM). Therefore, the products they offer in the market are still identical but differ in terms of price and coverage. The question for these companies is whether or not they can stay in business because customers have a wide range of different products to choose from. To improve the inclusion and sustainability of insurance products, companies need to adapt to the realities by researching and developing their products.

Insurance promotes financial inclusion by providing choices to individuals and communities who are neglected or excluded by traditional insurance providers, which is in line with Bank Negara Malaysia's (BNM) mission of financial inclusion. Policymakers have developed policies to support financial inclusion as a top priority, especially in developing and emerging countries where access to financial services often lags behind that of more established countries (Razak & Asutay, 2022). The insurance industry today offers many products that help to answer questions raised by the BNM. At this point, it is clear that insurance companies today offer savings products in addition to life and health insurance. These types of insurance products help insurance company representatives to help more people to get insurance coverage.

Okello et al. (2020) and Razak & Asutay (2022) have emphasized that conventional finance has made some progress in creating mechanisms that enable wider access. Despite its achievements, the microfinance sector has struggled to maintain its impact on poverty reduction through economic empowerment. Even though insurance companies are not categorized as microfinance institutions, they too are struggling to maintain their influence in the market due to the intense competition they face. Although these companies offer a wider range of products, there are still several issues that deserve attention, including:

Trust and Perceived Value

The COVID-19 pandemic has led to a surge in demand for insurance, especially Shariah-compliance insurance. As a result, a large number of insurance agents have been recruited and offered various incentives, particularly in the form of cash, to provide the best possible service to their customers and increase their companies' revenues. As recruitment has become more extensive, it has turned out to be unmanageable and the quality of each company's agents has declined, which is frightening for many people.

To illustrate further, some agents have failed to adhere to the company's code of conduct by not treating clients with appropriate ethics and, instead, focusing only on their personal goals. For example, the agents may explain products incorrectly to the clients or not fully understand the policies they are recommending. Because of this, people tend to ignore the benefits of insurance and the advantages of each product even though they are suggested by certified people.

Due to a lack of transparency and being unable to provide the essential information that could help customers recognize the importance of insurance to their financial planning and overall well-being, customers may lose confidence in insurance products as an important part of their financial portfolio. This loss of trust reduces the perceived value of products that might otherwise be of benefit to the individual. Such findings may be attributed to the insurance industry's failure to invest in qualified professionals who can effectively communicate the importance of insurance.

Lack of Customization

Financial institutions can benefit from comprehensive personalization in both the short and long term, e.g. through increased revenue, a greater share of customer spending and improved marketing effectiveness (Marous, 2021). As the use of financial services, particularly insurance, continues to increase, individuals are encountering a growing variety of customizable products tailored to their specific needs. Nevertheless, it is a little depressing that Malaysian insurance policies are primarily generic, and although they allow for customization, options for customization are still limited. This deprives insurance companies of opportunities to increase utilization (Bauer, 2023).

The products offered by the insurance industry are primarily standardized offers. However, these products often do not cater to the individual needs of individual customers, which can lead to them being excluded from important financial services (Razak & Asutay, 2022). Furthermore, this lack of customized solutions can prevent customers from accessing and purchasing the available services. Without customization, the insurance coverage may be inadequate or excessive and not meet the customer's specific needs.

Macroeconomic Factors

Macroeconomics is the branch of economics that studies the overall behavior and performance of an economy, focusing on key factors such as markets, firms, consumers and government activities. It deals with important issues such as interest and exchange rates, economic growth, inflation and the balance of payments, all of which play a crucial role in shaping national and global economic stability. As insurance is one of the financial instruments, it also follows the macroeconomic factors. The instability of the Malaysian economy, inflation, and other economic factors have an impact on insurance products and industries, especially health insurance. The outbreak of the COVID-19 pandemic in 2019 has significantly heightened public awareness of the insurance sector. As reported by the Life Insurance Association of Malaysia (LIAM), Malaysians have increasingly recognized the importance of takaful and health insurance and are showing a growing ability to cope with the rising costs of premiums and payments (LIAM, 2020).

Inflation not only has a significant impact on the cost of living and financial resources but also on medical expenses, which are rising substantially every year. Prudential Malaysia (2022) attributes medical inflation to factors such as advances in medical technology, increased demand for healthcare services, rising per capita costs and issues such as abuse and medical fraud. In addition, a country's economic conditions and the escalating cost of healthcare services contribute to this trend.

To promote the financial inclusion of small and medium-sized enterprises (SMEs) during the economic downturn, various strategies have been implemented, including microfinance initiatives and customized

financing solutions for SMEs. These approaches aim to help SMEs achieve sustainable growth and improve their financial performance. Importantly, these efforts are linked to the promotion of ethical business practices that serve as a foundation for long-term success and equitable economic participation.

According to Nguyen & Nguyen (2020); Jan, Rahman, Zahid, Salameh, Khan, Al-Faryan, & Ali (2023), during economic downturns, consumers and businesses may curtail their spending, which can lead to a decrease in demand for some insurance products. Demand for goods such as group health insurance and unemployment insurance may be affected by rising unemployment rates.

Solutions

For every challenge, there is a suitable solution, a principle that also applies in the context of financial inclusion and insurance in Malaysia. Accordingly, the discussions explore the implications of our findings and emphasize the potential benefits for both individuals and the insurance industry.

Solution for individuals

In today's economic climate, relying only on modest savings is not sufficient due to the impact of inflation on future purchasing power. In line with recommendations made by Bank Negara Malaysia (BNM) and the World Bank, every individual should include insurance in their personal portfolio as it complements savings by providing important financial protection.

While insurance plays a crucial role in protecting an individual's financial portfolio, it is not a stand-alone solution. The primary purpose of insurance is to protect savings and maintain liquidity in difficult times. As mentioned earlier, insurance is an important support, particularly in circumstances such as medical emergencies requiring surgical procedures. Nevertheless, individuals must acknowledge that while insurance companies provide a range of financial products, including savings and investment options, these offerings do not entirely align with or substitute the savings services typically provided by banking institutions. Therefore, insurance policies should be viewed as complementary to, rather than a replacement for, savings and investment strategies.

Solution for the insurance industry

Consumers are concerned about whether products proposed by their advisors or agents really benefit them, which is one of the problems plaguing the insurance industry. To mitigate the conflict, insurance companies can, therefore, take the following steps. Among them is that the agents must pass an exam, complete a training course, undergo further training, and much more before they can be authorized as agents. Even though there is already a separate exam for insurance agents, the exam alone will not make these agents better unless they are well-trained by trainers and the agents' behaviors are monitored by the insurance companies.

One solution for the industry is to improve recruitment practices and move away from the random selection of agents. Instead, main companies should conduct interviews to identify the best candidates who have the skills and commitment to sell insurance products effectively. This approach will help the companies build a team of quality agents who not only sell but also build trust with customers, setting them apart from ordinary salespeople.

In the meantime, ongoing cases relating to current incidents can be addressed, albeit requiring substantial time for resolution. This delay arises as a person's financial inclusion is often jeopardized if they do not realize the benefits of insurance and do not cooperate with representatives due to previous negative experiences. Therefore, insurance company representatives should move beyond the role of the traditional salesperson who focuses solely on selling. Instead, they need to focus on providing optimal value to customers to realize the financial inclusion goals set out by Bank Negara Malaysia (BNM).

The COVID-19 pandemic has disproportionately affected populations in developing countries such as Malaysia, where many people have lost their jobs and now face the challenge of rebuilding their lives. As previously noted, insurance providers need to invest in research and development to create products that are both tailored to the specific needs of the market and affordable. The aim should not merely be to make a profit but rather to meet the financial needs of customers and craft optimal portfolios, thereby advancing financial inclusion.

4. Conclusion and Recommendations

To summarize, the development of microinsurance has varying degrees of difficulty. Therefore, financial inclusion strategies in the insurance sector should first promote the development of microinsurance products with lower levels of complexity and then gradually move on to insurance products with much higher levels of complexity. In other words, microinsurance products need to be simple in both legal and technical terms.

Insurance companies today place great emphasis on providing various services to meet the needs of their customers, including wellness programs, health screenings and fast claims processing. Many microinsurance initiatives are specifically aimed at providing coverage to disadvantaged and economically marginalized groups to promote financial inclusion. By participating as informed and financially literate consumers, they contribute significantly to economic sustainability as their investments inject important capital into their economies. It is therefore crucial to give these people the opportunity to borrow rather than limiting them to purchasing services.

Finally, the insurance sector also needs to adapt or develop new business models that are explicitly geared towards inclusive insurance, such as developing more creative services and new distribution systems that successfully reduce transaction costs. In addition, legislative changes need to be promoted that encourage inventions and the introduction of distribution networks that can reduce transaction costs for these types of goods.

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Performance Measurement System in Malaysian Higher Education Institutions: Driving Success or Inducing Stress?

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Abstract: An effective performance measurement system (PMS) is crucial for higher education institutions (HEIs) to drive success, but an unfair one may lead to stress and negative behaviors. Currently, academics are expected to excel in various areas, leading to overwhelming tasks and responsibilities. The existing system for evaluating academic performance is considered unfair as it overly prioritizes quantitative measures. The Key Performance Indicators (KPIs) are also perceived as inadequate in capturing the essence of the academic role, which should emphasize content and quality. This study aims to explore Malaysian academics' perceptions of the performance measurement system adopted by HEIs, their views on what constitutes a fair measurement system, and their opinions about the current system. This study targeted academics at Malaysian HEIs using convenience sampling due to the large number of institutions. A total of 379 participants responded to an online survey distributed via email with the help of university representatives. The instrument included sections on demographics, perceptions of PMS, opinions on fair PMS, and open-ended questions, utilizing a slider scale for precise data collection. The findings indicate that higher education institutions tend to adopt a directive performance measurement approach, relying heavily on quantitative indicators for monitoring. To create a fairer system, emphasis should be placed on effort and qualitative measures. Many academics express frustration over the numerous measures employed in the PMS, contributing to their excessive workload and work-life imbalance. Therefore, a fairer measurement system is needed to ensure a better work-life balance and reduce stress for academics.

Keywords: *Performance measurement; performance measurement system; work-life balance; academics; Malaysian higher education institutions*

1. Introduction

In recent years, academics in higher education institutions (HEIs) have faced increased responsibilities. The pursuit of higher university rankings, such as Quacquarelli Symonds (QS) World University Rankings and Times Higher Education World University Rankings (THE), has significantly impacted how universities are managed. In Malaysia, the Discipline-Based Rating System (D-SETARA) and Malaysian Research Assessment Instrument (MyRA) assess the research capacity and performance of HEIs, putting pressure on local universities to meet performance targets not only for recognition but also to secure government resources through budget allocation (Janudin & Maelah, 2016). Consequently, academics are anticipated to excel in diverse capacities such as teaching, research, securing grants, publishing, and engaging in community service, among other responsibilities (Abd Hamid, 2020; Kallio et al., 2016; Khan et al., 2010).

The extensive responsibilities, such as teaching up to 18 hours a week (for certain institutions), conducting research, and participating in various activities, are compounded by reduced funding. Higher education institutions (HEIs) require academics to generate income while simultaneously limiting resources for them to perform their jobs effectively. While academics are driven by intrinsic motivation (Kallio & Kallio, 2014), excessive workload can lead to increased fatigue, causing individuals to disconnect their efforts from the value of their work. Adnan et al. (2022) discovered that the multitude of tasks assigned to academics in recent years could be a contributing factor to their diminished vitality. This results in reduced motivation and a tendency to invest minimal effort (Noman, 2021). Consequently, academics may experience decreased motivation, heightened stress, and job burnout (Chen et al., 2014). Many academics find it challenging to take breaks during semester breaks due to numerous responsibilities, leaving little time for personal life (Noman, 2021). Despite the importance of rest for rejuvenation and motivation, some academics find it difficult to spare time for such activities.

Despite the overwhelming tasks, academics lack the flexibility to choose their assignments due to the

evaluation system used by higher education institutions (HEIs). The system assesses their performance using key performance indicators (KPIs), encompassing various tasks (Che Omar et al., 2014). Failure to meet these KPIs can result in academics not receiving an annual salary increase, and even achieving satisfactory results may not guarantee bonuses. Many acknowledge that these KPIs, as highlighted by several sources (Kallio & Kallio, 2014), inadequately represent the nature and substance of academic jobs, focusing too much on quantity rather than the content and quality emphasized in academic roles. The current evaluation system is criticized as being unfair, causing unnecessary stress and fostering dysfunctional behaviors such as free-riding, back-stabbing, and plagiarism among academics.

While organizations use performance measurement systems to ensure goal alignment and motivate employees, Cuguero-Escofet and Rosanas (2016) argue that modern organizations increasingly prioritize quantitative aspects over qualitative ones in their evaluation and reward systems. The use of numerous Key Performance Indicators (KPIs) can also contribute to stress and burnout among academics (Franco-Santos & Doherty, 2017; Kallio & Kallio, 2014). In the Malaysian higher education system, academic leaders prioritize achieving goals, KPIs, and standards (Ghasemy et al., 2018). This paper aims to: i) explore Malaysian academics' views on their HEIs' performance measurement system; ii) gather opinions on a fair measurement system; and iii) examine academics' reactions to the current system. The goal is to provide insights into academics' workloads for top management and assist the Ministry of Education in developing a more effective system for the future of tertiary education in Malaysia.

The structure of this paper is as follows: Section 2 explains the review of literature; Section 3 on research methodology; Section 4 elaborates the results and discussion; and Section 5 concludes the paper.

2. Literature Review

Performance Measurement System (PMS): An Overview

An organization's success, whether for-profit or not-for-profit, relies on employee performance. The Performance Measurement System (PMS) plays a crucial role in evaluating and influencing employee satisfaction with their performance assessment. Flamholtz (1996) notes that PMS is employed to control specific behaviors and align decisions with organizational objectives. Franco-Santos et al. (2012) emphasize PMS as a valuable resource that improves decision-making, enhances competitive advantage, and consequently boosts organizational performance. PMS also transforms organizational strategy into measurable Key Performance Indicators (KPIs), evaluating both employee and organizational performance (Zuriekat, et al., 2011). This process aims to strengthen organizational quality and reputation (de Waal & Kourtit, 2013) and create shareholder value (Maisel, 2001).

Undoubtedly, the Performance Measurement System (PMS) plays a crucial role in achieving organizational goals, providing several advantages for both employees and the organization. For employees, PMS aids in enhancing performance and building expertise continuously (Mone & London, 2018). Empowering employees to participate in developing measures, as suggested by Groen et al. (2017), gives them control over their performance, indirectly motivating and supporting their professional development (Kim & Holzer, 2016). This effectiveness is further heightened when linked to a reward system (Lawler, 2003). For organizations, PMS is instrumental in measuring the efficiency and effectiveness of actions, including client satisfaction, efficiency, and workload completion (Melnyk et al., 2014; Groen et al., 2017). Implementing and using PMS correctly yields various benefits for organizations, including higher results orientation, better strategic clarity, increased personnel commitment, and enhanced organizational quality, as concluded by de Waal & Kourtit (2013).

While the implementation of Performance Measurement Systems (PMS) offers numerous organizational benefits, it also encounters challenges related to system requirements and implementation methods. De Waal and Kourtit (2013) highlight issues such as internal competition, high costs, excessive bureaucracy, low information quality, and an abundance of indicators that can render the PMS unreliable. Challenges also arise in the acceptance of PMS by employees and managers due to resistance to change and disagreements with the set measures and targets for performance assessment (Maisel, 2001). In all organizations, including educational institutions where academic matters are central, having an effective Performance Measurement System (PMS) is crucial. This ensures that the system's implementation aligns with strategic objectives and is

accepted by both employees and managers. For instance, higher education institutions (HEIs) implement PMS designed to suit the nature of academics, complementing their strategies, aligning behaviors, and supporting top management decisions (Janudin & Maelah, 2016). However, research on PMS in university settings, particularly focused on academics, is limited. This is partly due to the challenge of measuring performance based on activities and processes, especially when academic performances are not directly linked to pay (Kallio & Kallio, 2014). Lately, a proposal has emerged for an Islamic performance measurement model that considers both material and spiritual aspects, along with the efforts exerted by employees (Adnan et al., 2021).

The Practice of Performance Evaluation - PMS Practice: Directive vs Enabling

Setting up a successful PMS is a crucial task for any organization. How an organization manages performance measurement determines its ability to identify performance issues and motivate excellence. According to Mujeeb (2011), a well-implemented performance management system not only establishes career paths for employees but also contributes to shaping the organizational culture. This system becomes ingrained in management practices, fostering job security and career development. The PMS also influences how performance is handled, either through a directive or enabling approach, as conceptualized by Franco-Santos and Doherty (2017).

The directive approach is traditional and hierarchical, involving a top-down method. In this approach, managers or supervisors set goals, define performance criteria, and give specific instructions to employees. The focus is on compliance, meeting set targets and control. Feedback and evaluations are usually given by managers, emphasizing monitoring to align individual performance with organizational objectives. In contrast, enabling performance management takes a collaborative approach, aiming to empower employees to own their performance. It creates an environment that encourages growth, development, and autonomy. In this approach, managers serve as facilitators and coaches, offering guidance and support to employees. Goals are commonly set together, and feedback is sought from various sources, including peers and subordinates. The focus is on learning, continuous improvement, and fostering employee engagement.

Organizations using a directive approach typically increase employee stress, while those using an enabling approach reduce stress and enhance employees' work experience (Franco-Santos & Doherty, 2017). This aligns with the idea that excessive command-and-control management, as suggested by Franco-Santos et al., (2014), doesn't improve employee motivation and performance, neglecting certain aspects of human behavior. Newton-Lewis et al. (2021) suggested that directive approaches work better in simpler systems with clear outcomes, sufficient resources, and extrinsically motivated workers while enabling approaches are more effective in complex, uncertain environments with high trust, teamwork, intrinsic motivation, and strong leadership. Previous literature also suggests that directive and enabling approaches should not be viewed as mutually exclusive. Designers of PMS need to find a balance between the two as they are complementary: directive approaches can drive short-term innovation and improvement while enabling approaches are essential for long-term strategic renewal and change.

The study's findings may provide insights into how academics perceive current performance evaluation practices in Malaysian Higher Education Institutions (HEIs) – whether these practices truly motivate academics to be more productive and committed or, conversely, dampen their motivation.

3. Methodology

Population and Sampling

The population of this study comprises all academics employed at universities across Malaysia. However, given the large number of institutions—20 public universities and 47 private universities, as reported by StudyMalaysia.com (2020)—it was not feasible to include all of them in the study. Therefore, convenience sampling was employed to select a manageable sample of universities for data collection. To ensure a practical approach, all academicians within the selected universities were considered potential respondents. However, in the initial phase, only those who were willing to serve as enumerators were chosen to facilitate the data collection process. Consequently, the final sample included a total of seven public universities, three private universities, four polytechnics, and two university colleges, ensuring a diverse representation of higher education institutions in Malaysia. This selection aimed to capture a broad range of academic experiences and

perspectives while maintaining feasibility in data collection.

Data Collection Method

Data collection was conducted through an online survey administered via SurveyMonkey. To facilitate distribution, designated representatives from each selected university were responsible for disseminating the survey by sending out emails containing both the cover letter and the survey link to academics within their respective institutions. This approach ensured that the survey reached a broad audience while maintaining a structured distribution process. Additionally, to capture respondents' levels of agreement effectively, the slider scale feature provided by the SurveyMonkey application was utilized, allowing participants to indicate their responses on a continuous scale rather than selecting fixed categorical options. This method enabled more precise data collection and a detailed understanding of respondents' perceptions.

Instrument

The instrument consisted of four sections, namely demography, the perception of PMS currently practiced at their respective HEIs, the opinions on a fair PMS and an open-ended section. Perception of PMS employed in HEI was captured using an 11-item instrument developed by Franco-Santos and Doherty (2017) which was meant to measure how academics perceived the implementation of their current evaluation system. Franco-Santos and Doherty (2017) and Kallio et al. (2016) proposed two dimensions of directive and enabling performance management. Sample items are (a) My institution uses specific performance indicators to monitor performance; (b) My institution rewards us based on whether the objectives set have been met.

Opinions on the fair performance measurement were measured using five items. These items were created based on available literature, like Colquitt et al. (2001) and Cooman et al. (2009). The literature agreed that work effort should consider persistence and intensity of completing a task. Sample items are (a) To have a fair performance measurement and appraisal, I think it should consider the effort that we put into work, and not just the output or outcome; and (b) To have a fair performance measurement and appraisal, I think discretionary work or activities should be recorded in the specified format as a basis for performance appraisal.

An open-ended question was asked to elicit the effect of performance measurement on academics' work life, which is 'Think about your Key Performance Index set by your institution and annual performance appraisal. How do they affect your work life?' This question was, however, optional. The slider scale in Survey Monkey was used with percentage (%) as the measurement unit for the scores for each questionnaire item. The use of percentage as a measurement unit for each item is suggested by Yusoff and Janor (2014) and Yusoff (2019). Each respondent was asked to rate their agreement on each item on a scale of 0 to 100% which provides more discriminative options.

4. Results and Discussion

Respondents' Profile

Table 1 presents a comprehensive breakdown of the respondents' demographics. A total of 379 academics from universities in Malaysia participated as respondents, although only 344 of them provided complete answers for the demographic section. The respondents consisted of 72% females, and most of them fell within the age range of 30 to 39 years. In terms of work experience, 79.7% of the respondents had been working for more than eight years. Most respondents (75.7%) were married, and 67.4% of them had one to five children. Furthermore, a significant portion of the respondents (88%) belonged to public universities, and 72.4% of them reported earning a monthly income ranging from RM5,000 to RM15,000.

Regarding the field of study, 34.4% of the respondents were from the social science discipline, while the remaining respondents were from science and technology backgrounds. A notable portion of the respondents (24.3%) held administrative positions at their respective universities. Concerning the assessment of academic performance, most of the respondents (60.5%) mentioned that their performance was evaluated using both quantitative and qualitative measures. Additionally, 25.1% stated that they were primarily assessed quantitatively, 9.6% reported being evaluated solely based on quantitative measures, and only 4.8% of the respondents indicated that their performance was measured qualitatively.

Table 1: Respondents' profile

VARIABLES	SUBGROUPS	NO.	%	VARIABLES	SUBGROUPS	NO.	%
Gender	Male	242	72.5	Types of institution	Private university	22	6.6
	Female	92	27.5		Private university college	10	3
Marital status	Divorced/ Widowed	10	3		Public university	294	88
	Married	253	75.7		Public University College / Others	8	2.4
	Single	71	21.3	Household monthly income	Less than RM5,000	25	7.5
Age	21 - 29	8	2.4		RM5,000 – 9,999	136	40.7
	30 - 39	125	37.4		RM10,000 –14,999	106	31.7
	40 - 49	123	36.8		RM15,000 – 24,999	51	15.3
	50 - 59	74	22.2		RM25,000 - 34,999	9	2.7
	60 and above	4	1.2		RM35,000 – 44,999	2	0.6
No of children	None	88	26.3		RM45,000 & above	5	1.5
	1 - 3	158	47.3	Work experience	1 – 3 years	24	7.2
	4 - 5	67	20.1		4 – 7 years	44	13.2
	6 and above	21	6.3		8 – 11 years	72	21.6
Field of work	Science and Technology	219	65.6		12 – 15 years	61	18.3
					16 years and above	133	39.8
	Social Sciences	115	34.4	Administrative post	With post	81	24.3
Current PMS adopted	Both qualitatively and quantitatively	202	60.5		Without post	253	75.7
	Mostly quantitatively	84	25.1	Current PMS adopted	Only quantitatively	32	9.6
	Mostly qualitatively	10	3		Only qualitatively	6	1.8

Perceptions of Performance Evaluation Practiced

Table 2 shows the respondents' perception of the current performance evaluation being practiced at their institutions. The coefficients of variation (CV) for almost all items are more than 30%, indicating that mean values are not appropriate to describe the data on perception of the evaluation style (Cui, 1989). Therefore, median values are used to describe how the respondents perceived the performance evaluation practiced. Based on the median, the agreement ranged between 57.5% to 81.5%. The highest score is for item 1 (85%) which is "my institution uses specific performance indicators to monitor performance" followed by item 2 (80%) which refers to "my institution sets specific performance targets to differentiate between good and bad performance".

The upper quartile is also used to indicate respondents' level of agreement, with percentages of 81% and above reflecting strong agreement with the specified items. Item 1 and item 2 show the upper quartile which is more than 90%. This indicates that it is strongly agreed that the academic institution has set the target to be achieved by the academics and uses performance indicators to measure and monitor the performance of the academics.

Item 4, "my institution monitors what we do and do not do", item 7, "my institution equally promotes and recognizes excellence in whatever shape or form it comes in'' and item 11, "my institution gives recognition to high performance, which motivates us to work harder" are all rated at a median of 70%. Referring to Table 2

indicates that respondents moderately agreed that their HEIs monitor the progress of their achievement, and the recognition given did motivate them to work harder. It is also moderately agreed that academic institutions promote and recognize all types of performance in accordance with the predetermined KPIs. As for item 8, "my institution provides constant opportunities for learning and development" which is rated at 75% indicating that respondents moderately agreed that academic institutions provide constant opportunities to the academics for their learning and development.

Table 2: Perception of Performance Evaluation Practiced

	ITEM	Mean values (%)	SD (%)	CV (%)	Lower quartile (%)	Median (%)	Upper quartile (%)
1	My institution uses specific performance indicators to monitor performance.	78.38	20.67	26.8	70	81.5	94
2	My institution sets specific performance targets to differentiate between good and bad performance.	73.59	22.25	30.2	59.75	80	90
3	My institution rewards us based on whether the objectives set have been met.	61.54	28.16	45.8	52	66	84
4	My institution monitors what we do and do not do.	67.28	25.17	37.4	50	70	87
5	My institution is effective at informing individuals how the work of individuals contributes to their overall institutional success.	63.31	25.8	40.8	50	69	83
6	My institution provides us with the necessary resources to do our work well.	59.98	25.47	42.5	47	62.5	80
7	My institution equally promotes and recognizes excellence in whatever shape or form it comes (e.g. teaching, research, management/ administration).	63.36	25.07	39.6	50	70	81.25
8	My institution provides constant opportunities for learning and development.	68.89	23.76	34.5	54.75	75	87
9	My institution provides us with a lot of autonomy to choose how we meet our output goals in whatever way we think is best.	62.7	24.75	39.5	50	68.5	80
10	My institution allows us to express our disagreement with our appraiser regarding the rating that we get.	54.5	26.75	49.1	39	57.5	77
11	My institution gives recognition to high performance, which motivates us to work harder.	67.22	25.18	37.5	50	70	88.25

Two items with the lowest scores are item 10, "my institution allows us to express our disagreement to our appraiser regarding the rating that we get"; and item 6, "my institution provides us with the necessary resources to do our work well" (57.5% and 62.5% respectively). The upper quartile values for these two items are less than 81%. This indicates low agreement with the statements. The agreement on the provision of necessary resources for academics to perform their work better is also low, indicating academic institutions do not sufficiently provide the necessary resources to the academics.

Item 3, "My institution rewards us based on whether the objectives set have been met" is rated at 66%, indicating low agreement on the rewards to the academics based on their performance. This is expected as academics' rewards are not contingent upon performance (Kallio & Kallio, 2014; Kallio, et al., 2016). The

agreement on item 5, "my institution is effective at informing how the work of individuals contributes to its overall institutional success" is almost low (rated at 69%), like item 9, "my institution provides us with a lot of autonomy to choose how we meet our output goals in whatever way we think is best" (rated at 68.5%). These indicate that the HEIs are not that effective in communicating academics' performance, and do not give sufficient autonomy or empowerment to the academics to change or modify the learning instructions which are necessary to create effective teaching and learning (Struyven et al., 2004).

Performance management practices are important in HEIs as suggested by Franco-Santos and Doherty (2017) since academics' perceptions of the use of performance management practices, either directive or enabling, will affect their stress level or vitality. Based on the discussion of the results and previous literature, it can be concluded that HEIs are more prone to directive performance management as they highly rely on performance indicators to monitor performance (Franco-Santos & Doherty, 2017). This relates to the high agreement level on items 1 and 2, which provide evidence that specific targets have been set and used to evaluate performance.

The use of directive performance can also be related to the low agreement of items 6, 9 and 10 which demonstrate that HEIs may not provide sufficient necessary resources for academics, and some may not allow flexibility to academics to meet their output goals that may dampen their work motivation and increase stress and job-burnout. This is in tandem with the findings by (Franco-Santos & Doherty, 2017) which suggested that directive performance management will negatively affect well-being.

Academics' Opinion of Fair Performance Measures

Table 3 below shows the results from descriptive analysis of responses to issues that should be considered to have fair performance measures. Looking at the mean values, all the issues stated in the items were highly agreed upon by respondents. The coefficient of Variation (CV) of less than 20% for three items implies that the variation among respondents' agreement was small. The highest mean agreement (86.1%) was given to the item that states, 'A fair performance appraisal should consider the effort that we put into work, and not just the output or outcome'.

Similarly, the lower quartile, median, and upper quartile values were also highest for this item. Respondents also highly agreed with the other two items that state, 'discretionary work or activities should be recorded in the specified format as a basis for performance measure', and 'it should consider the level of job demands required of us'. Only one item, 'working time or hours spent on a task should be recorded as a basis for performance measure', scored a mean of less than 80% (76.88%) and CV more than 20%.

This shows that there are respondents who highly agreed with this item, but the variation in the agreement is quite big. These findings were also agreed by the interviewees who strongly supported the inclusion of effort in the evaluation of performance, in line with the proposal by Adnan et al. (2021).

Table 3: Academic's Opinion of Fair Performance Measures

Item	Mean values (%)	SD (%)	CV (%)	Lower quartile (%)	Median (%)	Upper quartile (%)
To have a fair performance measurement and appraisal, I think it should consider the effort that we put into work, and not just the output or outcome.	86.10	16.48	19.1	79.00	90.00	100
To have a fair performance measurement and appraisal, I think discretionary work or activities should be recorded in the specified format as a basis for performance appraisal.	82.30	15.99	18.6	72.00	85.00	96.75
To have a fair performance measurement and appraisal, I think working time or hours spent on a task should be recorded as a basis for performance appraisal	76.88	22.73	29.6	65.00	82.00	98.00
To have a fair performance measurement and	83.46	16.19	19.4	75.00	86.00	100

appraisal, I think it should consider the level of job demands required of us.

What Do Academics Feel About Their Current Evaluation System?

An open-ended question, adapted from Kallio et al. (2016), was included in the survey: "*How does the current performance measurement system practiced by your institution affect your life as an academician*?" This question aims to gather qualitative insights into the personal impact of the performance management system on academics' professional and personal lives. Basically, responses to an open-ended question on how the academics feel about their current evaluation system demonstrated that they are truly unsatisfied with the system. Many of them use this question to express their dissatisfaction with the system to the extent that they are pouring their heart and soul when answering the question. Responses like, *"They want us to have superpowers"* simply reflect academics' disappointment over the current system. Another response was, *"There are so many components in the appraisal form that must be filled. The score must be a minimum of everything, and I cannot fill them all if I work 8.00 to 5.00 every day. To obtain a minimum score for each component in the appraisal form, I must find some time at home to do my work. Otherwise, I will not be able to maintain that minimum score required"* portrays how demanding the academic work nowadays is. Adding to the disappointment is the practice of not involving the academics in the setting of the KPIs like one comment made, *"KPI was never discussed with us, a given top-down KPI is adding stress to my work life."*

In terms of goal or target setting, many agree that the target set is unrealistic and leads them to be unmotivated, besides making them stressed and causing burnout. Some of them reported having a high teaching load of as high as 18 hours a week which makes fulfilling other tasks highly difficult. One comment, *"I am ok with having KPI, but I would like the appraisal to be fair to other aspects as well such as being a committee member in a conference, a committee in documentation such as for accreditation, new curriculum - if we are busy doing these things how can be published in a good journal? How can we make a proper research proposal?"* is a sign of frustration over excessive workload.

Some were frustrated when their teaching aspect was not given sufficient recognition even when they were choosing the teaching track, "*Unrealistic expectations in research on lecturers whose main workload is teaching. Our KPI focuses more on research. I feel useless that I'm not being recognized for my excellence in teaching despite my positive evaluation by my students."* Unrealistic targets may not motivate academics to give their best as suggested by this statement, *"It makes me do work based on what to fulfill in KPI. Sometimes I deny tasks that do not contribute to KPI."* Not only it will make them unmotivated, but it may also lead to disappointment as some KPIs set are not even within their control, as stated by this respondent, "*When the appraisal system focuses more on the quantity, it leads to more pressure because I have to achieve a certain quantity of research funding, publication, etc. which sometimes involve process that is beyond my control within the evaluated year."*

In terms of the impact that the evaluation system has on motivation, it is not surprising that many exhibit a downward trend. Consider how badly serious this statement is, *"The set KPIs sometimes are impossible to achieve within a year plus the unnecessary extra workload. After 10 years, I do not feel motivated to go to work anymore."* Just imagine the quality of our education if many academics feel like this, *"I don't enjoy my job anymore. Feeling anxious, mentally, and physically tired, thinking of early retirement."* It would certainly result in uncommitted academics that cannot bring knowledge to a level that makes it meaningful to students. Somehow, the same academics just manage to stay positive amidst the excessive workload. *"I usually focus on teaching and administrative work during the semester. During the semester break is time to focus on others, e.g. research, innovation, etc. This is quite hectic because it is one thing after another. But we got to do what we got to do."*

Such excessive workload undeniably has also affected the work-life balance and both the physical and mental health of the academics. Most of the academics responding to this open-ended question expressed their disappointment at how their personal life has been infringed, especially the family time that has been sacrificed to fulfill the work requirement. *Respondents stated this, "Fulfilling the KPI when teaching load is overwhelming causes stress in managing time and tasks. It took much time from personal life and an imbalance between work and life,"* or "*the KPIs deter achieving quality of work life as there is too much work to do. Sometimes I have to work till late at night and over the weekend. Work is never finished because KPI is result-oriented and does not*

consider effort and time spent."

These comments evinced that Malaysian academics are now sunk in the excessive workload that has no doubt manifolded in this era (McCaffery, 2018 as cited in Khan, 2019) making the job highly demanding (Abd Hamid, 2020; Kallio et al., 2016; Khan, 2019). The effects of such a manifestation have been expressed by the respondents of this study. Though some still show a high vitality level to many others, their jobs have certainly badly affected their work-life balance as well as their health. Perhaps findings from this study can provide some evidence to the top management or the Ministry of Education to revise their performance measurement system in motivating the academics to give quality service delivery and improving the satisfaction of the academics with regards to their performance evaluation, thus the university's goals to achieve academic excellence and promote moral and spiritual values are achieved.

5. Conclusion and Recommendations

The Performance Management System (PMS) significantly influences employee motivation and satisfaction by shaping how their performance is evaluated. This study's findings reveal that Malaysian higher education institutions lean more towards a directive approach than an enabling one, in line with the characteristics described by Franco-Santos and Doherty (2017). There's a strong consensus that universities set targets for academics, using performance indicators to measure and monitor their performance. However, universities may not fully recognize all aspects of academic performance when relying solely on predetermined Key Performance Indicators (KPIs). Additionally, they may not provide sufficient autonomy or empowerment for tasks such as modifying learning instructions, which are crucial for effective teaching and learning, as noted by Struyven et al. (2004).

Open-ended questions reveal that academics feel disheartened when they are not informed about awarded marks or when there's no room for discussion. This indirectly lowers their motivation, and some work only to meet Key Performance Indicators (KPIs) rather than striving for their best. This aligns with Franco-Santos and Doherty's suggestion (2017) that the well-being of employees suffers under a directive approach. The university ought to contemplate incorporating effort as a measurement item (Adnan et al., 2021) since some KPIs may require more than a year to achieve, and certain roles are highly demanding (Abd Hamid, 2020; Khan, 2019).

Future research could investigate deeper into the perspectives of superiors responsible for assessing academics' performances, specifically examining their perceptions of the performance measurement system and its overall effectiveness. This exploration would help determine whether their viewpoints align with those of academics, particularly in terms of fairness, motivation, and job satisfaction. Understanding these dynamics could provide valuable insights into potential gaps between evaluators and those being evaluated, allowing for improvements in the system's design and implementation.

Furthermore, expanding the scope of this study beyond the academic sector to include diverse industries would offer a broader understanding of performance management practices. Different industries may have unique challenges and expectations regarding performance measurement, and comparing various sectors could highlight the best practices and areas for improvement. Such an expansion would also contribute to the development of more flexible and adaptable performance management frameworks that cater to a wide range of professional environments.

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Beyond the Scoreboard: Bibliometric Insights into Accounting and Financial Management in Sports Clubs and Associations

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Abstract: Understanding the evolution of sports accounting and financial management is essential for ensuring the sustainability, competitiveness, and long-term success of sports clubs and organizations. This study analyzes the evolution of accounting and financial management practices within sports clubs and organizations by conducting a bibliometric analysis of 77 Scopus-indexed documents published between 2000 and 2024. The investigation focuses on research topics, key contributors, institutional affiliations, and publication trends to uncover patterns and advancements in the field. Using keywords such as "sports accounting," "sports finance," and "financial management in sports," the study employed a systematic TITLE-ABS-KEY search, limiting results to relevant subject areas, including business, economics, and social sciences. The findings reveal that 67.53% of the documents are research articles, with business, management, and accounting being the predominant subject area, followed by economics, econometrics, and finance. "Sports finance" emerged as the most frequently occurring keyword, highlighting its centrality in the field, particularly in budgeting, financial management, and economic impacts. Additionally, the study identified a consistent rise in publication activity since 2006, peaking in 2020. Key authors and institutions were identified, with contributions from France, the United Kingdom, and the United States leading the field. Citation metrics, including an h-index of 13 and a g-index of 29, emphasize the influence and relevance of the research. This study highlights the growing focus on financial transparency, digital transformation, and sustainability, providing a foundation for future research on advancing sports accounting and finance.

Keywords: *Sports finance, Sports accounting, Bibliometric analysis, VOS Viewer, Harzing's Publish or Perish*

1. Introduction

In the world of sports, where passion meets business, the financial management of sports clubs and organizations is not just about balancing the books; it is about sustaining dreams, nurturing talent, and ensuring the heartbeat of sport continues to thrive. From local clubs to global giants, sports entities navigate a unique financial landscape where every decision can influence both on-field performance and off-field community impact. Effective financial management and accounting practices drive the sustainability and growth of sports clubs and organizations. The intersection of accounting and finance within the sports industry encompasses essential aspects such as financial management, regulatory compliance, and strategic financial planning, which collectively contribute to the long-term viability of sports organizations.

One of the pivotal shifts in recent years has been the increasing scrutiny of financial transparency and sustainability. Plumley, Wilson, and Shibli (2017) discuss how regulations have pushed clubs towards more sustainable financial planning, with findings indicating that financial performance and sporting performance are not separate or opposing variables. Instead, they exist on a continuum, with clubs positioning themselves and shifting along this spectrum to varying degrees over time. Since the 2011/2012 season, the introduction and enforcement of regulations like UEFA's Financial Fair Play (FFP) have set new standards for financial practices in football clubs. Meanwhile, the application and interpretation of these rules continue to evolve, impacting how clubs manage their finances.

The financial health of sports clubs is intricately linked to their performance on the pitch. Winning teams attract more fans, bigger sponsorships, and higher media rights deals, but this can create a cycle where financial strategy becomes as crucial as a sporting strategy. Ramchandani, Plumley, Davis, and Wilson (2023) conclude that FFP plays a role in reinforcing the competitive hierarchy among European clubs, but it is not the sole factor. Other contributing elements include broadcasting revenues, financial flows between leagues, transfer fees, wages, and governance frameworks.

Moreover, digital transformation has revolutionized financial management practices. Clubs are now leveraging big data analytics not just for scouting or performance analysis but also for financial forecasting and risk management. Toma and Campobaso (2023) highlight the importance of data analytics for teams that mainly rely on two primary factors to enhance performance: financial investment and the implementation of an effective game strategy. The ultimate objective for each team is to secure the highest possible position in the league standings by the end of the season. Achieving top-tier results in sports not only boosts earnings but also ensures the club's long-term sustainability. Football, a significant industry, generated €28.4 billion in revenue during the 2017/18 season in the European market, and for football to thrive, it must deliver captivating entertainment to its audience, which requires maintaining a healthy level of competitive balance. (Toma & Campobaso, 2023)

The role of fan ownership and community investment models has also gained traction, influencing how clubs are financially managed. These models, which give fans a say in club decisions, bring unique challenges and opportunities in financial governance. These community-based models can lead to more inclusive financial decisions, though not without complexities in balancing democratic governance with commercial viability. With increasing community involvement, a well-structured policy is essential to effectively manage the expanding range of stakeholder interests. However, concerns about fan involvement in club management often center on fears of disorder. Varmus, Kubina, Mičiak, Boško and Greguška (2023) suggest starting with simple, indirect forms of fan participation, such as decisions on club events or anthems, to build trust. Gradually, clubs can progress to advanced governance roles, like establishing bodies with voting rights. Ratten (2019) offers a fresh perspective on sports policy by emphasizing the benefits of adopting an entrepreneurial approach. This approach highlights the practical link between sports entrepreneurship and public policy, providing valuable insights into their relationship.

Crucially, the human element remains at the core of sports finance. Managing finances in sports is not just about numbers. It is about understanding the people - the players, the fans, the staff, and the community at large. Leadership in sports finance requires a blend of empathy, strategic foresight, and adaptability to navigate the peaks and troughs of sports seasons and economic cycles.

In essence, the accounting and financial management of sports clubs and organizations is a dynamic field where every decision is a play in the broader game of sustaining sports culture, community spirit, and commercial success. As we move forward, the integration of technology, regulatory evolution, and innovative financing models will continue to shape how these entities manage their financial future, keeping the spirit of the game alive and well. Therefore, this study offers a bibliometric analysis that provides a distinct lens on academic discourse concerning accounting and financial management within sports organizations. By systematically examining research trends, citation networks, and influential publications, the bibliometric results shed light on the intellectual structure of the field and highlight key themes and emerging trends in the literature. In the following sections, the literature review is examined in the subsequent section, followed by the research methodology used. The next section contains an analysis of the results. Finally, the study concludes with a summary of the results and an outlook for future research on this study.

2. Literature Review

The financial management of sports clubs and organizations has evolved significantly, influenced by the professionalization of sports, regulatory changes, and the integration of technology in financial practices. This literature review synthesizes findings and key points from various research to explore the current state of accounting and financial management in the sports sector.

Financial Reporting and Regulation

Financial reporting in sports clubs often diverges from traditional corporate models due to unique aspects like player contracts, broadcasting rights, and sponsorship deals. The introduction of UEFA's Financial Fair Play (FFP) regulations has been pivotal in shaping financial practices. Morrow (2013) critically evaluates football club financial reporting, suggesting that while FFP aims to ensure financial sustainability, the focus on economic stakeholders might overlook broader social and community responsibilities of sports clubs. Furthermore, Dimitropoulos and Scafarto (2021) explore the impact of FFP on Italian football clubs, finding

that it influences player expenditure and financial performance but not necessarily sporting success. According to Wilson, Platts, and Plumley (2022), effective financial management strategies are essential for large and small sports clubs. These strategies include budget preparation, cash flow forecasting, and financial audits. Additionally, Galić, Tolušić, and Baban (2019) emphasize the role of financial management in ensuring the sustainable development of non-profit sports organizations. Their study on futsal competitions in Eastern Croatia highlights the importance of budget management and financial transparency. Baxter, Carlsson-Wall, Chua, and Kraus (2019) stated that maintaining male elite teams requires sound market practices like securing sponsorships and generating stable revenue from ticket sales while funding amateur, female, and youth leagues. The increasingly professional financial management of clubs has evolved with a focus on market and community interests, though separating these interests has proven challenging.

Financial Performance Analysis

Accounting practices in sports organizations involve the systematic recording, reporting, and analysis of sports organizations and found that, while beneficial, its success depends on simplicity and practicality. However, as the sports business is getting competitive and complex, involving not only players and clubs financial transactions. Flinkberg and Rönnblom (2009) examine how large elite sports associations use traditional management accounting tools to achieve their goals, highlighting the importance of financial reporting and accountability. García-Unanue, Felipe, and Gallardo (2015) examined the implementation of cost accounting in public, Andon and Free (2019) brought up an interesting issue of valuing playing talent in professional sports as inherently complex and uncertain. Assessing a player's qualities is challenging, often relying heavily on past performance, perceived interest from other clubs, and other subjective factors.

In recent years, performance in sports has been closely tied to financial health, with various studies analyzing this relationship. Alaminos, Esteban, and Fernández-Gámez (2020) utilize neural networks, including novel quantum neural networks, to analyze the financial performance of European football clubs, identifying liquidity, leverage, and sporting performance as key determinants. Similarly, Galariotis, Germain, and Zopounidis (2018) combine methodologies for evaluating business, financial, and sports performance in French football clubs, highlighting the complexity of these interactions.

Corporate Governance and Financial Management

Corporate governance in sports clubs and organizations has unique challenges due to its hybrid nature, blending not-for-profit with commercial aspects. Clune, Boomsma, and Pucci (2019) delve into how accounting practices in amateur sports organizations like the Gaelic Athletic Association navigate these complexities, revealing tensions between maintaining amateur status and financial sustainability. Prior studies have mentioned the discoveries in Forster's (2004) research on the finance, accountability, and governance of global sports' governing bodies, underscoring the challenges these entities face in adhering to commonly accepted accounting standards. This research highlights the need for transparent and auditable financial practices to ensure accountability. As the influx of money into sports has surged dramatically, so too has the potential for corrupting influences. Andon and Free (2019) emphasize that integrity and accountability have become central to sports administration. This focus addresses various critical issues, including the integrity of bidding processes such as the FIFA World Cup, concerns over match-fixing and corruption, and the creation of investigatory units and integrity-focused bodies to oversee participant behavior, including the use of performance-enhancing drugs.

In addition, the role of stakeholders in sports clubs' financial management has been explored, particularly in balancing financial performance with community and fan engagement. Hamil and Chadwick (2010), along with more recent studies, advocate for broader accountability that incorporates non-economic stakeholders, suggesting that financial transparency should extend beyond the boardroom to foster trust and inclusivity.

Risk Management and Financial Control

Andon and Free (2019) discuss the evolution of accounting in the business of sports, emphasizing the need for robust financial reporting standards to ensure accountability and transparency. Feiler, Coates, Wicker, and Breuer (2023) analyze the financial situation of non-profit sports clubs, explaining that clear financial reporting is necessary to understand the financial health of these organizations and make informed decisions. Based on their study in Hungary sports associations accounting reports, Gosi (2019) summarizes that since 2010, sports

associations benefiting from corporate tax subsidies have experienced a tenfold increase in annual revenues, while other associations have seen smaller revenue growth. Subsidies form the largest revenue source for these organizations. Personnel expenditure has risen significantly. Asset growth across associations highlights strong financial assets, passive accruals, and good liquidity. Financial reports reflect the dynamic expansion of the sports economy sector and thus requiring greater risk management and control measures ~~in place~~.

To mitigate the ongoing economic impacts of the COVID-19 pandemic on football clubs, Sevim (2021) emphasizes the necessity of implementing long-term structural solutions. Clubs should focus on transparency, accountability, and efficient resource management, aligning with UEFA Fair Play criteria to maintain a balanced budget. This approach will minimize risks, enhance financial stability, and contribute to sustainable financial structures. Charumbira (2022) proposed a conceptual framework that provides guidelines for sports managers, policymakers, and regulators to adopt strategies for monitoring expenses, enhancing revenue, and achieving financial self-sustenance. It assesses sports entities' reliance on generated revenue, highlights the risk of financial failure, and emphasizes the importance of sustainable financial models for long-term economic viability. Sports clubs and associations should integrate strategic management and public policy interventions to ensure responsible spending and promote revenue generation. These actions are crucial for reducing the risk of financial failure and achieving 'sports financial self-sustenance' with optimal economic performance within the sports sector.

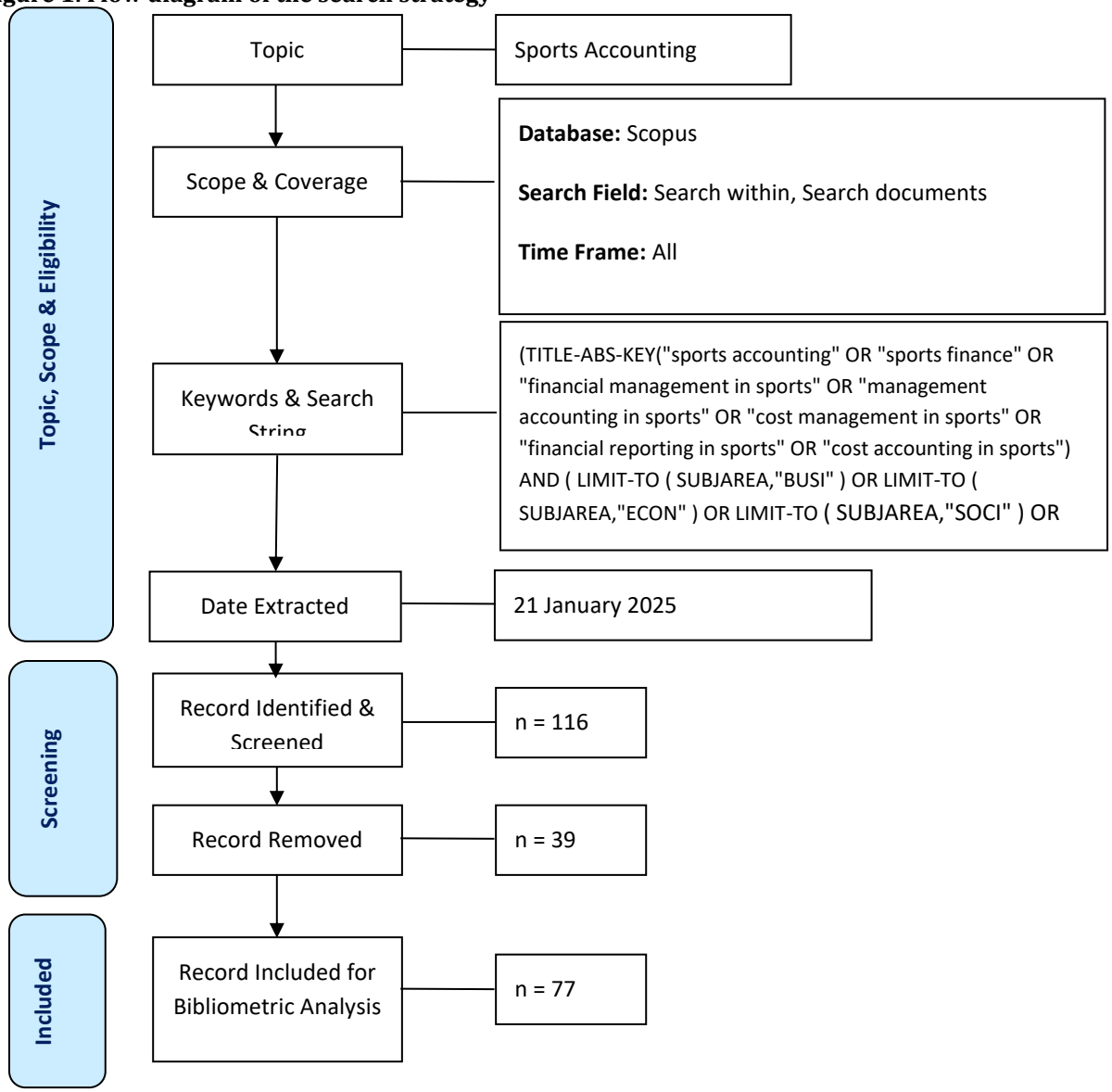
With the rise of big data, there is an increased focus on using technology for risk management in sports finance. Sports clubs and organizations can leverage big data to enhance risk prevention and control mechanisms, proposing strategies like refined cost accounting and improved budget management systems.

3. Methodology

This study utilized a bibliometric approach, as it offers a comprehensive, quantitative, objective, and systematic analysis of the current state of research by identifying research hotspots and anticipating future research trends (Ahmi, 2022). Additionally, bibliometric techniques pinpoint the most significant patterns in publications, citations, authors, keywords, and institutions, thereby providing a clear overview of academic research on a given topic or within a journal (Awang, Nasir, Taib, Shuhidan s Ifada, 2024).

A detailed investigation using the TITLE-ABS-KEY ("sports accounting" OR "sports finance" OR "financial management in sports" OR "management accounting in sports" OR "cost management in sports" OR "financial reporting in sports" OR "cost accounting in sports") AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "DECI"))) search query on 21 January 2025 resulted in the acquisition of 116 documents from the Scopus database, spanning the years 1982 to 2024. However, as this study limits the subject area from Business, Management, Accounting, Economics, Econometrics and Finance, Decision Sciences, and Social Sciences, only 77 documents were taken as the final sample size for the bibliometric analysis. A comprehensive summary of all queries is illustrated in the flow chart in Figure 1.

Figure 1: Flow diagram of the search strategy



Source: Zakaria, Ahmi, Ahmad & Othman (2021), Moher, Liberati, Tetzlaff, & Altman (2009)

For further analysis, the retrieved data were exported into standardized formats, including RIS, CSV, and Microsoft Excel. The data were then summarized based on document type, source language, and publication patterns. A citation analysis was conducted to determine the total number of citations, average citations per publication, and average citations per cited publication, aiming to identify highly cited publications and influential authors in the field. Harzing's Publish or Perish software was used to evaluate the performance of the examined documents. Additionally, VOSviewer software, which generates bibliometric networks, was utilized to create charts and diagrams reflecting the frequency of published materials, analyzed using Microsoft Excel. An analysis of frequently occurring keywords was performed to identify clusters of keywords and emerging areas of study in sports accounting. Based on bibliometric data, this study offers valuable insights into the research area's subject matter, helps identify potential research questions, and tracks the evolution of research topics over time.

4. Results and Findings

Documents Profiles

Document profiles refer to the specific attributes of each publication within a dataset, extending beyond just titles and abstracts (Adnan, Halmi, Nasir & Ahmad, 2024). The research area was explored in detail by analyzing various aspects of document profiles to offer insights into research topics, key authors, and institutions, as well as research trends and collaborations that influence the field's overall development. The detailed information related to the 77 documents retrieved from the Scopus database on sports accounting is presented in Tables 1, 2, and 3. Most documents are articles, making up 67.53% of the total. Book chapters account for 15.58%, books for 11.69% and editorials for 2.60%. The remaining categories, including conference paper and review, ~~each~~ represent 1.30%.

Table 1: Document Type

Document Type	Total Publications (TP)	Percentage (%)
Article	52	67.53
Book Chapter	12	15.58
Book	9	11.69
Editorial	12	2.60
Conference Paper	1	1.30
Review	1	1.30
Total	77	100.00

English is the predominant language used in the publications with 96.03% of the total as it offers standardization, ensuring consistency and ease of understanding. Meanwhile, the Russian accounted for 3.90%.

Table 2: Languages

Language	Total Publications (TP)	Percentage (%)
English	74	96.10
Russian	3	3.90
Total	77	100.00

Scopus categorizes the publications into 14 primary subject areas. Analyzing the distribution of publications across these categories reveals the predominant areas of study within this dataset. The results indicate a concentration of publications in business, management and accounting, which constitutes 66.23% of the total. Meanwhile, economics, econometrics, and finance contribute 57.14% to the subject area. It is followed by social sciences and Decision Sciences at 23.38% and 12.99%, respectively. Meanwhile, the remaining subject areas contributed less than 10% of the publications.

Table 3: Subject Area

Subject Area	Total Publications (TP)	Percentage (%)
Business, Management and Accounting	51	66.23
Economics, Econometrics and Finance	44	57.14
Social Sciences	18	23.38
Decision Sciences	10	12.99
Medicine	6	7.79
Health Professions	5	6.49
Arts and Humanities	4	5.19
Computer Science	3	3.90

Engineering	2	2.60
Environmental Science	2	2.60
Earth and Planetary Sciences	1	1.30
Energy	1	1.30
Mathematics	1	1.30
Psychology	1	1.30

Publication Trends

The analysis indicates that over the past 24 years, there has been a notable increase in publications related to sports accounting and finance; however, the number of publications remains fewer than ten as shown in Figure 2. This type of analysis is essential for observing changes in publication patterns over different periods, visualizing the evolution of research objectives, and identifying future areas of research growth. The publication activity during the first five years was minimal, with only a publication recorded in 2000 and 2005. This observation indicates a nascent interest in sports accounting and finance research. From 2006 onwards, there was a slight uptick in the number of publications, with two publications in 2006 and 2008, and one publication each in 2009 and 2010. A notable increase occurred in 2011, with four publications suggesting growing interest and recognition of the field. The years 2012 to 2018 showed more consistent and steady growth in publications. There was a fluctuation in publication numbers, with significant peaks in 2013 (5 publications), 2016 (6 publications), and 2018 (8 publications). This period reflects a broader acceptance and establishment of sports accounting and finance as a distinct research area. The most recent years, from 2019 to 2024, exhibit a notable rise in publication activity. 2020 stands out with the highest number of publications (9), followed by strong outputs in 2021 (7), 2022 (7), and 2024 (7). This trend suggests that sports accounting and finance have become ~~a~~ well-recognized and active in research fields with increasing contributions from scholars.

Figure 2: Total Publications and Citations by Year

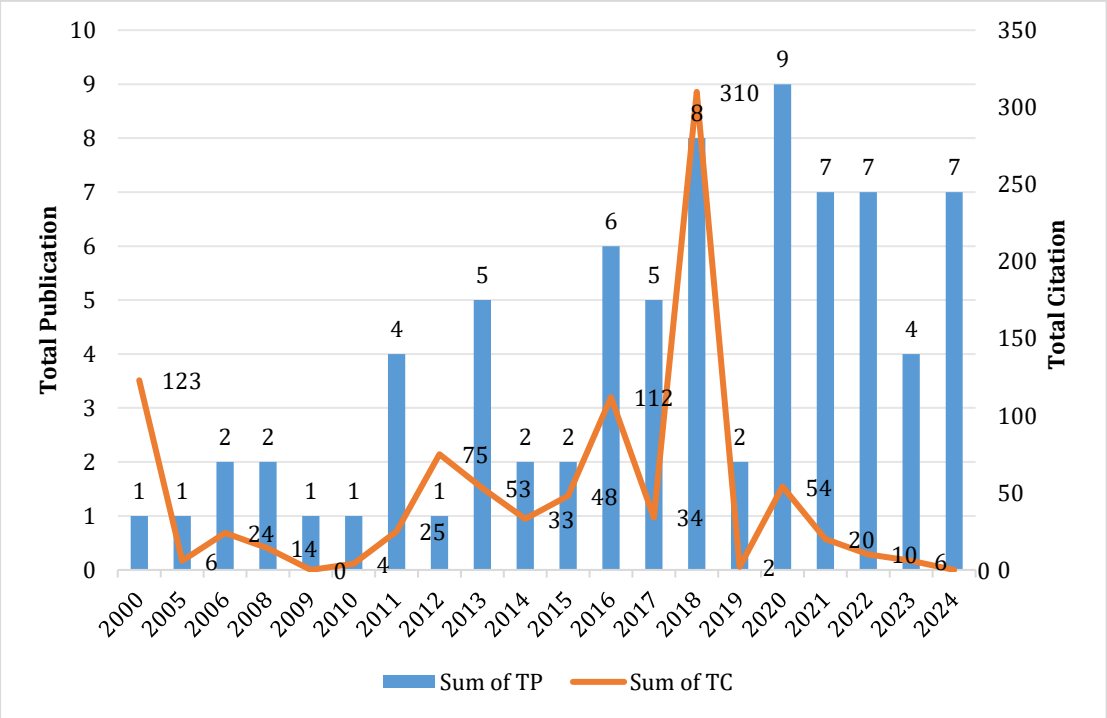


Table 4 presents the analysis of annual publications. Throughout the sample period, the h-index ranged from 1 to 5. This metric is utilized to assess the productivity and citation impact of publications. The observed variation in the h-index from 1 to 5 indicates that the researcher's impact and productivity have increased over time,

suggesting greater recognition and citation of their work within the academic community. As evidenced by the highest h-index, five publications related to sports accounting and finance received at least 52 citations in 2018, and seven citations in 2020. Conversely, the number of published works exceeded the number of cited works in the years 2013 and 2018 to 2024. This result implies the credibility of the publications, as it shows that not all works are being cited within the same year. Additionally, the g-index reflects the total number of accumulated citations. As of 2018, the highest g-index indicates that a minimum of 8 publications have collectively garnered 64 citations.

Table 4: Year of Publication

Year	TP	NCP	TC	C/P	C/CP	h	g
2000	1	1	123	123.00	123.00	1	1
2005	1	1	6	6.00	6.00	1	1
2006	2	2	24	12.00	12.00	2	2
2008	2	2	14	7.00	7.00	1	2
2009	1	0	0	0.00	0.00	0	0
2010	1	1	4	4.00	4.00	1	1
2011	4	4	25	6.25	6.25	3	4
2012	1	1	75	75.00	75.00	1	1
2013	5	3	53	10.60	17.67	2	5
2014	2	2	33	16.50	16.50	2	2
2015	2	2	48	24.00	24.00	2	2
2016	6	6	112	18.67	18.67	4	6
2017	5	5	34	6.80	6.80	4	5
2018	8	6	310	38.75	51.67	5	8
2019	2	1	2	1.00	2.00	1	1
2020	9	8	54	6.00	6.75	5	7
2021	7	5	20	2.86	4.00	3	4
2022	7	5	10	1.43	2.00	2	2
2023	4	3	6	1.50	2.00	1	2
2024	7	0	0	0.00	0.00	0	0
Total	77						

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Publication by Authors

This section delves deeper into the contributions of leading authors within the domain of sports accounting and finance, highlighting scholars who have significantly advanced the field. Table 5 enumerates the top five most prolific authors specializing in sports accounting and finance. Analyzing the institutional affiliations of these authors offers insight into the specialized research areas of various institutions and countries. Such information is invaluable for identifying key research institutions and potential collaboration partners in this sector. The findings reveal that most publications are attributed to scholars from France, the United Kingdom, the United States, and Germany. Andreff, W., from Université Paris 1 Panthéon-Sorbonne in France, has authored five articles with a cumulative citation count of 152, the highest among the listed authors. Wilson, R., of Sheffield Business School, United Kingdom, has also published five articles, garnering 120 citations. Conversely, Plumley, D., also from Sheffield Business School, United Kingdom, has contributed four articles, accumulating a total of 110 citations. Additionally, Brown, M.T., from the University of South Carolina, United States, and Frick, B., from Paderborn University, Germany, have each authored three publications, with total citation counts of 12 and 9, respectively.

Table 5: Top 5 Most Productive Authors

Author's Name	Affiliation	Country	TP	NCP	TC	C/P	C/CP	*h*	*g*
Andreff, W.	Université Paris 1 Panthéon-Sorbonne Paris	France	5	4	152	30.40	38.00	3	5
Wilson, R.	Sheffield Business School	United Kingdom	5	5	120	24.00	24.00	4	5
Plumley, D.	Sheffield Business School	United Kingdom	4	4	110	27.50	27.50	4	4
Brown, M.T.	University of South Carolina	United States	3	2	12	4.00	6.00	2	3
Frick, B.	Paderborn University	Germany	3	1	9	3.00	9.00	1	3

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Publication by Institutions

Table 6 highlights the most productive institutions with at least four publications in sports accounting and finance. The results indicate that most documents are affiliated with institutions from France, the United Kingdom, Russia, and the United States. Université Paris 1 Panthéon-Sorbonne and Sheffield Hallam University are in the lead with five total publications, accumulating 153 and 120 total citations, respectively. HSE University and Syracuse University, each with four publications, have fewer citations of 26 and 19, respectively. This result suggests potential but with a current lower impact compared to the leading institutions. Despite having only four publications, The University of San Francisco shows a high citation count of 92. Plekhanov Russian University of Economics has four publications with a total of 11 citations. Though the citation count is lower, the institution demonstrates consistent productivity.

Table 6: Most productive institutions with a minimum of four publications

Affiliation	Country	TP	NCP	TC	C/P	C/CP	*h*	*g*
Université Paris 1 Panthéon-Sorbonne	France	5	4	153	30.60	38.25	3	5
Sheffield Hallam University	United Kingdom	5	5	120	24.00	24.00	4	5
HSE University	Russia	4	3	26	6.50	8.67	3	4
Syracuse University	United States	4	3	19	4.75	6.33	2	4
Plekhanov Russian University of Economics	Russia	4	4	11	2.75	2.75	3	3
University of San Francisco	United States	4	4	92	23.00	23.00	4	4

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Publication by Countries

Assessing bibliographic data includes evaluating the publication count per country and pinpointing the most prolific contributors. Table 7 delineates the top ten countries with the highest contributions. The United States emerges as the frontrunner with 31 publications, constituting 40.26% of the total. The Russian Federation and the United Kingdom have nine publications, accounting for 11.69%. Germany follows with eight publications (10.39%), while France contributes five (6.49%). Canada and Poland have four publications (5.19%) and three (3.90%), respectively. New Zealand, South Korea, and Spain each account for 2 publications, representing 2.60%. The United States leads in research outcomes, followed by major European countries and emerging economies. The United States' dominance in research findings likely stems from the substantial financial scale of its sports industry. An important academic contribution is the development of financial management models

for both professional and amateur sports organizations. Although the bibliometric results underscore significant research contributions from Western and European countries, a notable gap is the underrepresentation of Southeast Asia countries in academic research on accounting and financial management in sports clubs and federations. The absence of key Southeast Asia countries such as Malaysia, Indonesia, Thailand, the Philippines, and Vietnam indicates that research in this region remains underdeveloped.

Table 7: Top 10 Publication Countries

Country	TP	%
United States	31	40.26
Russian Federation	9	11.69
United Kingdom	9	11.69
Germany	8	10.39
France	5	6.49
Canada	4	5.19
Poland	3	3.90
New Zealand	2	2.60
South Korea	2	2.60
Spain	2	2.60

Notes: TP=total number of publications

Publication by Source Titles

Evaluating the sources within a given field can illuminate the most significant journals and platforms for disseminating research findings. This process facilitates a comprehensive understanding to identify the leading sources within a particular domain of study. Table 8 presents a summary of the five most active sources. The foremost publisher is Elsevier Ltd, with six publications in the Sport Management Review journal, which has garnered a total of 171 citations. Following this is Fitness Information Technology, with five publications in the International Journal of Sport Finance, which has accumulated 30 citations. Although ranked fourth in total publications, Sport, Business and Management: An International Journal, published by Emerald Group Holdings Ltd., received a higher total citation count of 26 compared to the third leading source's journals, which received only 13 total citations. Additionally, Managerial Finance, a journal published by Emerald Group Holdings Ltd, has accumulated 19 citations.

Table 8: Top 5 Most Active Source Titles

Source Title	TP	Publisher	Cite Score	SJR 2023	SNIP 2023	NCP	TC	C/P	C/CP
Sport Management Review	6	Elsevier Ltd	5.80	1.429	2.76	6	171	28.50	28.50
International Journal of Sport Finance	5	Fitness Information Technology	1.58	0.351	N/A	4	30	6.00	7.50
Financial Management in the Sport Industry	4	Taylor and Francis	2.44	0.9	1.252	3	13	3.25	4.33
Sport, Business and Management: An International Journal	4	Emerald Group Holdings Ltd.	1.94	0.399	1.099	4	26	6.50	6.50
Managerial Finance	3	Emerald Group Holdings Ltd.	2.49	0.439	N/A	3	19	6.33	6.33

Notes: TP= total number of publications; TC= total citations; CiteScore = average citations received per document published in the source title; SJR = SCImago Journal Rank measures weighted citations received by the source title; SNIP = source normalized impact per paper measures actual citations received relative to citations expected for the source title's subject field.

Citation Metrics

Citation metrics are essential in bibliometric analysis. The frequency with which a publication is referenced by other scholarly works determines its impact and influence. The citation metrics shown in Table 9 were generated using Harzing's Publish or Perish software. There are 953 citations across the 77 identified papers, averaging 12.38 citations per paper. On average, there are two authors per publication. The h-index and g-index demonstrate a strong citation impact, with values of 13 and 29, respectively. An h-index of 13 indicates that 13 documents in forensic accounting have been cited at least 13 times, while a g-index of 29 signifies that at least 49 publications have collectively received 841 citations.

Table 9:Citations metrics

Metrics	Data
Papers	77
Number of Citations	953
Years	25
Citations per Year	38.12
Citations per Paper	12.38
Citations per Author	432.13
Papers per Author	43.77
Authors per Paper	2.19
h-index	13
g-index	29

Highly Cited Documents

Table 10 summarizes the information on highly cited documents. "The Evolving European Model of Professional Sports Finance" is the most cited document, with 123 citations. This is followed by "Europe's elite football: Financial growth, sporting success, transfer investment, and private majority investors" and "Considering legacy as a multi-dimensional construct: The legacy of the Olympic Games" both are cited 75 times. Meanwhile, A longitudinal and comparative analysis of competitive balance in five European football leagues counted 61 citations.

Table 10: Top 10 highly cited articles

No	Authors	Year	Title	Cites	Cites per Year
1	W. Andreff, P.D. Staudohar	2000	The Evolving European Model of Professional Sports Finance	123	4.92
2	M. Rohde, C. Breuer	2016	Europe's elite football: Financial growth, sporting success, transfer investment, and private majority investors	75	8.33
3	N. Agha, S. Fairley, H. Gibson	2012	Considering legacy as a multi-dimensional construct: The legacy of the Olympic Games	75	5.77
4	G. Ramchandani, D. Plumley, S. Boyes, R. Wilson	2018	A longitudinal and comparative analysis of competitive balance in five European football leagues	61	8.71
5	C.J. Cordery, D. Sim, R.F. Baskerville	2013	Three models, one goal: Assessing financial vulnerability in New Zealand amateur sports clubs	50	4.17
6	A. Fauve	2015	Global Astana: Nation branding as a legitimization tool for authoritarian regimes	40	4
7	R. Wilson, G. Ramchandani, D. Plumley	2018	Parachute Payments in English Football: Softening the Landing or Distorting the Balance?	37	5.29

8	S.L. Shapiro, J. Drayer	2014	An examination of dynamic ticket pricing and secondary market price determinants in Major League Baseball	30	2.73
9	W. Andreff	2018	Financial and sporting performance in French football Ligue 1: Influence on the players' market	24	3.43
10	B. Stewart	2006	Sports funding and finance	20	1.05

Top Keywords

Authors' keywords provide valuable insights into specific keywords within a broader topic. This analysis underscores the evolution of keywords and trends by examining frequently occurring terms and keyword clusters. Table 11 lists the top three keywords, each appearing in at least four publications, used by authors specializing in sports accounting and finance. The keyword "sports finance" (61.04%) emerges as the most frequently used, highlighting the significance of financial aspects related to sports. This prevalence suggests that funding, budgeting, financial management, and economic impact are central focal points in the research literature. The prominence of "sports finance" indicates a strong emphasis on understanding the economic dimensions of sports, which can have wide-ranging implications for policy, management, and strategic decision-making in the sports industry.

Additionally, "sport" constitutes 29.87% of the primary keywords, respectively. This reflects a broad interest in general sports topics, encompassing various aspects of sports activities, events, and management, indicating that while financial aspects are crucial, there is also substantial research dedicated to understanding the broader context and dynamics of sports. Meanwhile, "sports economics," accounts for 15.58% of the primary keywords. This result suggests a growing focus on the economic analysis of sports, including market dynamics, economic impact studies, and the financial performance of sports organizations. In contrast, competitive balance, and sports management each represent 5.19% of the primary keywords, indicating specific interest areas within the broader field of sports research.

Table 11: Top author's keyword with a minimum of four publications

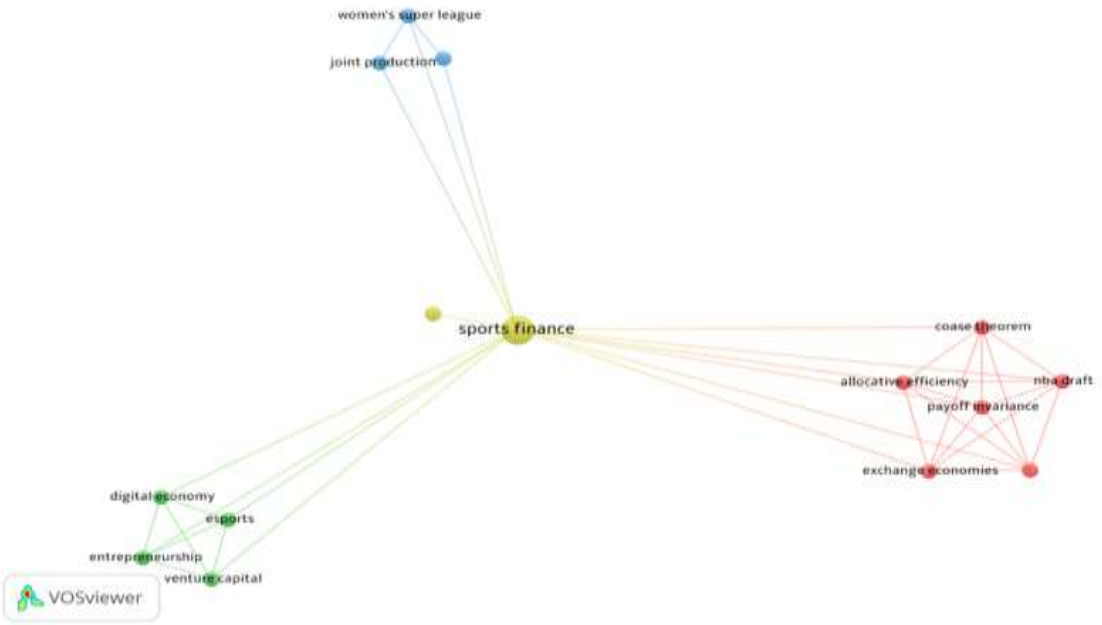
Author Keywords	Total Publications (TP)	Percentage (%)
Sports Finance	47	61.04
Sport	23	29.87
Sports Economics	12	15.58
Competitive Balance	4	5.19
Sport Management	4	5.19

Co-occurrence Analysis of Author's Keywords

Figure 3 shows the network visualization of key terms associated with sports accounting and finance using VOSviewer. This visualization depicts the co-occurrence of potential research topics in sports accounting and finance and the authors' chosen keywords. The dimensions and meanings of the nodes within the network indicate the significance and relationships of specific terms. This observation aids in identifying the most frequently used and critical keywords within the field. Nodes with higher weights represent the most utilized keywords in the dataset. Larger nodes indicate more frequent usage of keywords and can also reflect the frequency of term usage.

Sports finance occupies the most prominent node in the network, signifying its central significance. It intersects with all other nodes within the network. The intersection of sports finance with the digital economy highlights the growing importance of digital platforms in generating revenue for sports organizations. Meanwhile, the intersection with Coase Theorem emphasizes the importance of efficient resource allocation within sports organizations. Furthermore, sports finance also intersects with joint production, underscoring the significance of effective collaborative efforts in sports organizations that contribute to favorable financial outcomes.

Figure 3: Network visualization of the author's keywords



In Table 12, the authors' keywords are organized into four main clusters to visually depict the primary subject areas of studies on a specific topic. The first cluster includes allocative efficiency, Coase Theorem, exchange economies, NBA draft, payoff variance, and property rights. This cluster emphasizes foundational economic theories and principles that underpin financial decisions in sports organizations, with a focus on efficiency and property rights. The second cluster groups the digital economy, entrepreneurship, esports, and venture capital. This cluster suggests innovations, particularly digital technologies, and investments, are transforming the sports industry. The third cluster consists of joint production, women's sport, and the women's super league. This cluster highlights the importance of collaboration and the growing financial significance of women's sports, illustrating how joint efforts contribute to the overall success of sports organizations. The fourth cluster encompasses Premier League clubs and sports finance. This cluster centers around the financial dynamics of top-tier sports organizations, with a particular focus on Premier League clubs and the broader scope of sports finance.

Table 12: Cluster of the co-occurrence analysis of author's keywords

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Allocative efficiency	Digital economy	Joint production	Premier League clubs
Coase theorem	Entrepreneurship	Women's sport	Sports Finance
Exchange economies	Esports	Women's Super League	
NBA draft	Venture capital		
Payoff variance			
Property rights			

5. Conclusion and Recommendations

This study contributes significantly to the current understanding of accounting and financial management in sports clubs and organizations by providing a comprehensive bibliometric analysis of 77 documents from the Scopus database. The findings highlight the field's evolution, focusing on critical aspects such as financial sustainability, governance, and technological integration. By analyzing publication trends, subject areas, and institutional contributions, the study identifies key research contributors, highlighting the dominance of "sports finance" as a primary focus, and emphasizes the global relevance of this research area. Additionally, the

study underscores the increasing importance of digital platforms and data analytics in enhancing financial practices in sports organizations. This study offers valuable insights for academics, practitioners, and policymakers in addressing financial transparency, regulatory compliance, and the challenges of balancing financial performance with stakeholder engagement. It encourages organizations to adopt sustainable financial models and leverage digital tools for risk management and resource optimization.

However, this research has limitations, including its reliance on Scopus-indexed documents and an emphasis on English-language publications, potentially excluding significant studies in other languages or databases. Additionally, the analysis does not extensively cover the financial management practices of smaller or amateur sports organizations, a critical gap in the literature.

Future research should address these limitations by expanding the scope to include diverse datasets and exploring underrepresented areas such as the financial dynamics of smaller clubs and the socio-economic impacts of financial practices. By broadening the academic focus to include Southeast Asia and other underrepresented regions, scholars can provide a more comprehensive understanding of global sports finance management. In addition, future studies should explore how financial models from developed markets can be adapted to Southeast Asia's emerging sports ecosystem, taking into account factors such as government intervention, sponsorship trends, and infrastructure development. There is also a need for further investigation into the long-term effectiveness of financial regulations, such as UEFA's Financial Fair Play, and their influence on competitive balance across leagues is also needed. This study emphasizes the dynamic and multifaceted nature of financial management in sports, paving the way for future research to explore innovative solutions and practical strategies to ensure the sustainability and growth of sports organizations.

Challenges and Future Directions

The literature points to ongoing challenges like financial instability, dependency on state subsidies, and the need for more robust financial education among sports managers. Future research could explore the impact of digital transformation on financial strategies, the adaptation of clubs to new economic models, and the effectiveness of current financial regulations in promoting equitable competition and financial health across different sports levels. One of the significant challenges identified in the literature is the lack of standardized accounting practices across different sports organizations. This inconsistency can lead to difficulties in financial comparisons and benchmarking. Charumbira (2022) stated that while significant research has focused on measuring the financial value of sports entities, comparatively less attention has been given to evaluating how different financial models adopted by these entities expose them to the risk of financial failure. Additionally, there is a need for more research on the impact of financial management practices on the long-term sustainability of sports clubs. Another gap in the existing research is the limited focus on the financial management of small and amateur sports clubs. Most studies concentrate on large, elite organizations, leaving a gap in understanding the financial challenges faced by smaller clubs.

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The Evolution of Technology in Accounting Education: A Bibliometric Analysis of Research Trends and Teaching Innovations

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Abstract: The rapid advancement of technology has significantly transformed accounting education, necessitating a deeper understanding of its impact on teaching practices and research trends. This study aims to explore the evolution of technology in accounting education through a bibliometric analysis, focusing on identifying key research trends, innovative teaching methods, and their implications for curriculum development. The significance of this study lies in its ability to provide actionable insights for educators, policymakers, and researchers to enhance pedagogy, align academic standards with industry needs, and prepare students for a technology-driven professional landscape. The methodology involves a comprehensive bibliometric analysis of peer-reviewed literature on technology in accounting education. Using data visualization and trend analysis tools, the study examines publication patterns, influential works, emerging themes, and key research gaps. The applied approach ensures a robust synthesis of existing knowledge while uncovering future opportunities for academic and practical advancements. The findings reveal significant trends in the adoption of digital tools, such as artificial intelligence, data analytics, and cloud computing, as well as their integration into accounting education. These outcomes demonstrate the growing emphasis on equipping students with competencies aligned with modern industry requirements. The study also identifies innovative teaching practices and potential areas for further research, offering valuable contributions to the academic community and professional organizations. Overall, this study contributes to the field by providing a roadmap for enhancing accounting education through technology integration, fostering better alignment between academia and industry, and encouraging future research on emerging technological trends.

Keywords: *Accounting Education, Technology, Teaching Innovations, Accounting Students, E-learning, Digital, Bibliometric analysis, VOSviewer*

1. Introduction

The field of accounting education has undergone significant transformation with the emergence of technology. Traditional teaching methods, which relied heavily on manual processes and theoretical instruction, are being replaced by innovative, technology-driven approaches that prepare students for the complexities of a data-driven professional landscape. The integration of technologies such as artificial intelligence (AI), cloud computing, and data analytics has reshaped how accounting concepts are taught, understood, and applied in real-world contexts. This evolution underscores the necessity for accounting education to align with advancements in technology to ensure the relevance and competency of future professionals. Scholarly attention to the intersection of technology and accounting education has grown substantially over the past few decades, leading to a wealth of research on the subject. Bibliometric analysis, a method that quantitatively evaluates academic literature, offers a valuable tool for understanding the scope, impact, and trends of research in this domain. By identifying key publications, influential authors, and emerging themes, bibliometric studies provide a comprehensive view of how technology is shaping accounting education.

This study seeks to investigate the evolution of technology in accounting education by analyzing research trends and teaching innovations. Specifically, it aims to trace the historical progression of technological integration, explore how emerging tools have transformed pedagogical practices, and highlight innovative teaching methods that enhance learning outcomes. Additionally, it identifies under-researched areas and proposes future directions to address the challenges and opportunities presented by technological advancements. In doing so, this paper contributes to the broader discourse on accounting education by providing actionable insights for educators, policymakers, and institutions. It emphasizes the importance of leveraging technology not only to enhance the quality of education but also to meet the dynamic demands of

the accounting profession. By offering a detailed bibliometric analysis, this study sets the stage for informed decision-making and future research in the ever-evolving landscape of accounting education.

2. Literature Review

The concept of "bibliometrics" was first introduced by Belgian documentalist Otlet in the 1930s and later gained prominence through Pritchard, (1969). Bibliometric analysis applies quantitative methods to scholarly works, including journal articles, conference papers, books, and patents. This technique enables researchers to assess academic productivity and influence within a specific field or across disciplines. According to Öztürk et al. (2024), bibliometric analysis involves systematically examining publications in a particular area or journal to generate scientific insights. It utilizes statistical and numerical approaches to analyze indicators such as yearly publication counts, trending topics, leading institutions, prominent journals, influential authors, citation statistics, and keyword patterns. Sweileh et al. (2017) highlight that bibliometric analysis is a versatile tool for assessing the quality and quantity of scholarly outputs, as well as identifying trends and patterns within research domains. Commonly used indicators include publication types, outlets, author affiliations, document origins, and the h-index (Ahmi & Mohd Nasir, 2019). Bibliometric analysis is a prominent method for observing changes in research trends over time and can classify publications by year, author, institution, or country to reveal recurring themes. Additionally, bibliometric tools like VOSviewer and Publish or Perish allow for the visualization of co-authorship, keyword trends, and citation networks, enhancing the understanding of how knowledge is disseminated and interconnected (Nasir et al., 2023). The application of bibliometrics in this context not only helps track the progression of themes such as AI, blockchain, and data analytics in education but also identifies underexplored areas for future research (Nasir et al., 2023; Sweileh et al., 2017).

As described by Rusly et al. (2019), bibliometric analysis offers a structured framework for uncovering details such as keyword usage, author contributions, and citation patterns. Similarly, Ho (2007) defines bibliometric analysis as a quantitative method that provides descriptive insights into publications based on fields, timeframes, countries, or their intersections. Bibliometric analyses highlight an exponential growth in publications related to technology in accounting education, with significant contributions from global academic collaborations (Sangster et al., 2020). Research themes have evolved from basic technological integration to the ethical implications of advanced tools and their role in a globalized education landscape. Moreover, studies indicate a growing focus on the long-term impact of technology-driven education on career readiness and professional success (Tingey-Holyoak & Burritt, 2012).

The integration of technology into accounting education has been a transformative journey, significantly impacting traditional pedagogies and aligning them with the dynamic demands of the accounting profession. Early research primarily focused on the adoption of fundamental tools such as spreadsheets and basic accounting software, which transitioned students from manual to computerized workflows (McCarthy, 2003). These innovations improved efficiency and laid the groundwork for incorporating advanced technologies like data analytics and cloud computing into modern curricula (Watty et al., 2010). Subsequent studies emphasize the necessity of teaching not only technical skills but also critical thinking and analytical capabilities, which are vital for leveraging these advanced tools effectively (Apostolou et al., 2013). Recent advancements, such as artificial intelligence (AI), blockchain, and data analytics, have had a profound impact on accounting education.

AI-driven platforms, including Cognii and ALEKS, have been shown to enhance personalized learning experiences, improving student comprehension and retention rates (Al-Htaybat et al., 2018). Blockchain technology has gained prominence for its practical application in teaching auditing and secure record-keeping, enabling students to engage directly with emerging industry tools (Coyne & McMickle, 2017). Additionally, data analytics tools like Tableau and Power BI are increasingly integrated into the curriculum, developing students' competencies in analyzing and visualizing complex datasets (Richins et al., 2017). The inclusion of generative AI platforms, such as ChatGPT, in 2023 has opened new avenues for adaptive learning and problem-solving in accounting education (Damerji & Salimi, 2023). For example, ChatGPT has been used in accounting courses to assist students in drafting financial reports, providing instant feedback on errors, and generating explanations for complex accounting standards. Case studies from institutions implementing ChatGPT highlight improvements in student engagement and a reduction in the time needed to grasp intricate concepts, demonstrating its potential to transform traditional teaching methodologies.

Technology has fostered pedagogical innovations such as simulations, virtual labs, and gamification, which create immersive learning environments. Simulations replicate real-world accounting scenarios, enhancing problem-solving and decision-making skills (Boyce et al., 2001). Comparative studies reveal that simulation-based learning often surpasses traditional lecture methods in fostering critical thinking and retention (Smith et al., 2015). The accessibility of accounting education has also improved through e-learning platforms and massive open online courses (MOOCs), which offer flexible and cost-effective learning solutions (Domínguez et al., 2013). Furthermore, immersive technologies like augmented reality (AR) and virtual reality (VR) are increasingly being explored for their potential to simulate complex accounting processes and environments. For example, AR has been used to overlay financial data onto physical objects, allowing students to interact with and analyze data in real-time scenarios. VR environments have been employed to create virtual audit rooms where students can practice conducting audits, receiving immediate feedback on their performance. These applications have garnered positive feedback from users, highlighting their effectiveness in enhancing engagement and understanding (Qasim & Kharbat, 2020).

Despite its transformative potential, the integration of technology into accounting education encounters several challenges, such as bridging the digital divide, resistance to change among educators, and the complexity of adopting new tools. Students in low-income regions often lack access to reliable internet and devices, worsening educational inequalities (Johnson et al., 2019). Furthermore, educators frequently cite insufficient training and concerns about obsolescence as barriers to embracing technological advancements (Smith & Brown, 2020). Addressing these issues through continuous professional development and adaptable curriculum is essential to maximize the benefits of technology integration (Howieson et al., 2014). For instance, programs such as the "Technology in Education" workshops offered by leading academic institutions focus on training educators in using advanced tools like data analytics software and AI platforms. Additionally, initiatives like peer-led training sessions and collaborative development of tech-enhanced lesson plans have proven effective in reducing resistance and fostering a culture of innovation among educators.

Current literature highlights significant gaps, particularly in understanding the long-term career impacts of technology-driven education. There is also a need for comparative analyses of various technologies across diverse educational settings to ensure equitable and effective implementation. Future research should prioritize longitudinal studies to assess the evolving relationship between technological advancements and professional competencies in accounting (Al-Htaybat et al., 2018; Richins et al., 2017). Methodologies such as cohort studies tracking graduates over several years, and frameworks like the Technology Acceptance Model (TAM) integrated with industry-specific metrics, could provide robust insights into how technological competencies impact career progression and adaptability. Furthermore, studies such as Damerji and Salimi (2023) emphasize the importance of integrating AI and blockchain technologies into the accounting curriculum to prepare students for future industry challenges. The evolving intersection of technology and accounting education has demonstrated immense potential to enhance learning outcomes, accessibility, and alignment with industry needs. While challenges persist, ongoing research and innovation offer promising avenues to address these issues. By fostering collaboration among educators, policymakers, and industry professionals, the field can continue to advance and meet the demands of a rapidly changing professional landscape.

3. Methodology

Search Strategy

This study conducts a bibliometric analysis to create a map of the research environment on The Evolution of Technology in Accounting Education. To achieve the research objectives, the Scopus database was used as the primary data source in this study. The Scopus database is known for its extensive collection of bibliographic information. Figure 1 outlines the steps of the bibliometric analysis, from the selection of data sources and the search strategy to the data extraction that leads to the final documents. The search strategy was created by combining different keywords. The search query included phrases related to The Evolution of Technology (such as "accounting education" and "accounting student") and specifically related to technology. The phrases were combined, and the search was refined using Boolean operators (AND, OR). After applying the search strategy, a preliminary collection of articles was compiled from the Scopus database and then screened against the inclusion and exclusion criteria. After finalizing the list of relevant articles, VOSviewer and Publish or Perish software were used in this study to analyze publication trends, identify highly cited publications and examine

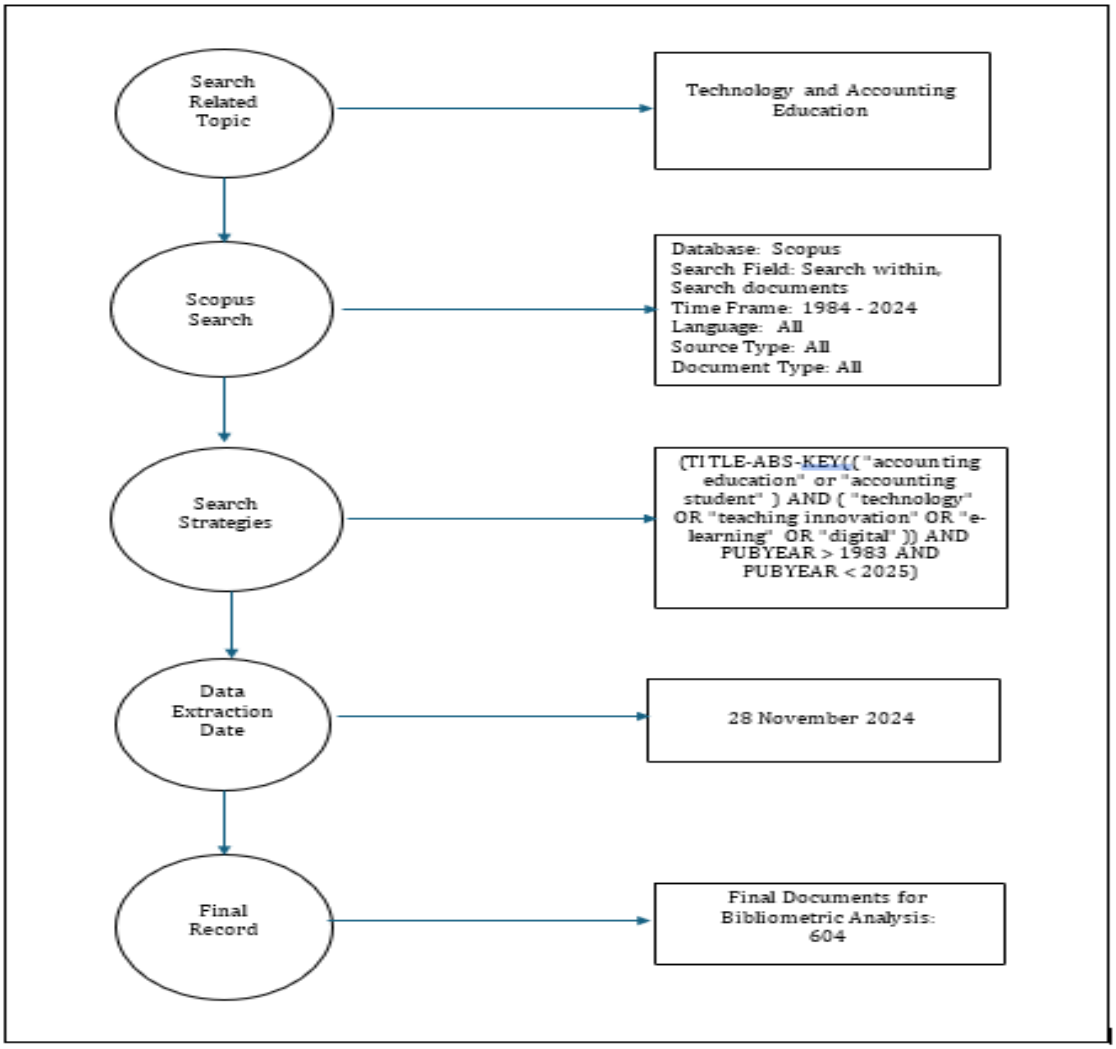
patterns of keyword co-occurrence. In addition, information on the affiliation of authors, institutions and countries was retrieved and analyzed to investigate research collaborations.

This section presents the bibliometric analysis of the scientific research findings on "The Evolution of Technology in Accounting Education". This study focuses on documents published in the Scopus database between 1984 and 2024 which led to a total of 604 articles being included as final documents for bibliometric analysis.

To summarise, this study uses the following bibliometric indicators for publication of "The Evolution of Technology in Accounting Education", as subsequently discussed:

- Documents Profiles i.e., number of research documents published in Scopus between 1984 and 2024 (by Document Type, Source Type, Language, and Subject Area)
- Publication Trends per year: Total Publications and Citations
- Publication by Authors: Most Productive Authors
- Publication by Institutions: Most Productive Institutions
- Publication by Countries: Top Countries Contributed
- Publication by Source titles: Most Active Source
- Citation Metrics
- Highly Cited Documents: Top Highly Cited
- Top Keywords; Co-occurrence Analysis of Author's Keywords

Figure 1: Flow diagram of the search strategy



4. Results and Discussion

Documents Profiles

Table 1 outlines the distribution of 604 research-related documents, highlighting a strong focus on original research, with research articles comprising 64.40% of the total as the primary medium for disseminating peer-reviewed findings. Conference papers account for 20.86%, emphasizing the importance of academic gatherings in sharing emerging ideas. Book chapters (7.12%) provide detailed exploration of subtopics, while review papers (2.98%) suggest the need for more systematic reviews to consolidate findings and address research gaps. Conference reviews (2.81%) reflect an interest in summarizing academic discussions, while minimal contributions from errata (0.83%), books (0.66%), and retracted papers (0.33%) indicate high-quality research output, with only two retractions demonstrating strong academic integrity. Overall, the data underscores a predominant focus on original research and conferences while highlighting opportunities for growth in review papers, books, and comprehensive texts, showcasing the dynamic and diverse nature of the field.

Table 1: Document Type

Document Type	Total Publications (TP)	Percentage (%)
Article	389	64.40%
Conference Paper	126	20.86%
Book Chapter	43	7.12%
Review	18	2.98%
Conference Review	17	2.81%
Erratum	5	0.83%
Book	4	0.66%
Retracted	2	0.33%
Total	**604**	**100.00**

Table 2 shows the distribution of publication types, with journals accounting for 67.22% of the 604 publications, emphasizing their role in disseminating high-quality, peer-reviewed research. Conference proceedings (18.05%) highlight the significance of academic gatherings in fostering collaboration and addressing emerging trends. Book series (9.27%) and standalone books (5.30%) reflect the value of thematic collections and comprehensive texts in exploring specialized topics. A trade journal with just one publication (0.17%) indicates minimal engagement with industry-focused outlets, pointing to a primarily academic research focus. This distribution underscores journals as the primary medium for academic dissemination, with conferences and book-related sources playing complementary roles. The limited presence of trade journals suggests an opportunity to enhance the practical impact of research through industry-oriented channels.

Table 2: Source Type

Source Type	Total Publications (TP)	Percentage (%)
Journal	406	67.22%
Conference Proceeding	109	18.05%
Book Series	56	9.27%
Book	32	5.30%
Trade Journal	1	0.17%
Total	**604**	**100.00**

Table 3 shows that English dominates the 605 analyzed publications, accounting for 97.85%, reflecting its role as the global standard for research dissemination in international fields like technology and accounting education. Other languages include Spanish (0.99%), Portuguese (0.66%), and single publications in Croatian, Polish, Russian, and Ukrainian (0.17% each), indicating localized or regional focus. One dual-language document highlights efforts to bridge linguistic audiences. The prevalence of English underscores its role as academia's lingua franca, while non-English publications emphasize the value of addressing regional contexts and fostering inclusivity to enrich the field with diverse perspectives.

Table 3: Languages

Language	Total Publications (TP)*	Percentage (%)
English	591	97.85%
Spanish	6	0.99%
Portuguese	4	0.66%
Croatian	1	0.17%
Polish	1	0.17%
Russian	1	0.17%
Ukrainian	1	0.17%
Total	**605**	**100.00**

*one document has been prepared in dual languages

The 605 analyzed publications reveal a strong interdisciplinary focus on technology in accounting education (Table 4). Most research falls within Business, Management, and Accounting (56.46%) and Social Sciences (53.64%), emphasizing accounting education, pedagogy, and societal impacts of technology. Computer Science (27.81%) highlights the integration of tools like e-learning, data analytics, and blockchain. Contributions from Economics, Econometrics, and Finance (18.54%) show financial principles intersecting with educational innovation, while Engineering (10.43%) and Decision Sciences (6.62%) reflect technical and analytical support for decision-making. Smaller contributions from Mathematics (4.64%), Arts and Humanities (3.31%), and Environmental Science (2.81%) broaden the scope, while Psychology (1.82%) and Health Professions (0.83%) point to emerging areas like cognitive learning. Minimal representation in Materials Science (0.33%), Medicine (0.50%), and Earth Sciences (0.66%) indicates limited but intriguing interdisciplinary applications. A Multidisciplinary category (0.33%) underscores growing research complexity. This distribution highlights a robust focus on core areas like Business, Social Sciences, and Computer Science, with smaller fields offering opportunities for future exploration and innovation in addressing educational and technological challenges.

Table 4: Subject Area

Subject Area	Total Publications (TP)	Percentage (%)
Business, Management and Accounting	341	56.46%
Social Sciences	324	53.64%
Computer Science	168	27.81%
Economics, Econometrics and Finance	112	18.54%
Engineering	63	10.43%
Decision Sciences	40	6.62%
Mathematics	28	4.64%
Arts and Humanities	20	3.31%
Environmental Science	17	2.81%
Physics and Astronomy	15	2.48%
Psychology	11	1.82%
Energy	8	1.32%
Agricultural and Biological Sciences	5	0.83%
Health Professions	5	0.83%
Earth and Planetary Sciences	4	0.66%
Medicine	3	0.50%
Materials Science	2	0.33%
Multidisciplinary	2	0.33%

Publication Trends

Table 5 shows a significant growth in research output and citation impact from 1984 to 2024, totalling 604 publications. The early years (1984–2000) had limited activity, with fewer than seven publications annually. Output increased sharply from 2010, peaking in 2021 (67 publications), 2023 (86), and 2024 (83). While recent years show high publication numbers, their citation impact remains low due to limited time for citations (C/P: 3.43 in 2023, 1.11 in 2024). Earlier years, such as 1998 (C/P: 47.33) and 2003 (C/P: 49.10), had landmark studies with lasting influence. Citations peaked in 2020 (722) and 2017 (489), reflecting significant

contributions. Metrics like the h-index (14) and g-index (26) were highest for 2020–2021 publications. Early impactful works, such as those from 1991 (15 citations) and 1994 (19 citations), laid foundational groundwork. The data highlights consistent growth in research activity and citation influence, with recent outputs expected to gain impact as citations accumulate.

Table 5: Year of Publication

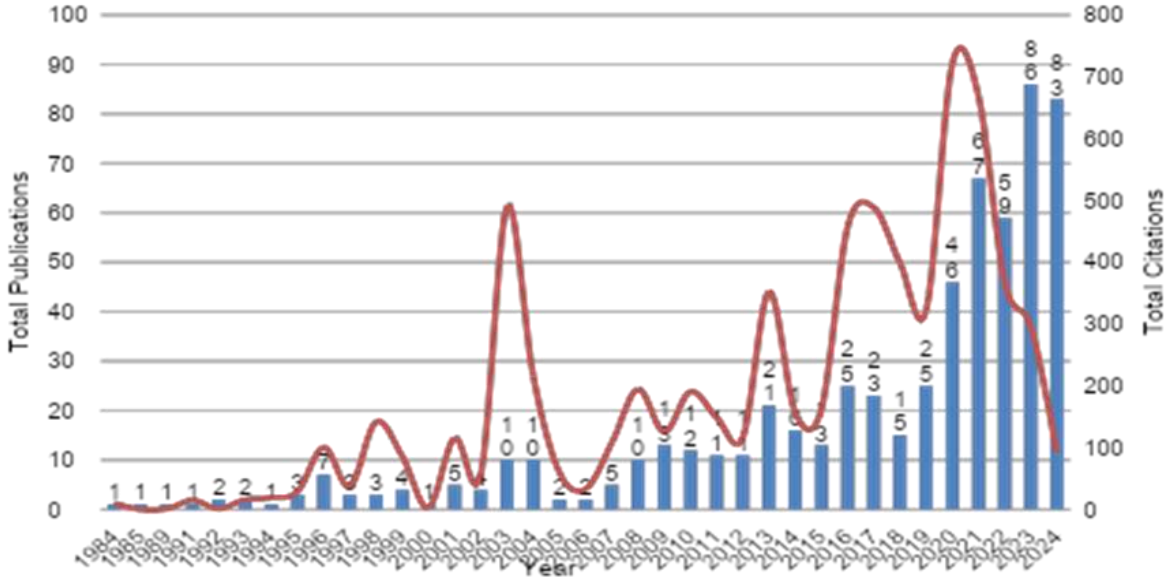
Year	TP	NCP	TC	C/P	C/CP	*h*	*g*
1984	1	1	10	10.00	10.00	1	1
1985	1	0	0	0.00	0.00	0	0
1989	1	1	1	1.00	1.00	1	1
1991	1	1	15	15.00	15.00	1	1
1992	2	1	1	0.50	1.00	1	1
1993	2	2	16	8.00	8.00	2	2
1994	1	1	19	19.00	19.00	1	1
1995	3	3	29	9.67	9.67	3	3
1996	7	6	101	14.43	16.83	5	7
1997	3	3	37	12.33	12.33	2	3
1998	3	3	142	47.33	47.33	3	3
1999	4	4	86	21.50	21.50	4	4
2000	1	1	3	3.00	3.00	1	1
2001	5	5	116	23.20	23.20	5	5
2002	4	4	57	14.25	14.25	4	4
2003	10	8	491	49.10	61.38	7	10
2004	10	7	216	21.60	30.86	5	10
2005	2	2	60	30.00	30.00	2	2
2006	2	2	33	16.50	16.50	2	2
2007	5	5	108	21.60	21.60	4	5
2008	10	8	195	19.50	24.38	6	10
2009	13	7	125	9.62	17.86	5	11
2010	12	8	191	15.92	23.88	6	12
2011	11	9	149	13.55	16.56	6	11
2012	11	9	116	10.55	12.89	5	10
2013	21	18	353	16.81	19.61	9	18
2014	16	10	157	9.81	15.70	8	12
2015	13	12	162	12.46	13.50	6	12
2016	25	22	457	18.28	20.77	9	21
2017	23	19	489	21.26	25.74	10	22
2018	15	15	399	26.60	26.60	9	15
2019	25	22	322	12.88	14.64	8	17
2020	46	37	722	15.70	19.51	13	26
2021	67	54	669	9.99	12.39	14	24
2022	59	42	367	6.22	8.74	12	17
2023	86	53	295	3.43	5.57	9	14
2024	83	29	92	1.11	3.17	5	7
Total	**604**						

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Figure 2 highlights the evolution of the field through publication growth and citation trends. During 1984–2000, research output was minimal, with fewer than seven publications annually, reflecting the domain's early stages. A gradual rise followed from 2000 to 2010, with peaks in years like 2003 and 2007 due to foundational studies. A sharp surge began in 2010, accelerating in the 2020s, with notable peaks in 2021 (67 publications), 2023 (86), and 2024 (83), signalling increased scholarly focus. Citations reveal key years of influence, such as 1998, 1999, and 2003, where impactful studies garnered high citations despite low output. From 2010 to 2020, citations rose steadily, peaking in 2020 with over 700, reflecting significant contributions. Recent years (2023–

2024) show lower citations, expected due to the recency of these works. The shift from isolated, highly impactful studies in the early years to broader dissemination with distributed impact reflects the field's growth. While earlier works show high citations per publication, recent output highlights expanding interest and interdisciplinary advancements. These newer publications, though yet to reach their full citation potential, are poised to shape the future direction of the field.

Figure 2: Total Publications and Citations by Year



Publications by Authors

Table 6 highlights the most productive authors in the field, led by John M. Hassell (Indiana University, USA) with 15 publications, 778 citations, and an h-index of 13, demonstrating sustained influence. Barbara Apostolou (Louisiana State University, USA) follows with 13 publications, 643 citations, and a strong citation impact (C/P = 49.46). Stephanie F. Watson (C/P = 81.75) and James E. Rebele (C/P = 60.86) stand out for their high citation impact despite fewer publications. U.S.-based authors dominate, reflecting strong American institutional leadership. Contributions from Australia (e.g., Nicholas McGuigan and Thomas Kern), Europe (e.g., Soledad Moya and Jordi Carenys), Asia (e.g., Marhaiza Ibrahim), and Africa (e.g., Kirstein Marina) showcase growing global interest, though with relatively modest impact metrics compared to U.S. and European counterparts. The data highlights the notable influence of authors with fewer but highly cited works (e.g., Watson, Rebele) and consistent contributions from high h-index authors (e.g., Hassell, Apostolou). It also points to opportunities for emerging authors, particularly in Asia and Africa, to enhance their impact, while underscoring the expanding global scope of the field.

Table 6: Most Productive Authors

Author's Name	Affiliation	Country	TP	NCP	TC	C/P	C/CP	*h*	*g*
Hassell, John M.	Indiana University	United States	15	15	778	51.87	51.87	13	15
Apostolou, Barbara	Louisiana State University	United States	13	13	643	49.46	49.46	12	13
Dorminey, Jack W.	WEST VIRGINIA UNIVERSITY	United States	9	9	419	46.56	46.56	9	9
Rebele, James E.			7	7	426	60.86	60.86	7	7
McGuigan, Nicholas	Monash University	Australia	6	5	54	9.00	10.80	0	0

Hamdan, Allam	Ahlia University	Bahrain	5	3	13	2.60	4.33	1	3
Kern, Thomas	Macquarie University	Australia	5	4	35	7.00	8.75	0	0
Watson, Stephanie F.	University of Central Arkansas	United States	4	4	327	81.75	81.75	0	0
Moya, Soledad	ESADE Business School	Spain	4	4	126	31.50	31.50	0	0
Kunz, Rolien	University of Pretoria	South Africa	4	4	34	8.50	8.50	0	0
Ibrahim, Marhaiza	Universiti Utara Malaysia	Malaysia	4	3	11	2.75	3.67	0	0
Stanley, Trevor	Queensland University of Technology	Australia	4	4	125	31.25	31.25	0	0
Kirstein, Marina	University of Pretoria	South Africa	4	4	34	8.50	8.50	0	0
Seethamraju, Ravi	University of Sydney Business School	Australia	4	1	8	2.00	8.00	0	0
Carenys, Jordi	EADA Business School	Spain	4	3	93	23.25	31.00	0	0

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Publications by Institutions

Table 7 lists the top institutions contributing to the field, each with at least seven publications. Universiti Teknologi MARA (Malaysia) leads with 20 publications (3.31%), reflecting its strong research focus. Indiana University-Purdue University Indianapolis (14 publications, 2.32%) and Kelley School of Business (13 publications, 2.15%) highlight significant U.S. contributions. Other key contributors include RMIT University (Australia) with 12 publications (1.99%) and Universiti Utara Malaysia and West Virginia University with 10 publications each (1.66%), showcasing Malaysia's prominence and U.S. influence. Ahlia University (Bahrain) and Centro de Estudos Organizacionais e Sociais do Politécnico do Porto (Portugal) follow with 9 publications (1.49%) each, indicating growing activity in the Middle East and Europe. Institutions like the University of South Africa, Instituto Politécnico do Porto, Universidade de Aveiro (Portugal), and The University of Sydney (Australia) each contributed 8 publications (1.32%), with Macquarie University, Monash University (Australia), and the University of Pretoria (South Africa) adding 7 publications (1.16%) each.

The data underscores Malaysia's and the U.S.'s leadership, with growing contributions from Europe, Australia, the Middle East, and Africa, reflecting global collaboration and interest. Expanding international partnerships could further enhance research outputs and impact.

Table 7: Most productive institutions with a minimum of seven publications

Affiliation	Total Publications (TP)	%
Universiti Teknologi MARA	20	3.31%
Indiana University-Purdue University Indianapolis	14	2.32%
Kelley School of Business	13	2.15%
RMIT University	12	1.99%
Universiti Utara Malaysia	10	1.66%
West Virginia University	10	1.66%
Ahlia University	9	1.49%

Centro de Estudos Organizacionais e Sociais do Politécnico do Porto	9	1.49%
University of South Africa	8	1.32%
Instituto Politécnico do Porto	8	1.32%
Universidade de Aveiro	8	1.32%
The University of Sydney	8	1.32%
Macquarie University	7	1.16%
Monash University	7	1.16%
University of Pretoria	7	1.16%

Publications by Countries

The global distribution of research shows the United States leading with 126 publications (20.86%), reflecting its dominant role in the field. Australia follows with 72 publications (11.92%), highlighting Oceania's engagement. Asia emerges strongly with countries like Indonesia, Malaysia, and the United Kingdom contributing 42 publications each (6.95%), alongside China (32, 5.30%) and others such as Jordan (14, 2.32%) and Bahrain (13, 2.15%). Europe makes significant contributions, led by the United Kingdom (42, 6.95%), Portugal (24, 3.97%), and Spain (14, 2.32%). In Africa, South Africa leads with 33 publications (5.46%), while Brazil represents South America with 11 (1.82%). Oceania also sees New Zealand contributing 20 publications (3.31%). This data underscores the United States' leadership while highlighting growing contributions from Asia, Europe, and Oceania. Emerging regions like Africa and South America signal increasing global collaboration and diversification in technology and education research.

Table 8: Top Countries contributed to the publications with a minimum of seven publications

Country	Continent	Total Publication	%
United States	North America	126	20.86%
Australia	Oceania	72	11.92%
Indonesia	Asia	42	6.95%
Malaysia	Asia	42	6.95%
United Kingdom	Europe	42	6.95%
South Africa	Africa	33	5.46%
China	Asia	32	5.30%
Portugal	Europe	24	3.97%
New Zealand	Oceania	20	3.31%
Jordan	Asia	14	2.32%
Spain	Europe	14	2.32%
Bahrain	Asia	13	2.15%
Saudi Arabia	Asia	12	1.99%
Brazil	South America	11	1.82%
Canada	North America	9	1.49%
Germany	Europe	9	1.49%
Egypt	Africa	8	1.32%
India	Asia	8	1.32%
Poland	Europe	8	1.32%
Oman	Asia	7	1.16%
Romania	Europe	7	1.16%

Publications by Source Titles

Table 9 lists key sources in accounting education research, led by Accounting Education (58 publications, 1308 citations) and Journal of Accounting Education (53 publications, 1847 citations). Both demonstrate significant academic impact, with Accounting Education showing strong metrics (CiteScore 8, SJR 0.905). Other contributors include the Journal of Education for Business (12 publications, 174 citations) and Issues in Accounting Education (12 publications, 114 citations), emphasizing the educational aspects of the field. The Journal of Emerging Technologies in Accounting (11 publications, 213 citations) focuses on technology integration, supported by solid impact metrics (CiteScore 4.3, SJR 0.559). Specialized journals like Advances in Accounting Education (10 publications) and Pacific Accounting Review (8 publications) add valuable insights.

Conference proceedings, including the ACM International Conference Proceeding Series and Lecture Notes in Networks and Systems (9 publications each), highlight technological engagement, albeit with lower citation impacts. High-impact journals like Meditari Accountancy Research (7 publications, 91 citations, CiteScore 7.8) and Accounting Research Journal (8 publications, 151 citations, CiteScore 5) stand out, while multidisciplinary sources like Education Sciences and Springer Proceedings in Business and Economics reflect cross-disciplinary relevance. This data underscores the dominance of specialized journals, the growing role of technology-focused sources, and the importance of diverse publication venues in advancing interdisciplinary research and collaboration.

Table 9: Most active source titles

Source Title	TP	TC	Publisher	Cite Score	SJR 2020	SNIP 2020
Accounting Education	58	1308	Taylor & Francis	8	0.905	2.263
Journal of Accounting Education	53	1847	Elsevier	4.2	0.413	1.491
Journal of Education for Business	12	174	Taylor & Francis	3.1	0.445	0.88
Issues in Accounting Education	12	114	American Accounting Association	2.6	0.421	0.871
Journal of Emerging Technologies in Accounting	11	213	American Accounting Association	4.3	0.559	1.021
Advances in Accounting Education: Teaching and Curriculum Innovations	10	60	Emerald Publishing	1.2	0.103	0
ACM International Conference Proceeding Series	9	11	N/A	1.5	0.253	0.233
Lecture Notes in Networks and Systems	9	3	Springer Nature	0.9	0.171	0.282
Communications in Computer and Information Science	8	28	Springer Nature	1.1	0.203	0.246
Pacific Accounting Review	8	98	Emerald Publishing	3.8	0.436	1.077
Accounting Research Journal	8	151	Emerald Publishing	5	0.425	0.938
Springer Proceedings in Business and Economics	7	7	N/A	0.7	0.151	0.14
Meditari Accountancy Research	7	91	Emerald Publishing	7.8	0.932	1.323
Journal of Physics: Conference Series	6	18	N/A	1.2	0.18	0.303
AIP Conference Proceedings	6	5	N/A	0.5	0.152	0.291
Advances in Intelligent Systems and Computing	5	2	Springer Nature	N/A	N/A	N/A
Studies in Systems, Decision and Control	5	5	Springer Nature	1.6	0.116	0
International Journal of Phytoremediation	4	59	Taylor & Francis	7.6	0.715	0.862
Education Sciences	4	49	Multidisciplinary Digital Publishing Institute (MDPI)	4.8	0.669	1.323
Iberian Conference on Information Systems and Technologies, CISTI	4	4	N/A	N/A	N/A	N/A

Notes: TP=total number of publications; TC=total citations; CiteScore = average citations received per document published in the source title; SJR = SCImago Journal Rank measures weighted citations received by the source title; SNIP = source normalized impact per paper measures actual citations received relative to citations expected for the source title's subject field.

Citation Metrics

Table 10 summarizes key citation metrics from 1984 to 2024, covering 604 publications with 6801 citations—an average of 170.03 citations per year and 11.26 per paper. A high h-index of 43 and a g-index of 62 underscore the influence of top-cited works, with 43 papers receiving at least 43 citations. Collaboration is moderate, with an average of 2.53 authors per paper, though citations per author (4.45) suggest individual contributions are spread across many works. These metrics reflect a growing, impactful, and collaborative research field, with strong citation averages indicating the relevance of outputs and a solid foundation for continued growth.

Table 10: Citations metrics

Metrics	Data
Publication years	1984 - 2024
Total Publications	604
Number of Citations	6801
Years	41
Citations per Year	170.03
Citations per Paper	11.26
Citations per Author	4.45
Authors per Paper	2.53
h-index	43
g-index	62

Highly Cited Documents

Table 11 highlights the top 20 highly cited articles in accounting education research, showcasing significant contributions and evolving priorities. Howieson (2003) leads with 173 citations, addressing accounting education's readiness for 21st-century challenges. Influential works include Watty et al. (2016) and Sledgianowski et al. (2017), with 136 and 132 citations, respectively, focusing on faculty resistance to technology and integrating Big Data into the curriculum. Recent impactful studies, such as Damerji and Salimi (2021) and Qasim and Kharbat (2020), emphasize AI, blockchain, and analytics in education, with high citation rates (26.50 CPY and 21.80 CPY). Key themes include technology integration, curriculum reforms, and pedagogical innovation. Studies like Dzuranin et al. (2018) and Dolce et al. (2020) explore aligning education with industry needs and addressing skill gaps, while Stanley and Marsden (2012) advocate for innovative teaching methods. Foundational works by Rebele et al. (1998) and Apostolou et al. (2010) continue to shape the field. Global studies, such as Awayiga et al. (2010) in Ghana and Moorthy et al. (2019) in Malaysia, highlight the adaptability and international relevance of the research. These articles demonstrate the field's responsiveness to challenges, commitment to innovation, and lasting impact on academia and practice.

Table 11: Top 20 highly cited articles

No.	Authors	Title	Source Title	Cites	Cites per Year
1	Howieson B. (2003)	Accounting practice in the new millennium: Is accounting education ready to meet the challenge?	British Accounting Review	173	7.86
2	Watty K.; McKay J.; Ngo L. (2016)	Innovators or inhibitors? Accounting faculty resistance to new educational technologies in higher education	Journal of Accounting Education	136	15.11
3	Sledgianowski D.; Gomaa M.; Tan C. (2017)	Toward integration of Big Data, technology and information systems competencies into the accounting curriculum	Journal of Accounting Education	132	16.50
4	Pincus K.V.; Stout D.E.; Sorensen J.E.; Stocks K.D.; Lawson R.A. (2017)	Forces for change in higher education and implications for the accounting academy	Journal of Accounting Education	116	14.50

5	Qasim A.; Kharbat F.F. (2020)	Blockchain technology, business data analytics, and artificial intelligence: Use in the accounting profession and ideas for inclusion into the accounting curriculum	Journal of Emerging Technologies in Accounting	109	21.80
6	Apostolou B.; Dorminey J.W.; Hassell J.M.; Watson S.F. (2013)	Accounting education literature review (2010-2012)	Journal of Accounting Education	108	9.00
7	Damerji H.; Salimi A. (2021)	The mediating effect of use perceptions on technology readiness and adoption of artificial intelligence in accounting	Accounting Education	106	26.50
8	Moorthy K.; Yee T.T.; T'ing L.C.; Kumaran V.V. (2019)	Habit and hedonic motivation are the strongest influences in mobile learning behaviors among higher education students in Malaysia	Australasian Journal of Educational Technology	100	16.67
9	Mohamed E.K.A.; Lashine S.H. (2003)	Accounting knowledge and skills and the challenges of a global business environment	Managerial Finance	97	4.41
10	Dzuranin A.C.; Jones J.R.; Olvera R.M. (2018)	Infusing data analytics into the accounting curriculum: A framework and insights from faculty	Journal of Accounting Education	95	13.57
11	Dolce V.; Emanuel F.; Cisi M.; Ghislieri C. (2020)	The soft skills of accounting graduates: perceptions versus expectations	Accounting Education	94	18.80
12	de Lange P.; Suwardy T.; Mavondo F. (2003)	Integrating a virtual learning environment into an introductory accounting course: Determinants of student motivation	Accounting Education	91	4.14
13	Alshurafat H.; Al Shbail M.O.; Masadeh W.M.; Dahmash F.; Al-Msiedeen J.M. (2021)	Factors affecting online accounting education during the COVID-19 pandemic: an integrated perspective of social capital theory, the theory of reasoned action and the technology acceptance model	Education and Information Technologies	86	21.50
14	Palmer K.N.; Ziegenfuss D.E.; Pinsker R.E. (2004)	International knowledge, skills, and abilities of auditors/accountants: Evidence from recent competency studies	Managerial Auditing Journal	82	3.90
15	Apostolou B.; Hassell J.M.; Rebele J.E.; Watson S.F. (2010)	Accounting education literature review (2006-2009)	Journal of Accounting Education	82	5.47
16	Watson S.F.; Apostolou B.; Hassell J.M.; Webber S.A. (2007)	Accounting education literature review (2003-2005)	Journal of Accounting Education	80	4.44
17	Rebele J.E.; Apostolou B.A.; Buckless F.A.; Hassell J.M.; Paquette L.R.; Stout D.E. (1998)	Accounting education literature review (1991-1997), part II: Students, educational technology, assessment, and faculty issues	Journal of Accounting Education	80	2.96
18	Al-Htaybat K.; von Alberti-Alhtaybat L.; Alhatabat Z. (2018)	Educating digital natives for the future: accounting educators' evaluation of the accounting curriculum	Accounting Education	78	11.14

19	Apostolou B.; Dorminey J.W.; Hassell J.M.; Rebele J.E. (2015)	Accounting education literature review (2013-2014)	Journal of Accounting Education	75	7.50
20	Musleh Al-Sartawi A.M.A. (2020)	E-Learning Improves Accounting Education: Case of the Higher Education Sector of Bahrain	Lecture Notes in Business Information Processing	70	14.00
21	Stanley T.; Marsden S. (2012)	Problem-based learning: Does accounting education need it?	Journal of Accounting Education	70	5.38
22	Awayiga J.Y.; Onumah J.M.; Tsamenyi M. (2010)	Knowledge and skills development of accounting graduates: The perceptions of graduates and employers in Ghana	Accounting Education	70	4.67

Top Keywords

Table 12 highlights key themes in accounting education research through top author keywords. "Accounting education" dominates with 204 mentions (7.89%), reflecting its central role, followed by "Accounting" (57, 2.20%), indicating the foundational relevance of the discipline. Keywords like "Higher education" (1.12%), "E-learning" (1.01%), and "Artificial intelligence" (0.93%) show growing interest in technology integration, while terms such as "COVID-19" (0.81%) and "Online learning" (0.54%) highlight shifts in education delivery during the pandemic. Technological focus is evident with "Technology" (0.89%), "Information technology" (0.81%), and "Data analytics" (0.58%), reflecting alignment with industry demands. Other terms like "Accounting curriculum" (0.58%), "Skills" (0.43%), and "Accounting profession" (0.58%) emphasize the connection between education and professional readiness. Broader themes like "Educational technology" (0.70%) and "Learning" (0.46%) underscore the focus on pedagogy and innovation. These keywords illustrate a dynamic research landscape, blending technology, curriculum alignment, and adaptability to evolving educational and industry needs.

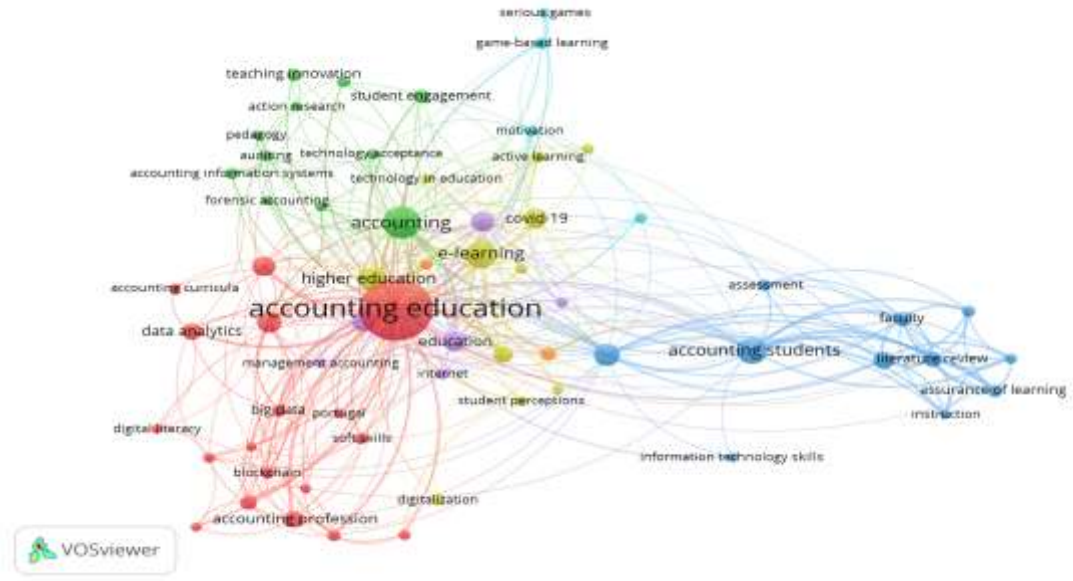
Table 12: Top author's keywords

Author Keywords	Total Publications (TP)	Percentage (%)
Accounting education	204	7.89%
Accounting	57	2.20%
Higher education	29	1.12%
E-learning	26	1.01%
Artificial intelligence	24	0.93%
Technology	23	0.89%
Education	21	0.81%
Information technology	21	0.81%
COVID-19	21	0.81%
Educational technology	18	0.70%
Students	17	0.66%
Blended learning	16	0.62%
Accounting curriculum	15	0.58%
Data Analytics	15	0.58%
Accounting students	15	0.58%
Accounting profession	15	0.58%
Literature review	14	0.54%
Online learning	14	0.54%
Learning	12	0.46%
Skills	11	0.43%

Co-occurrence Analysis of Author Keywords

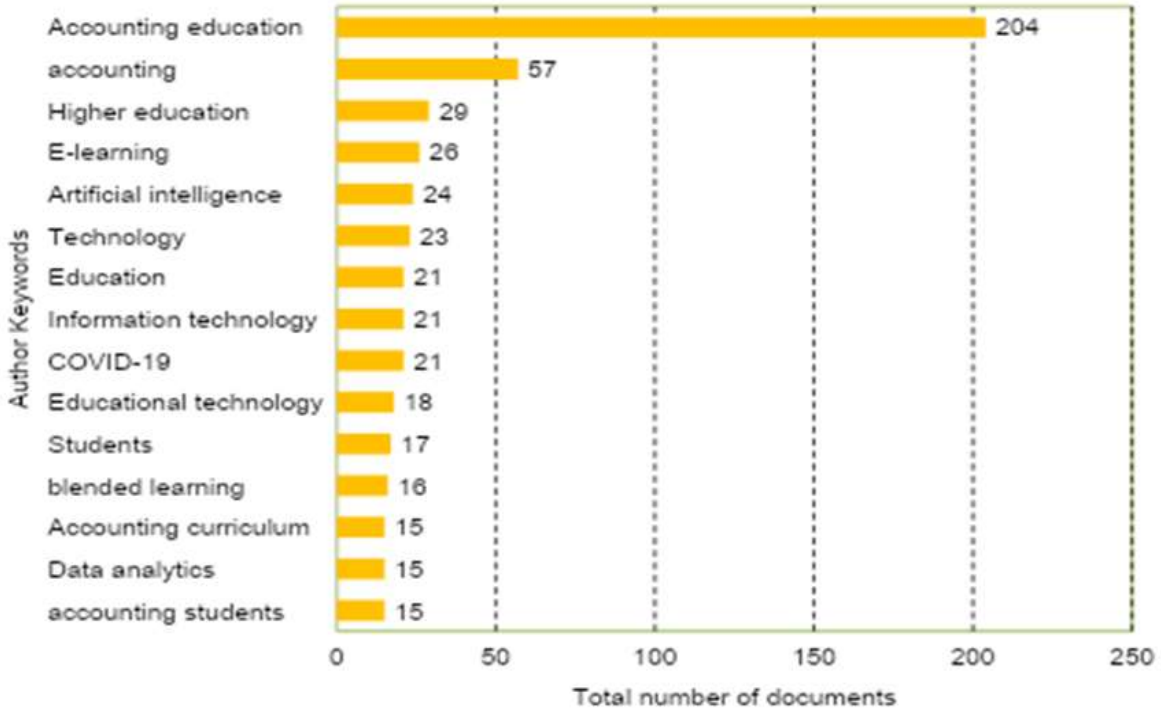
Figure 3 visualizes thematic relationships in accounting education research through a VOSviewer keyword network, with "Accounting Education" at its center, highlighting its foundational role. The network is divided into clusters representing key themes. The red cluster focuses on technology and professional skills, featuring keywords such as "accounting curricula," "data analytics," and "blockchain," which emphasize aligning education with industry demands. The green cluster highlights pedagogy and innovation, with terms like "student engagement" and "teaching innovation" aimed at enhancing learning effectiveness. The blue cluster centers on student-focused research, exploring "accounting students," "assessment," and learning outcomes, while the yellow cluster reflects e-learning and online education, incorporating terms like "COVID-19" and "active learning" to address shifts in education delivery during the pandemic. Strong connections between keywords like "data analytics," "blockchain," and "digital literacy" underscore the role of technology in preparing students for modern professional challenges. Emerging areas such as "serious games," "game-based learning," and "soft skills" highlight niche but growing interests. Overall, the network reveals a dynamic and interconnected research landscape, balancing established themes like curriculum development with newer trends, such as gamification and the impact of COVID-19 on education, while identifying opportunities for further exploration in underdeveloped areas like soft skills and innovative teaching strategies.

Figure 3: Network visualization of the authors' keywords



The bar chart in Figure 4 shows the frequency distribution of the top 15 keywords in accounting education research, reflecting central themes and trends. "Accounting Education" leads with 204 mentions, underscoring its foundational role, followed by "Accounting" (57), emphasizing the core subject. "Higher Education" (29) and "E-learning" (26) highlight the growing importance of digital and broader educational contexts. Technological themes include "Artificial Intelligence" (24), "Technology" (23), and "Information Technology" (21), emphasizing the integration of advanced tools to meet industry demands. "Educational Technology" (18) and "COVID-19" (21) reflect shifts toward online and hybrid learning due to global disruptions. Student-focused themes like "Students" (17), "Blended Learning" (16), and "Accounting Students" (15) highlight engagement and hybrid models, while "Accounting Curriculum" (15) and "Data Analytics" (15) emphasize aligning education with industry needs. The chart underscores the field's dynamic nature, with a focus on technology, curriculum development, and adaptability to contemporary challenges like COVID-19, ensuring relevance in a rapidly evolving profession.

Figure 4: Frequency Distribution of Top 15 Author Keywords



5. Conclusion and Recommendations

The evolution of technology in accounting education has fundamentally transformed the teaching and learning landscape, as demonstrated by this bibliometric analysis. Advanced tools such as artificial intelligence, blockchain, and data analytics have reshaped traditional pedagogical methods, fostering innovative practices like virtual simulations, gamification, and adaptive learning platforms. These advancements have significantly improved student engagement, critical thinking, and practical skill development, aligning educational outcomes with the demands of a technology-driven accounting profession. This study, while comprehensive, is not without its limitations. The reliance on the Scopus database may have excluded relevant contributions from other sources, potentially limiting the breadth of the analysis. The focus on publications from 1984 to 2024 might not fully capture the latest trends, particularly those from 2024 that have yet to accrue significant citation impact. Moreover, the predominance of English-language publications risks omitting valuable insights from non-English-speaking regions. The emphasis on quantitative metrics, such as publication counts and citations, may also overlook qualitative aspects, such as the real-world effectiveness of technological tools in accounting education. Additionally, the study does not extensively explore regional variations in technology adoption or the nuanced impacts of specific tools like AI or blockchain on education outcomes. The absence of longitudinal data and practitioner perspectives further limits insights into the long-term impacts of technology-driven education and its alignment with industry needs.

Despite these limitations, the findings emphasize the transformative potential of technology in accounting education and highlight critical areas for future research. Addressing these gaps through longitudinal and interdisciplinary studies, and by incorporating insights from diverse regions and stakeholders, will ensure a more holistic understanding of the field. By fostering collaboration among educators, policymakers, and industry leaders, accounting education can continue to innovate and adapt. Ultimately, the integration of technology offers a roadmap to prepare students not only for the complexities of the modern accounting profession but also for leadership in an increasingly digitized and interconnected world.

The journal article could be improved by emphasizing the global importance of technology in accounting education, discussing regional contributions, disparities, and international collaborations. A section on research gaps, such as the long-term effects of technology-driven education and comparisons across diverse

contexts, would clarify underexplored areas. Including case studies of institutions using AI, blockchain, or data analytics would add practical insights. The article should address challenges like the digital divide, resistance to change, and technological obsolescence, with solutions such as professional development and better technology access. Adding visuals like graphs and trend charts would improve readability. Clear policy recommendations, including faculty training and equitable technology access, should be outlined. Using frameworks like the Technology Acceptance Model (TAM) would provide insights into technology adoption. Encouraging collaboration across institutions and proposing future research on emerging technologies like generative AI would enhance the article's value for academia, industry, and policymakers.

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A Systematic Review of the Challenges and Opportunities of the Agriculture Economic Sector in Malaysia

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Abstract: Globalization brings the emergence of technology which has dramatically changed the traditional nature of the agriculture sector into a modern which currently achieves sustainability to address issues of food security, aging and unemployment in most agriculture sectors of the world countries. Particularly, Malaysia's agriculture sector faces challenges, including a labor shortage due to its domination by aging farmers, and low youth participation due to negative agricultural perspectives. Nevertheless, this sector remains crucial and looking forward to sustainability as world population growth is the challenge of agriculture found among Malaysian researchers. Another hand, several themes of opportunities have been found that had been expected to respond to the current agriculture challenges trends such as youth, modern agriculture and agricultural entrepreneurship which have been often discussed in the literature. Agriculture Entrepreneurship and emerging trends of technology changes have raised the attention to be integrated to respond and create an opportunity for the group of youth to respond through their agriculture sector participation which had been often discussed among previous researchers. Youth are identified as the key to productivity capability and inclusive development as aligned to the establishment of the youth agropreneur unit in 2013 which aims to groom a new breed of youth Agropreneur in Malaysia under Malaysia National Agriculture Policy 2030. Therefore, the purpose of the study is to review past studies and to analyze the pattern of the challenges and opportunities of the agriculture sector in Malaysia.

Keywords: *Agricultural challenges, Agricultural opportunities, Agricultural Entrepreneurship, Modern Agriculture, Youth, Systematic Literature Review, Malaysia*

1. Introduction

The overview of Malaysia's Challenges in the agriculture economic sector

Previous research highlights several challenges faced in the agricultural sector, such as the low application of technology, environmental degradation, and rapid urbanization, which contribute to the slow growth of the country's development (Dung & Heip, 2017). As evidence, it involved the world and Malaysia's agricultural issues such as minimal GDP growth, ranking 8th out of 10 ASEAN countries. It lags behind nations such as Myanmar, Cambodia, Laos, and Vietnam, where agriculture remains a cornerstone of rural livelihoods (Wee & Lim, 2022). Statistically, Malaysia has experienced a significant decline in the share of agriculture in its GDP, dropping from 46% in 1961 to 7.7% in 2018. Similarly, agricultural employment decreased from 37% in 1980 to 27% in 1991, and further to 11.1% in 2018, reflecting the nation's transition to a modern industrial economy the International Monetary Fund (IMF, 2019). Currently, agriculture is the third-largest contributor to Malaysia's GDP at 7.1% (RM101.5 billion), following the services and manufacturing sectors (DOSM, 2019). Despite these challenges, the agricultural sector remains a vital component of the global economy, essential for meeting the food and livelihood needs of the world population. Consequently, ensuring agricultural sustainability is of utmost importance.

Recently, the projected global population is expected to grow, as estimated by the United Nations (2015), which had serious concerns about agricultural production to ensure their ability to meet the rising demand for food (Pawlak & Kolodziejczak, 2020). With farming businesses facing challenges related to food security Milovanovic, (2014), current trends indicate that 56% more food will be required to meet human demand, as the global population is expected to reach 10 billion by 2050 (Ranganathan et al., 2018). Additionally, global food demand is anticipated to surge by 2050 due to factors such as urbanization, population growth, and rising per capita incomes (FAO, 2017). Frona et. al., (2019) highlight the importance of meeting these demands to achieve agricultural sustainability. However, this objective is increasingly challenged by the growing scarcity of natural resources, posing a significant hurdle for the future FAO, (2017). Despite these challenges, the

growing population presents opportunities for agricultural transformation. Expanding the agricultural industry, particularly through modern agricultural practices, can create employment opportunities and help address food security concerns (IMF, 2019).

Besides, the growing educational background, changing lifestyles, and employment aspirations among young people have led to a higher tendency for them to seek non-agricultural jobs, May et al., (2019); Rigg (2020), resulting in migration to urban areas. It indicates the labor scarcity in agriculture which led to a growing reliance on non-citizens in the agricultural workforce, which now accounts for 16% of the total labor force (Dung & Heip, 2017; IMF, 2018; DOSM, 2019). Since Malaysia's independence, the share of agricultural employment has steadily declined, dropping from 37.2% in 1980 to 7.2% in 2021 (IMF, 2019; Praburaj, 2018). This includes a significant decline in agricultural participation, reflecting a shift toward non-agricultural sectors, despite youth comprising approximately 42% of the population (DOSM, 2021). Recent statistics show that only 15% of youth in Malaysia participate in the agricultural sector, out of an estimated 13.9 million young people in the country (Mat Lazim et al., 2020; MAFI, 2021). In comparison, other Southeast Asian countries like Indonesia, the Philippines, and Thailand have higher youth participation rates, ranging from 22.7% to 35.1% (Kees, 2010). The lack of youth engagement in agriculture in Malaysia, as noted by Awais & Khan (2014), is attributed to the sector's unappealing characteristics, such as physical and mental exhaustion, low job security Rittirong et al., (2014), and the perception that it is dirty, dangerous, and sweaty Mohammad et al. (2015); Abu Bakar et al. (2022). Despite that, agriculture remains a critical sector for employment, and there is a need to engage, develop, and train young farmers through government-led programs to ensure the future of the agricultural industry (Jansuwan & Zander, 2021) as a new phenomenon to adopt.

Indeed, youth involvement plays a crucial role in addressing the challenges associated with an aging population. Countries like Pakistan, Japan, and Malaysia are projected to face significant issues related to an aging population by 2050, making youth engagement essential for ensuring sustainable development. Similarly, Thailand has an abundant of aging farmers than a very small number of young farmers as referred to 11th Thailand National Plan. This is because of the demographic structural change in most countries (Nordin et al., 2020). The aging workforce in Malaysia's agricultural sector, comprising 67.9% of the population, contributes to the low adaptation to modern agriculture and reduced food and crop production, particularly among elderly farmers (DOSM, 2021; MOA, 2019). Modern farming and IT are a significant barrier for farmers to improve their agriculture productivity due to low educational background that affects the development of IT in agriculture (Awais & Khan, 2014). Leaving older farmers to deal with risk, workloads, less competition, instability and food security issues are becoming future barriers because agriculture is still important as a source of living. Not rely on older farmers because they are less motivated, less open to new ideas and efficient methods, and less productive as their health might deteriorate (May, 2019: Morais, 2017). Thus, young farmers need to be invited, developed and trained through programs organized by the government (Jansuwan & Zander, 2021).

The Opportunities of the Agriculture Sector

Certain challenges have the potential to create opportunities in the agriculture sector. Agriculture become a crucial economic sector in developed countries and can be broadly divided into traditional and modern practices. Modern agriculture utilizes advanced production techniques to maximize efficiency and output, whereas traditional agriculture is often characterized by its focus on local markets, limited technology adoption, and lower productivity (Ismail & Mohammad, 2009). Modern agriculture presents significant opportunities by increasing food production, improving resource efficiency, and fostering economic growth. It enables the adoption of innovative technologies, such as precision farming, automation, and biotechnology, which can enhance sustainability, create new employment opportunities, and address global challenges like food security and climate change. Due to economic globalization, agriculture over the last decade has changed dramatically. The demand of the Industrial Revolution had transformed from traditional into modern agriculture since the late 16000s. Modern agriculture is using the tools of information technologies that aim for an integrated local and global economy, particularly in agriculture, industry and trade. It showed a strong integration of domestic and international markets as guided strongly by national policy (Ismail & Mohammad 2009). Food security, sustainability practices, and innovation have increasingly taken place to change the agriculture sector in the future. Government, politicians and practitioners are aware agriculture sector requires entrepreneurship to bring along technology adoption among farmers for future sustainability (McElwee 2008;

Pyysiainen et al. 2006).

Hence, entrepreneurship presents a valuable opportunity to tackle the pressing issue of unemployment, a significant concern for the government. With rising unemployment rates over the years, the National Agenda strategy has prioritized initiatives to reduce joblessness. By fostering entrepreneurial ventures, new job opportunities can be created, driving economic growth and offering innovative solutions to unemployment challenges. Statistically, Malaysia is one of the southern Asia countries that contributed to the slightly higher unemployment rate among youth. For example, Malaysia's youth unemployed constitute an estimated about 3.8% (DOSM, 2019), and the data has doubled since the country was hit by the spreading of COVID-19 by 6.3% in the fourth quarter of 2020 (EPU, 2020). In 2023, approximately 1.87 million people were employed in Malaysia's agriculture sector, marking a slight increase from 2022. However, the agriculture sector's share of total employment in Malaysia has been decreasing over time. As of Q2 2024, Malaysia's unemployment rate stood at 3.3%, aligning with pre-pandemic levels. Previous studies indicate that farmers depend on low-skilled domestic labor and foreign workers due to the shortage of skilled domestic youth. Meanwhile, a study by KRI (2020) shows that unemployed youth are eager to enter the modern agriculture sector, presenting an opportunity for them to fill the agricultural labor market, particularly in high-skilled positions or entrepreneurship. Modernized agriculture had a significant influence on productivity and environmentally saved profitability which remains a challenge for farmers to adopt, particularly in Malaysia (Global Alliance, 2014). This shows modern agricultural technology is crucial to achieving higher productivity in the economic sector including agriculture.

Despite mainstream entrepreneurship research, the scenario seems to have changed in the past couple of years, a new and diverse entrepreneurship phenomenon focusing on the agriculture sector, known as agricultural entrepreneurship. The growing entrepreneurial opportunity in the agriculture sector can be described as venture creation, learning, and development to exploit entrepreneurial opportunities and the working environment. Indeed, agricultural entrepreneurship shares many characteristics with generic entrepreneurship. However, there is a distinctive feature to the specific context of the agriculture sector. Agricultural entrepreneurship offers entrepreneurial opportunities for new product creation, innovation, distribution and marketing Pindado and Sanchez (2017) and production in agriculture. Recently, agricultural businesses have needed to adapt to new changes in consumer habits, sustainability, and modern and productive production which are indicated adopted by a relevant group of people known as agents of change. As a result, entrepreneurship in agriculture is gaining high attention in literature Seuneke et al. (2013) which is closely relevant to groups of youth. The term is often discussed and connected to youth and modern agriculture by past researchers that shown a significant contribution to this literature. Therefore, youth, modern agriculture and agricultural entrepreneurship are the opportunities that have been disclosed in agricultural literature.

Significance of the Study

The concept of entrepreneurship has emerged as a response to the challenges and opportunities in the agriculture sector, particularly by embracing modern agricultural practices. This connection highlights how entrepreneurship can drive the adoption of innovative technologies and techniques, paving the way for a more efficient, sustainable, and profitable agricultural industry. For example, the current modern industrial economy has been adopted by various sectors such as manufacturing, services, medicine, robotics, telecommunication, automobile, and energy and without leaving behind including agricultural sectors, Hellinger & Seeger, (2011) and provided a new solution to industrial (Sung, 2018). For instance, to achieve sustainable agriculture trends, modern agriculture has the potential of technological revolution to embrace Wee & Lim, (2022) into integrated with the ICT system. This revolution is growing and could change into more modern, competitive, efficient, profitable and sustainable which would be lower cost and better-quality products that offer an opportunity to the agricultural sector (Mat Lazim et al., 2020).

The modern revolution in the agriculture sector provides an effective pathway to ensuring sustainability in developed countries are far enormous, and highly sophisticated throughout an extensive value chain until the final consumer (Dutonde, 2018). For instance, the US, Germany, and Japan leverage modernization, automation, and digitalization to address agricultural challenges, even with an aging agricultural workforce. Future farming is anticipated to integrate IR4.0 technologies such as AI, IoT, robotics, and big data analytics, fostering a

modern, unified system that enhances youth interest in agriculture (Mat Lazim et al., 2020). Also, Malaysia's agriculture had transformed which contributed to economic development based on agricultural development theory (IMF, 2019). Indeed, a crucial medium of entrepreneurship has offered opportunities to achieve agricultural sustainability, reflected in the growing number of research publications on this topic over the years (Condor, 2020, Wahyudi & Kiminami 2021). Studies have shown significant growth in agricultural entrepreneurship research since the late 1990s and early 2000s (Condor, 2020). However, despite the expansion of general entrepreneurship research, the agricultural sector has often been overlooked in this context (Fitz-Koch et al., 2017). This new context of agricultural entrepreneurship, driven by globalization, is critical for the sector's future development (Fitz-Koch et al., 2017; Dias, 2018). It introduces a fresh paradigm of entrepreneurship in agriculture (World Bank, 2015; Wisam, et al. (2016), extending beyond developed nations to also include developing countries (Condor, 2020).

Modern agriculture, in particular, offers substantial potential benefits that can be unlocked through entrepreneurship and youth involvement. This is demonstrated by the guidance of the National Key Economic Areas (NKEA), which aim to create job opportunities and enhance farmers' incomes. Malaysia's agriculture transformation agenda focus on modernization was started under the 11th -12th Malaysian Plan: 2016-2025 to concern and address food security, improve crop productivity, and farm profitability and strengthen food supply chain support (Bujang & Bakar, 2019). Thus, the new phenomenon provides opportunities in this agriculture sector such as modern agriculture which makes farmers more creative, cost-saving, and increases productivity. Youth can be attracted to the agriculture sector as significant agents of change to adopt for achieving sustainability reasons (De Lauwere, 2009). Aligned with, the many benefits of modern agriculture, various initiatives and programs in Malaysia are carried out by the government to promote modern agriculture farming as part of encouraging younger to have more confidence in pursuing their opportunity of jobs in the agriculture sector despite the challenges faced in Malaysia.

Significantly, a Systematic Literature Review (SLR) can reduce biases, fill the research gap, and increase research validity. A comprehensive structured review is well-organized and clear (Higgins et al. 2011). Therefore, the study wants to analyze the recent pattern of the challenges and opportunities faced by the agriculture sector in Malaysia which had been often discussed ten years ago by past studies (2014 – 2024) since these are unclear to derive future agricultural literature studies. The author will be closely investigating different challenges in Malaysia's agriculture sector which can get clues for the different potential opportunities to employ in 10 years of Malaysian literatures from 2014-2024. The study develops SLR based on common terms on emerging agricultural issues in Malaysia and identifies several themes of opportunities that can address the challenges that had been discussed by past studies. The reason for SLR's study is based on this specification, to help the government or organization plan strategies. In addition, it is increasing the empirical studies contribution which focuses on significant entrepreneurship specifically in the agriculture sector, modern agriculture and youth, despite agricultural challenges in Malaysia. Lastly, this recent SLR helps to describe current trends of youth through the medium of agricultural entrepreneurship and modern agriculture which provides recommendations to future researchers that warrant this recent SLR to do a further investigation.

2. Methodology

The Systematic Review protocol provides a detailed overview, including the rationale, hypothesis, and methods. This study uses the Reporting Standards for Systematic Evidence Syntheses (ROSES), which involve steps such as formulating a research question, systematic searching (identification, screening, and eligibility), quality appraisal, data extraction, and analysis.

ROSES

Unlike PRISMA, which is mainly focused on the health sector, ROSES are more flexible for multidisciplinary research, supporting quantitative, qualitative, and mixed methods (Haddaway et al., 2018). The process includes (1) searching, (2) screening, (3) quality appraisal, (4) data extraction, and (5) result in development to ensure transparency, and quality, and reduce bias (Shaffril et al., 2020; Haddaway et al., 2018; Lockwood et al., 2015).

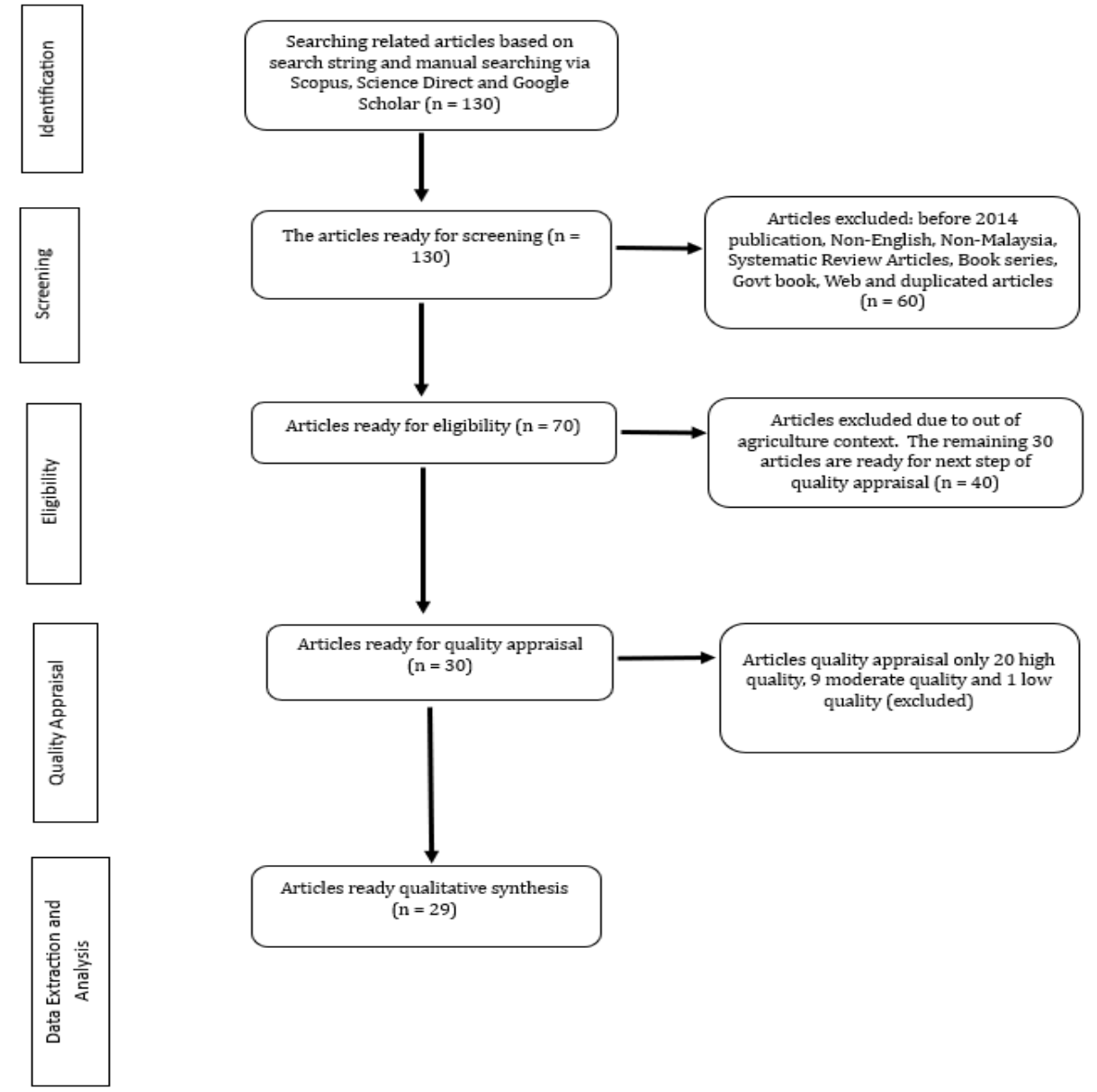
Research question formulation

The research question was formulated using the PICO method (Lockwood et al., 2015), where 'P' represents the problem or population, 'I' denotes interest, and 'Co' indicates context. Following three systematic screening stages—identification, screening, and eligibility—the finalized articles undergo quality appraisal as outlined by Hong et al. (2018). This process involves the main author, co-authors, and qualitative study experts for thorough evaluation. Using the PICo framework by Lockwood et al., (2015), the main research question focuses on the challenges and opportunities in Malaysia's agriculture sector, using keywords and symbols of the search function in Scopus, Web of Science and Google Scholars.

Systematic searching process

Subsequently, the identification, screening and eligibility and inclusion and exclusion criteria process followed after the research question are formulated as presented by the flow chart process below.

Figure 1: the systematic searching process by the researcher



Identification

The Keywords "challenges", "Opportunities" and "Malaysia agriculture sector" as guided research question: The challenges and the opportunities of Malaysia's Agriculture Economic Sector. The synonyms-related terms from previous studies were employed from the three largest databases from 2014 to 2024 (Table 1). The two largest databases Scopus and Web of Science were used for literature search, identifying selected articles and for reviewing purposes. These two databases have covered 40 million disciplinary scientific literature of book series, open access journals, books and reports commonly high impact indicators (Pranckute, 2021). In addition, the author also considers Google Scholar databases as an additional source of databases due to the largest free access article, diversity in subject area and languages as suggested by (Haddaway et al. 2015). Reviewing additional Google Scholar databases is part of the significance of employing diverse search techniques (Shaffril et al. 202: Cooper et al. 2018). The author combined the main keywords for searching articles related as follows. To sum up, the author retrieved 130 potential articles in this identification stage.

Table 1: Search String for the systematic review process.

Databases	Keyword used
Scopus	TITLE-ABS-KEY ("Agriculture' OR "Agricultural" AND "Challenges" OR "Barrier" AND "Opportunities" OR "Prospect" AND "Malaysia")
Web of Science	TS = (("Agriculture" OR "Agricultural") AND ("Challenges" OR "Barrier" OR "Opportunities OR Prospect") AND ("Malaysia"))
Google Scholar	The challenges AND The opportunities in AND Agriculture Economic Sector AND Malaysia

Screening process and exclusion criteria

The second stage is the screening process of the duplicate articles manually followed by inclusion and exclusion criteria. The inclusion databases include research articles and exclude systematic reviews, book series, books, chapters in books and conferences proceeding from a maturity timeline of 10 years which indicates a sufficient period for revolution research (Alexander, 2020). The authors selected articles from 2014 to 2024 that showed significant literature contribution and maturity intensity. As a result, more diverse research articles from different database sources would increase the level of literature intensity. The qualitative, quantitative and mixed methods were selected to review with different perspective outcomes. Articles are chosen in English as a common language preference. The primary data are preferred rather than secondary data. The author believes that it is very important to review the challenges and opportunities in Malaysia's economic sector to know the existing issues faced and to identify the prospects of the agriculture sector that need to be addressed. Overall, a total of 60 articles were excluded from the review based on these criteria, which resulted in 70 articles continuing for the next eligibility process.

Eligibility

The authors screened all selected articles to verify and meet the inclusion criteria and research question. It included screening and discussing the abstract, title, and methodology. The criteria for eligibility and exclusion are presented in Table 2. A total of 40 articles were excluded because do not match on inclusion criteria and context such as a focus on organization, technology and engineering and science and agriculture context. The remaining 29 articles were eligible for the next step of quality appraisal.

Table 2: The Criterion of eligibility and exclusion articles.

Criterion	Eligibility	Exclusion
Literature Type	Journal (research articles)	Journal (systematic review), book series, chapter in book conference proceeding
Language	English	Non-English
Timeline	Between 2014 to 2024	<2014

Indexes	Social Science Citation Indexed, Emerging Sources Citation Index, Art and Humanities Index (Web of Science)	Science Citation Index Expanded (Web of Science)
Countries and territories	Malaysia	Non-Malaysia

Quality Appraisal

These 29 articles have been evaluated under quality appraisal as suggested by (Shaffril et al. 2020; and Haddaway et al., 2018) to ensure the risk of bias is minimal, secure the article quality, and integrity and be highly satisfied. Then the discussion took place until all authors met mutual judgment by using a measurement scale, tool and checklist of Mixed-Method Appraisal Tool (MMAT). MMAT allows appraisal of all types of methodologies studies (Hong et al. 2018). It has 5 main criteria for assessment question of MMAT such as questions covered (1) appropriate and clear research question, data collection to address the research question, (2) adequate data collection (3) adequate interpretation of result and analysis (4) relevant strategy sampling (5) relevant measurement tool or statistical analysis. Overall, 29 articles were eligible for the next inclusion review, of which 20 articles were high ranked with 5 and 4 criteria fulfilled, 9 articles were moderate as fulfilled 3 & 2 criteria and 1 article was low quality and removed to the next process.

Data Extraction and Analysis

The qualitative synthesis was used to review articles to present thematic analysis across qualitative, quantitative and mixed methods article forms. This thematic analysis can interpret and represent data from qualitative studies (Flemming et al., 2019). The authors used inductive thematic analysis by developing a theme guided by research objectives. Authors review from abstract, result, discussion and conclusion through frequent reading which resulted in the similarities and relationships, kiger & Varpio, (2020), among authors to ensure groups of themes are matched and any inconsistency ideas are frequently discussed until mutual agreement among authors.

As a result, (5) main themes had developed under the challenges in the agriculture sector such as labor shortage that has sub-theme of low GDP and productivity, unemployment, aging farmers, growing population and negative agriculture perspectives and the theme of opportunities had found such as modern agriculture, agriculture entrepreneurship and group of youth as future generation in Malaysia agriculture economic sector. In all, this identified theme represented the challenges and opportunities of Malaysia's agriculture's economic sector phenomena in Malaysia. The similarities of these review studies are presented in (Table 3) as follows.

Table 3: Summary of the challenges and opportunities of the agriculture sector by Malaysia literature (2014-2024)

Malaysian Authors	Agricultural Challenges						Agricultural Opportunities		
	Shortage of labor, low productivity and low GDP growth	Negative agricultural perceptive	Growing population	Low youth participation in the agriculture sector	Aging Farmer	unemployment	Modern Agriculture	Youth	Agricultural Entrepreneurship
Mat Lazim et al., (2020)	/				/	/	/		
Dardak & Adhman, (2014)	/						/		
Sabirin & Fadhil, (2022).	/						/	/	/
Harun et al (2015).	/						/	/	/
Gabriel, W. W. E & Irving, T. S. H (2024)	/						/		/
Abdullah & Abu Samah (2014)	/					/		/	/

D'Silva et al., (2021)							/	/	/		
Humairah Mat, T. et al (2022)							/	/	/		
Ambad., S. N. A., & Rafiki., A. (2024),							/	/	/	/	
Che, N. (2022)							/		/	/	
Musa et al., (2021)							/	/	/	/	
Man, N., (2012)	/								/	/	
Abdul Raman., M. H. et al., (2014)	/								/		
Hadi, N. M. H. & Zainol. F. (2019)	/					/			/	/	
Abdullah, N., (2012)	/								/	/	
Mohammad, N et al. (2015)		/							/	/	
Abu Bakar et al. (2022)		/							/	/	
Yusoff et al., (2018)		/							/	/	
Wee & Lim, (2022)	/							/			
Firos Mustaffa (2019)			/					/	/	/	
Zainol et al. (2021)				/				/	/		
Yusoff et al. (2019)				/					/	/	
Ambad et al. (2021)						/		/	/	/	
Firos et al. (2020)											
Yusoff et al (2017)								/		/	
Waktu, S. et al. (2020)							/			/	
Humairah Mat, T. et al. (2022)							/	/	/	/	
Zainol et al (2019)	/			/		/		/	/	/	
Abdullah & Sulaiman (2014)	/						/		/	/	

3. Research Findings

Out of 29 articles selected for systematic review, two recent articles were published in 2024; six articles were published in 2022; the publications of 2021 have 3 research articles; the year 2020 had five articles; 2019 consists of four articles; 2015 has two articles and 2014 have an article publication of each year. In summary, most of the articles identified the common challenges in Malaysia's agriculture sector are shortage of labor, low productivity and low GDP contribution. It was followed by the second recurring issues of unemployment and issues of aging farmers, growing population, negative agricultural perspective and low youth participation which the study had identified as the common challenges pattern in Malaysia literature. In contrast, Malaysian agricultural literature also revealed the common opportunities pattern of the recent need of a group of youth and integrated with the recent need for emerging agricultural entrepreneurship and thus open opportunity to accept modern agriculture. Generally, most articles focus target group of youth towards agricultural entrepreneurship but they involve with diverse number of group youth in Malaysia's agriculture sector with different natures of study. Overall, these theme of agricultural entrepreneurship serves as a platform for youth

to engage in modern agriculture which has identified trends within Malaysia's agricultural literature.

Discussion: The Agricultural Challenges

According to Table 3, several of the challenges faced by the agriculture sector in Malaysia have been identified by Malaysian's past researcher such as shortage of local labor that will contribute to low agricultural productivity and GDP as well which had discussed by Mat Lazim et al. (2020); Dardak & Adhman, (2014); Sabirin & Fadhil, (2022); Harun et al. (2015); Gabriel & Irving (2024); Abdullah & Samah (2014); Abdul Raman et al., (2014); Man (2012); Hadi & Zainol (2019); Abdullah (2012). In tremendously, Malaysia's agriculture sector is dominantly by the aging farmer most of them are more than 55 years old as refer to Hadi & Zainol (2019); Musa et al. (2021); Ambad et al. (2021) and Mat Lazim et al. (2020). Referring to a similar discussion, aging farmers prefer the traditional way because age factors lack awareness and interest among them (Mat Lazim et al., 2020; Hadi & Zainol (2019); Ambad et al., 2021). As a result, they lack the technology skills and knowledge for the modern agricultural industry Yusoff et al. (2017), and most senior farmers are not as productive and innovative as younger individuals (Ambad et al., 2021). Nevertheless, the agriculture sector remains the crucial backbone for the country and livelihood as the statistics showed an increasing rate of the world population. Significantly, this pressure will demand more food to be produced by shrinking resources with higher productivity needed were discussed by Wee & Lim (2022); Musa et al. (2021) and Firos et al. (2019). Therefore, it is crucial to implement an improved national plan to address these issues, as the country still has opportunities to leverage its growing youth population and rising youth unemployment. By channeling these dynamics into the agricultural sector, Malaysia can revitalize it with fresh energy and innovation.

Due to globalization, changes require demands for appropriate manpower and modern technological machinery to conduct economics at a high level of growth (Firos et al. 2020). This is because the success of the agricultural sector relies on human capital development, with a particular focus on training programs (Abdul Raman et al., 2014). In contrast, appropriate manpower needed can address the unemployment rate by approaching dynamic economics and rebranding the agricultural sector, Humairah Mat et al., (2022), an increase in local youth participation in the plantation sector such as working environment, job status, facility and benefit in plantation field Abdullah (2012) and reduce unemployment and drive economic growth as well (Abdullah & Sulaiman, 2014; Abdullah & Samah, 2014; Abdul Aziz et al., 2013). Also, it would help to improve farmers' incomes, enhance agricultural productivity, maintain food security, and boost overall efficiency Ambad et al., (2024); Abdullah & Samah, (2014) and have a significant effect on boosting human productivity as well (Che, 2022).

Generally, unemployment can worsen the economy in the countries but it can be managed and it can complement labor shortage mainly among local people in this sector. This has been debated by, such as D'Silva et al., (2021); Humairah Mat et al. (2022); Ambad et al. (2024); Che (2022); Musa et al., (2021); Waktu et al. (2020) and Humairah Mat et al. (2022) to highlight. However, these opportunities are unable to be realized when youth are not really representing their participation in the agriculture sector and instead prefer to non-agricultural sector as mentioned by Zainol et al. (2021) and Yusoff et al. (2019). The participation of youth is very low in Malaysia's agriculture sector cause identification literature found such as a negative agricultural perspective such as dirty, not professional, not glamour careers among youth that had been highlighted in the literature by Mohammad et al. (2015); Abu Bakar et al. (2022) and Yusoff et al. (2018). Overall, the shortage of labor which dominated by aging farmers and low youth participation since the literature also found a negative agricultural perception. Another hand, the recurring debates about unemployment among youth are of high attention and would be able to counter the lack of labor in the agriculture sector in Malaysia. Nevertheless, the agriculture sector in Malaysia remains crucial and sustainable to cater to the world population growth as well. These challenges become a dilemma for Malaysia's agricultural sector and therefore, the government strongly continues to support through incentives, advice and grants under a national policy designed for the Malaysian agricultural community. Such interventions can increase innovativeness among youth and attract them toward agribusiness. Therefore, the researcher has seen the common pattern and themes in some opportunities in the literature that is currently practiced and its hope remains continues for better agricultural development in Malaysia.

Summary

Below is a summary list of agricultural challenges based on the selected discussion of Malaysia's agricultural

literature.

Labor Shortage – The uncertainty of Agricultural Production as low productivity, and low GDP. There is global uncertainty in agriculture's ability to meet the expanding food demand, particularly due to population growth and urbanization. It led to high reliance on foreign workers who refused to use technology in agriculture.

Rising Aging Population: Aging populations in countries like Malaysia, Pakistan, and Japan pose a challenge to the agricultural sector due to the lack of younger, skilled labor and the resistance of older generations to adopting modern agricultural practices

Unemployment Issue: Youth unemployment, particularly in Malaysia, has been rising, with many young people eager to join the modern agriculture sector, presenting an opportunity to fill high-skilled agricultural positions

Low Youth Participation: The agriculture sector in Malaysia faces a low of 15% youth participation in the sector, compared to higher participation rates in other Southeast Asian countries.

Negative agriculture perspective – this negative agriculture view also contributed to low youth participation in Malaysia's agriculture sector.

Discussion: Way Forward of the opportunities in the agriculture sector

A systematic literature review has highlighted several recurring themes related to agricultural opportunities in Malaysia. There has been a growing body of knowledge on youth participation in agriculture in the past few years, the literature is scattered with limited coherence. Based on the evidence found, the study therefore recommended and offered valuable insights for future researchers namely about youth participation, modern agriculture, and agricultural entrepreneurship as summarized in Table 3. Several key terms for agricultural opportunities have been identified such as, Modern agriculture discussed by Mat Lazim et al., (2020), Dardak & Adhman (2014), Sabirin & Fadhil (2022), Harun et al., (2015), Gabriel & Irving (2024), D'Silva et al., (2021), Humairah Mat et al (2022), Ambad et al. (2024), Musa et al., (2021), Wee & Lim, (2022) Firos Mustaffa (2019) Zainol et al. (2021) Ambad et al. (2021), Yusoff et al (2017), Humairah Mat et al. (2022). In addition, Youth is also the identified key term of opportunities in the agriculture sector by most previous studies such as Sabirin & Fadhil, (2022), Harun et al., (2015), Abdullah & Abu Samah (2014), D'Silva et al., (2021), Humairah Mat et al (2022), Ambad et al. (2024), Che (2022), Musa et al., (2021), Man (2012) Abdul Raman et al., (2014) Hadi & Zainol (2019), Abdullah (2012) Mohammad et al. (2015) Abu Bakar et al. (2022) Yusoff et al., (2018), Firos Mustaffa (2019), Zainol et al. (2021), Yusoff et al. (2019), Ambad et al., (2021), Humairah Mat et al., (2022), Zainol et al., (2021) and Abdullah & Sulaiman (2014). Lastly, the opportunities of an emerging trend of agricultural entrepreneurship also had been discussed among researchers such as Sabirin & Fadhil, (2022). Harun et al. (2015). Gabriel & Irving (2024) Abdullah & Abu Samah (2014), Ambad et al. (2024), Che (2022), Musa et al., (2021), Man (2012), Hadi & Zainol (2019), Abdullah (2012), Abu Bakar et al. (2022), Yusoff et al., (2018), Firos Mustaffa (2019), Mohammad et al. (2015), Yusoff et al. (2019) Ambad et al. (2021) Yusoff et al (2017) Waktu et al. (2020) Humairah Mat et al. (2022), Abdullah & Sulaiman (2014).

These articles highlighted similar key terms that represent the growing importance of opportunities discussed in the literature, which are crucial for achieving sustainability in Malaysia's agricultural sector and addressing the identified challenges. Technology adoption contributes a huge potential to resolve of limited use of land, low agriculture productivity, shortage of labor and modern agriculture (Dardak & Adhman, 2014). Additionally, with a growing population and increasing demand for food, farmers must integrate and adopt modern agricultural practices and connected technologies in their farming activities (Wee & Lim, 2022). This is because modern agriculture might help to improve productivity, and efficiency and increase food production (Wee & Lim 2022; Hadi & Zainol, 2019). Similarly, it supported that modern technology presents new opportunities for agropreneurs to improve productivity and profitability Gabriel & Irving (2024). Significantly, farmers need to change from a traditional method to a digital technique in food production to meet the demand for food (Sabirin & Fadhil, 2022).

Referring to past studies, modern agriculture participation is directly relevant to the group of society named farmers as the main players in the agriculture sector (Sabirin & Fadhil, 2022). Therefore, farmers who are the

relevant persons to encouraged to adopt into agriculture activities in Malaysia by (Mat Lazim et al., 2020). This is because the Industrial Revolution (IR4.0) via modern agriculture has the potential to replace aging farmer intelligence with robots in the agriculture sector (Mat Lazim et al., 2020). Despite the great benefits IR4.0 adoption in modern agriculture could offer to the agriculture industry, however, farmers need to change and would take a long time to process Mat Lazim et al., (2020), whereby local farmers were unwilling to change to the new method, a survey had conducted by Harun et al. (2015) majority of them are elderly which prefer traditional way because age factors lack awareness and interest among them (Mat Lazim et al., 2020). Therefore, several past studies have discussed that youth are the future generation and need to be encouraged inro modern agriculture to improve global food supply, food security and unemployment issues Musa et al., (2021).

Other studies also found that modern technology will certainly attract the interest of youth to be involved in the agriculture sector, Mat Lazim et al. (2020), by cultivating a new generation of farmers who possess the vision, energy, and expertise to succeed the aging farming population, ensuring sustained food security to encounter issues of shortage of skilled labor, aging farmer in the agriculture sector (Hadi & Zainol, 2019). Younger farmers are essential for boosting agricultural productivity, as they tend to be more versatile, adaptive, and open to adopting modern technologies. They are also more likely to promote diverse agricultural activities, contributing to a more dynamic and sustainable agricultural industry Ambad & Rafiki (2024). In addition, modern agriculture has the potential of a source of employment opportunities for DOSM, (2021), particularly in youth participation because youth are strong for country development and are active, skilled and perform to derive which had been discussed by Malaysia researchers before 2014 by (Samah et al., 2010). These groups of youth become attention youth agropreneurs due to their high tendency to accept, adopt and use technology (D'Silva et al., 2021). Currently, Malaysia statistically reported the unemployment rate in Malaysia is about 4.3% Department of Statistics Malaysia, (2023). It was supported that knowledge-intensive and technology innovation adoption is the tool to invite youth into modern agriculture FAO, (2020) and it was agreed by Dr. Niaz Abdullah a UM professor, who realized that modernizing could make the agriculture sector a commercialized and productive sector which can remove worse stigma about it and attract more youth to come.

This modern agriculture opportunity to young generation can switch the wrong perceptive of the agriculture sector as a labor-intensive, dangerous job, sweaty, difficult and now change agriculture into one of the lucrative jobs, and thus the sector becomes a viable option for youth sector high in incomes and riches have said by Malaysia Education minister Datuk Dr. Radzi Jidin in 2022. Therefore, Malaysia has taken significant steps toward modernizing agriculture, focusing on increasing food production, improving productivity, and addressing labor shortages. As Aligned, Malaysia established the Young Entrepreneur Unit in 2013 by the Ministry of Agriculture and Agro-based Industry (MOA) to encourage the participation of young people in the agriculture sector. The main focus of this initiative was to increase the number of agropreneurs participating and nurture income agropreneurs among the young generation via various support programs to develop more modern agriculture generation and methods. The past study supported that the young focus of Malaysia's national agenda to incline them into modern agriculture technique adoption through training intervention among university students can drive them towards modern solopreneur which can reduce the unemployment rate by approaching dynamic economics and rebranding agricultural sector (Humairah Mat et al 2022). Significantly, the recent entrepreneurship trend is a powerful instrument to create employment opportunities and reduce the amount of unemployment. This is because individuals equipped with entrepreneurial, are able to create new methods, new products and processes creation which are able to trigger innovation and thus encourage youth to develop this sector, Ridha et al., (2017) as past studies focused on investigating the development of graduate agropreneur into agriculture sector (Zainol et al., 2021).

Recently, Malaysia has been on the right track in promoting agricultural entrepreneurship, aligning with the national transformation agenda to address unemployment and drive economic growth (Abdullah & Sulaiman, 2014; Abdullah & Samah 2014; Abdul Aziz et al., 2013). This initiative also aims to improve farmers' incomes, enhance agricultural productivity, maintain food security, and boost overall efficiency (Ambad & Rafiki 2024; Abdullah & Samah, 2014). The success of high-impact agricultural programs by the Ministry of Agriculture (MOA) further demonstrates the effectiveness of this approach. Moreover, agriculture entrepreneurship courses can attract more youth to be involved in the agriculture sector resulting in positive and significant effects to boost human productivity as well (Che, 2022). The attraction factors can increase local youth

participation in the plantation sector such as working environment, job status, facilities and benefits in the plantation field (Abdullah, 2012). Agricultural entrepreneurship serves as a platform to engage youth as a key target group for adopting modern agricultural practices, contributing significantly to Malaysia's agricultural literature. This is further supported by the steady increase in the youth population, which reached 6.2% in the fourth quarter of 2020 (DOSM, 2020). Therefore, youth are expecting to fill the sector gap in modern agriculture using technologies and tools adoption which need farmers to be knowledgeable, risk-takers person, creative, independent which youth are the common group discussed. The new agricultural entrepreneurship concept is the combination of two elements of entrepreneurship and agriculture that has shown growing relevant as a medium transformation towards new and modern technology opportunities to explore (Yusoff, Ahmad, & Halim, 2017). Indeed, modernization via entrepreneurship elements is a new path to resolve these challenges to penetrate agricultural farmers and often employed by other developing countries due to reason for poverty elimination among communities (Firus, 2020). Therefore, the study can summarize that agricultural entrepreneurship can trigger opportunities for modern technology applications which have been realized as an expected means to address these challenges.

According to empirical studies, a moderate level of youth involvement in agricultural entrepreneurship aligns with the 12th Malaysia Plan (12MP) and the National Food Security Policy 2.0. This initiative aims to encourage youth participation in agricultural entrepreneurship, contributing to economic growth and agricultural sustainability. To further support this, additional entrepreneurship programs and activities have been planned to nurture more youth agropreneurs in the future (Abu Bakar et al., 2022). Agricultural entrepreneurship plays a crucial role in addressing the issue of aging farmers, who, at an average age of 50, often face challenges in adopting new technologies. This has been a significant factor contributing to the lagging performance of Malaysia's agricultural sector. Increased youth involvement in agriculture can help Sabah combat poverty and reduce youth unemployment, as entrepreneurs generate job opportunities within the market. Currently, most farmers are senior citizens, who may not be as productive or innovative as younger individuals (Ambad et al., 2021).

Nevertheless, the current level of modern agricultural technologies among farmers in Malaysia remains low, which contributes to reduced productivity. To address this, the success of the agricultural sector relies on human capital development, with a particular focus on training programs (Abdul Raman et al., (2014). By emphasizing agricultural entrepreneurship, efforts are being directed toward transforming the sector into a modern and innovative field, with a strong emphasis on engaging youth to take an active role in shaping the future of food production. Therefore, the agriculture education program can assist and expose youth to the modern economy Man (2012). It was agreed that institutional factors play an imperative role in influencing agriculture entrepreneurship intention among students. Therefore, education is positively influenced by agricultural entrepreneurship intention. Young farmers need for their agriculture entrepreneurship careers Musa et al., (2021). As a result, numerous successful entrepreneurs were produced after the incubation program which indicated a good program means to be an intermediary for farmers to become experienced agriculture technology entrepreneurs (Abdul Raman et al., 2014). A significant effect of social institutional and psychological influence on the development of agricultural intention and behavior among Malaysia Gen Y as preparation for agricultural business (Yusoff et al. 2018).

According to Waktu, et al. (2020), Malaysia is a great place great of the development of modern agriculture as well as to promote agricultural entrepreneurship by spending billions of dollars, and yet there is a statistical number showing a discouraging number of youth who have an interest in the agriculture sector. Yet, it remains a less-looked-for career for them even though promising prospects are increasing their participation in the agricultural sector with policy guidance. For instance, Malaysia has strengthened more policies focused on young agropreneur and their participation in agriculture, such as the 11th MP, Malaysia government has applied various programs such as the Agro Youth Entrepreneur Incubator Program, Youth Agropenuer Grant to attract the younger generation to participate into agricultural entrepreneurship as a new direction to be modern and dynamic sector. Then, under the 12th MP (2021-2025) remains to strengthen smart farming in Young Agropreneur Programs as part of eager youth interest in agricultural entrepreneurship participation. Specifically, National Food Security Policy 2.0 (NAP 2.0), is also mentioned to empower modernization for environmental sustainability reasons to ensure food stability and food security. Consistently, Malaysia plans to conduct these programs currently and even until the future to encourage youth into the agriculture sector

since past studies have revealed that the statistical number of agropreneurs among youth is still low.

Summary

Here is a summary list of the opportunities in Malaysia's agriculture sector based on the discussion above. There are three main opportunities found in Malaysia's agriculture sector as mentioned below. With strong continuous government support under various national agricultural policies and agendas towards modern agriculture which is able to reduce unemployment among youth offer a viable career path and achieve food security, agricultural sustainability complements Industrial Revolution 4.0.

Youth Participation: Youth are seen as a critical target group for modern agriculture, offering fresh ideas, skills, and the drive for innovation.

Modern Agriculture: The adoption of modern agricultural techniques using technology such as IoT, Big Data, and AI has the potential to overcome labor shortages, low productivity, and land limitations.

Agricultural Entrepreneurship: This field is growing in relevance, combining agriculture with entrepreneurial skills to boost innovation, productivity, and sustainability in the sector.

These opportunities indicators have been highlighted by the most of selected articles reviewed which the study believes is relevant for addressing current agriculture challenges faced in Malaysia The focus of youth in participating in agriculture activities is to replace aging farmers which are currently dominant in this sector. It was being attention by past researchers such as most of the above-selected review articles. In alignment with that, promoting entrepreneurship in the agriculture sector known as agricultural entrepreneurship is a medium to make this sector more dynamic and competitive. This is because entrepreneurship helps an individual to be more innovative which is closely related to modern technology to adopt for production, marketing and so on. Besides, it also helps individuals consider taking risks, opportunists and creating a new concept for a better solution that fits the group of youth as currently very relevant as the target population for agricultural entrepreneurship and modern agriculture. It is in accordance with the Industrial Revolution embarked in developed and developing countries to employ as an opportunity. Therefore, youth are the target group of the population and are relevant for the current phenomena of embarking on modern agriculture with the new concept of entrepreneurship in the agriculture sector known as agricultural entrepreneurship. These opportunities reflect Malaysia's strategic push to modernize its agricultural sector, increase youth participation, and ensure food security while promoting economic growth through innovation. These elements encourage future researchers to do further investigation in this area of study.

4. Conclusion

The unsolved consequences of structural problems will hamper sustainability agriculture development. Those challenges will lead to an array of agricultural development problems if not get involved young generation into attractive modern agriculture. Therefore, the transformation of modern agriculture to make this sector more attractive to the eyes of youth as part of an effort to encourage youth to replace the challenges of low agriculture productivity, aging farmers, rising unemployment and keep rising of growing youth in Malaysia as well because the transformation of agriculture development is need the role person to change. Since the 9th Malaysian Plan, government strategies have focused on empowering youth for the future by enhancing education and training opportunities. Youth are being paid attention by the government to development programs to attract their interest in agricultural-based activities which include encouraging to use of modern technology to establish a young and modern generation of young farmers. The strategy to bring youth involved in modern agriculture has been illustrated in the Malaysia 11th National Policy and 12th Malaysia Plan to strengthen the role of youth in modern agriculture. In fact, numerous agriculture programs related to youth development have been illustrated by the establishment of the Young Agropreneur Unit which aims to increase the number of agropreneur among youth in Malaysia-by-Malaysia Agriculture and Food Industry since 2013. Another example is the higher education institution in Malaysia offers an Agriculture program at Malaysia University in which modern agriculture can trigger youth interest at the university level or even at the school level in inclusiveness development.

It is demonstrated that the recognition of the participation of youth in the development of agriculture is paramount which is interpreted with various policies and programs initiated by the government to encourage young people to engage in agriculture. On the other hand, this area also contributes to an increasingly growing concept of agricultural entrepreneurship context as the effort to innovate and explore new ways and means of venture into agriculture enterprise via modern agriculture. The development of youth agropreneurs via agriculture entrepreneurship context is gradually getting attention which originated from the general concept of entrepreneurship. It combines mixed agriculture and entrepreneurship areas which are able to create and redefine new and modern agriculture. Therefore, realize that intervention programs such as training by the government are continuous efforts and encouragement for them to produce better output. Malaysia aims to increase the number of agropreneurs as an agent of change that can be characterized as among youth, modern method and contributes to the growing literature of agricultural entrepreneurship areas, which getting attention from researchers. To sum up, the agricultural entrepreneurship context is able to open, create and adopt modern agriculture for sustainability which requires a group target population particularly 'youth' as agents of change. Towards that, agricultural entrepreneurship, modern agriculture and youth are identified opportunities in Malaysia's agriculture sector that can give branches of ideas for future researchers to contribute to existing literature.

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Understanding Autism Spectrum Disorder: A Comparison of Legislation and Support in Malaysia and the UK

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Abstract: Autism, encompassing conditions such as Asperger Syndrome, Childhood Disintegrative Disorder, and Pervasive Developmental Disorders, is marked by social communication deficits and repetitive behaviors. In Malaysia, the Persons with Disabilities Act 2008 provides general protections but lacks enforceable provisions, while the Employment Act 1955 does not address autism-specific workplace adjustments. Consequently, individuals with autism face high unemployment rates and financial hardships, with limited government support for specialized services or employer incentives. This paper explores the challenges faced by individuals with Autism Spectrum Disorder (ASD) in Malaysia, comparing its legal and social frameworks to those in the United Kingdom. The following paper presents a qualitative study based on secondary data collected through scientific databases and library research that examines the legal protection systems for persons with autism in Malaysia and the United Kingdom. Through statutory interpretation and comparative analysis, key features of each jurisdiction point out remarkable similarities and differences in the responsibilities of the government in the discharge of rights and protection for persons with autism. It is recommended that Malaysia adopt a comprehensive autism strategy similar to the UK's, including mandatory autism assessments for individuals in the criminal justice system, as well as implementing clear employment protections for autistic individuals by amending the Employment Act 1955 and establishing a workplace adaptation funding scheme, inspired by the UK's Access to Work system.

Keywords: *Insurance, Budget, Disabilities, Financial, ASD, United Kingdom*

1. Introduction and Background

Autism, first introduced by Kanner in 1943, was used to describe a group of children with severe social and communication abnormalities, alongside narrow or restrictive interests (Vaxobov, 2022). Over time, the understanding of autism has evolved significantly, and today, the diagnosis encompasses a range of conditions under the umbrella term Autism Spectrum Disorder (ASD) (Manolova & Achkova, 2014).

According to Sorenson (2022), and Barros & Soares, (2021), ASD is a neurodevelopmental problem characterized by a person's deficits in social communications, and restricted, repetitive patterns of behavior, interests, or activities. Bhakare & Vinchurkar (2015) added that it is representative of a complex, multifactorial developmental disability that disrupts typical development during critical periods of infancy and toddlerhood, leading to atypical patterns of social interaction, language, and behavior (Tantucci & Wang, 2023). The autism spectrum encompasses Asperger Syndrome, Childhood Disintegrative Disorder, and Pervasive Developmental Disorders. Outlined below are detailed explanations of each item.

Asperger Syndrome

Asperger Syndrome, now included under the ASD umbrella, is characterized by difficulties in social interaction and communication, along with restricted and repetitive patterns of behavior or interests (Fombonne & Tidmarsh, 2003). However, Chiang et al, (2014) revealed that individuals with Asperger's typically have average to above-average intelligence and do not show significant delays in language development, which sets them apart from other forms of autism.

Childhood Disintegrative Disorder

Childhood Disintegrative Disorder (CDD) is a rare condition in which there is a significant loss of previously acquired skills (Ellis, Larsen, & Havighurst, 2022). A child with CDD will typically lose previously mastered language, social interactions, motor skills, and self-care tasks after at least two years of normal development.

Pervasive Developmental Disorders

Pervasive Developmental Disorders (PDDs) include a class of neurodevelopmental disorders characterized by delays and/or peculiarities in the development of social interaction, communication, and behavior (Coutelle, 2023). These may significantly interfere with functioning in major life activities (Carbone & Dell'Aquila, 2023).

In Malaysia, individuals with autism face discrimination and a lack of understanding due to societal stigma and limited public awareness (Low, et al, 2021). The researcher believes that many autistic people struggle to gain access to employment and healthcare as misconceptions prevail about their supposed capabilities. Employers may refuse to hire them, and adequate coverage often excludes autism-related therapies and treatments from their policies. This lack of financial support further limits their access to essential healthcare services, exacerbating the challenges they face in achieving a good quality of life.

In addition to that, beyond these systemic barriers, persons with autism may face setbacks at the level of the justice system (Roseliza, Kusrin & Yusuf, 2024). Charging autistic individuals has occurred in Malaysian courts; there arise questions as to how neurodiverse persons can be accommodated into the justice system-for example, court proceedings do not take into account the cognitive and communicative limitations that will lead to processes being conducted fairly and wrongful convictions. In essence, Yang (2022) portrays the dire need for reforms in specialized training for law enforcement and judicial officers, support measures with appropriate communication aids, and inclusion of mental health professionals to ensure a fair deal for autistic defendants.

While several kinds of literature relate to problems in autistic people, current policies related to these problems and awareness about them are still not noticeable in the studies. Furthermore, not much empirical data is available as to how attitudes in society impinge on daily life and life opportunities for individuals with autism in Malaysia. Indeed, more awareness campaigns, policy reforms, and inclusive education can create acceptance and equal opportunities in Malaysia for the autism community.

This paper presents a qualitative research study using secondary data retrieved from scientific databases and library searches on the protection afforded by Malaysian and United Kingdom legislation to persons with autism. Doctrinal legal research shall be applied herein in this study, analyzing legislation, policies, and academic literature in determining whether proper legal protection is accorded to persons with autism. Documents used in the research include statutory provisions and relevant policies that outline the rights and obligations of key stakeholders. The study examines key features of each jurisdiction through statutory interpretation and comparative analysis, highlighting similarities and differences in the legal responsibilities of stakeholders, including educators, healthcare providers, and government entities in ensuring the rights and protection of persons with autism.

2. Autism Statistics in Malaysia

Recent statistics from the Ministry of Women, Family, and Community Development in Malaysia (2024) show a significant rise in the number of children diagnosed with autism. The number of children registered with the Department of Social Welfare (JKM) has increased by 663% from 6,991 in 2013 to 53,323 in 2023. This sharp rise highlights both an increase in awareness and a growing demand for specialized services for individuals with autism in the country.

Nevertheless, according to Chu, et al (2023), in Malaysia, the participants generally exhibited a moderate degree of both knowledge and attitude. This finding highlights the potential for further educational or awareness-raising efforts to enhance their knowledge and attitudes on the subject in question.

The Current Legal Landscape for Autism in Malaysia

Various laws in Malaysia cover individuals with autism, each designed to protect their interests. However, it should be realized that there are no specific laws dedicated to people with autism. In other words, like other forms of disabilities, individuals with autism are generally protected under broader disability-related legislation rather than laws tailored specifically to their needs. Among these laws are the Persons with Disabilities Act 2008, the Employment Act 1955 and National Autism Policies and Programs. Outlined below are comprehensive explanations for each item.

Persons with Disabilities Act 2008

In Malaysia, the Persons with Disabilities Act 2008, or PWD Act, is the main legislation protecting the rights of persons with disabilities, including persons with autism. Key provisions of the act include non-discrimination, access to education, and access to healthcare. However, the act does not carry any enforceable penalties for discrimination but instead relies on advocacy and policy implementation.

It is worth noting that, when it comes to access to healthcare, most insurance companies do not provide coverage for individuals with autism (Chu, et al, 2020). Bahry (2019) believed that this is because the majority of policies in Malaysia, including those addressing autism, exclude pre-existing conditions from their coverage. It is thus quite a task for a person suffering from autism to obtain health or life insurance that will address their needs. In addition, policies or riders specifically targeting healthcare, therapy, and support needs are generally scant in the Malaysian insurance market.

Thankfully, FWD SpecialMed 2 protects Persons with Disabilities, including those with autism. It is Malaysia's first online family takaful medical plan specially set up to provide persons with disabilities with affordable, accessible health insurance, with medical and financial protection to meet their needs.

When it comes to education, the Malaysian government, under the 2025 National Budget, has introduced several initiatives to support individuals with autism and their families. Eleven new PERMATA centers will be opened across the country to provide specialized care and education for families. Additionally, two new schools for children with autism will be established in Johor Bahru and Tuaran, Sabah, designed to offer special education tailored to the needs of these children. To assist families with additional expenses, over 110,000 special needs students, including children with autism, will receive a monthly allowance of RM150 each. A total of RM15 million will be allocated for the education of up to 30,000 children with autism, while RM10 million will be dedicated to supporting private schools that specialize in educating children with autism (Kementerian Kewangan Malaysia, 2024).

Criminal Justice System

In Malaysia, individuals with autism may not always receive the necessary accommodations in the criminal justice system. Clearly, in general, autism is not taken into consideration in the normal criminal trial process, and this seriously hinders proper understanding and non-application of proper consideration in cases dealing with autistic individuals.

One pressing concern is the vulnerability of autistic individuals to being coerced, manipulated, or unknowingly involved in criminal activities, including drug trafficking (Richman, Krause-Jensen & Rodogno, 2022). Due to difficulties in social communication, impaired executive functioning, and a tendency to take instructions literally, autistic individuals may not fully comprehend the legal implications of their actions (Gibbs & Pellicano, 2023). They may also struggle to navigate interactions with law enforcement officers, who might misinterpret their atypical behavior—such as avoiding eye contact, delayed responses, or heightened anxiety—as signs of guilt or deceit.

There have been cases globally and in Malaysia where autistic individuals were charged with drug-related offenses without due consideration of their cognitive and psychological conditions (Yang, 2022). Some may have been used as unwitting couriers, exploited by criminal syndicates that take advantage of their trusting nature and lack of awareness of illegal activities (Smith, 2024). Others may have had substances for personal therapeutic use yet were treated as traffickers due to the rigid application of drug laws.
The absence of clear legal provisions or judicial guidelines for accommodating autistic defendants further

exacerbates the issue, particularly in drug-related cases, which account for a significant portion of the prison population in Malaysia (Nawawi, et al, 2024). Unlike some countries that allow for expert testimony on neurodevelopmental conditions or alternative sentencing measures, Malaysian courts largely follow conventional legal procedures that may not account for the unique circumstances of autistic individuals, particularly in complex cases like drug-related offenses. While individuals facing charges such as murder may be evaluated in mental health institutions to assess their cognitive and psychological conditions, this process is not consistently applied to all cases, especially for those with autism. This raises serious concerns about the fairness of trials and the risk of wrongful convictions, as the unique needs of autistic defendants may not be fully understood or considered.

Employment Act 1955

Similar to individuals without disabilities, people with autism also need to work to support themselves and their families, particularly those with mild autism. Article 5 of the Federal Constitution guarantees that no person shall be deprived of their life or personal liberty. This provision can be interpreted to encompass the right to work and earn a living, as it relates to personal freedom (Ahmad, 2022).

Nevertheless, Ghuzal and Nordin (2023) highlighted that individuals with autism in Malaysia often encounter considerable difficulties in finding and maintaining meaningful employment. The research made by Ibrahim, Rahman & Dahlan (2021) also stated that young adults with ASD represent one of the highly unemployed populations in Malaysia. Even though there is no statistical data on the employment rate of persons with ASD available in Malaysia because ASD is not a separate category in the National Registry of PWDs, parents of individuals with ASD still face dire financial constraints and emotional distress emanating from the employment challenges their children encounter.

Fortunately, Individuals with autism are recognized as disabled under Malaysian tax law and thus eligible for tax relief of RM6,000. Furthermore, taxpayers supporting a dependent with autism can also claim up to RM6,000 per child, regardless of age, to help cover additional costs. Additionally, the tax relief for medical treatment expenses for children with autism has increased from RM4,000 to RM6,000 (Inland Revenue Board of Malaysia, 2024).

It is significant to mention that there are no specific provisions under the Malaysia Employment Act 1955, that address the challenges of working people with autism. The Act does not call upon the employer to make reasonable adjustments, such as flexible working hours, sensory-friendly working environments, or additional resources to support communication. Further, the lack of apparent legal protection against discrimination grounds of autism hinders a person with autism from trying to gain and maintain employment.

3. Comparing the UK and Malaysia

Unlike Malaysia, the UK offers more comprehensive legal protections and supports individuals with autism. Stephenson (2022) mentioned that the Equality Act 2010 for instance explicitly protects individuals with autism from workplace discrimination, offering stronger legal safeguards compared to Malaysia's Employment Act (Martin, 2021). UK employers are legally required to make reasonable adjustments, such as flexible working hours and sensory-friendly workspaces, to support employees with autism (Richards, et al, 2023).

According to Fong (2021), publicly funded employment programs in the UK include special employment, such as job coaching, interview preparation, and on-the-job accommodation, also available for individuals with autism. The UK government also offers financial incentives to employers for making necessary workplace accommodations; these efforts aim to foster a world that is inclusive of individuals with autism (Financial Times, n.d, Gov.UK, n,d). Additionally, Davies et al. (2024) praised awareness and training programs for helping employers to better support employees with autism, thereby fostering greater inclusion in the workplace.

In contrast, the employment support for persons with autism in Malaysia is not holistic. The Employment Act of 1955 does not specifically provide for protection or provisions for persons with autism and also falls short of specifying the requirements for workplace adjustments. Although there are initiatives as specified by Maidon et al (2024) such as the Vocational Program under The National Autism Society of Malaysia, the system is

piecemeal, there are fewer government-funded programs of employment support and a lack of incentives for employers to hire persons with autism.

Moreover, Hassan, et al (2024) emphasized the absence of a nationwide training and awareness program in Malaysia is restricting the employment of autistic people in this country. In contrast, the better legal framework and structured support system in the UK exhibit marked differences between the ways the two countries address challenges in the employment of persons with autism.

When it comes to the criminal justice system, the UK legal system is more responsive to the needs of persons with autism. The Autism Act 2009 ensures that autism is recognized as a condition that may affect criminal behavior and mental capacity (Beazley et al (2023). The criminal justice system has appropriate support, such as intermediaries during police interviews and special consideration during trials (Smith, 2024). Unlike Malaysia, there is no dedicated legislation in Malaysia that specifically addresses the unique needs of individuals with autism within the criminal justice system leaving individuals with autism and their families without sufficient legal protections or accommodations during criminal proceedings.

4. Conclusion and Recommendations

The Equality Act 2010 has set clear legal protection for persons with autism in the United Kingdom, especially in employment. Section 6 of the Act defines disability to include autism, while Section 20 requires employers to make "reasonable adjustments" to accommodate persons with disabilities to avoid placing them at an unfair disadvantage. Section 15 also prohibits discrimination arising from disability, where an employer is not allowed to treat an autistic person unfavorably because of their condition unless objectively justified. Additionally, under the Autism Act 2009, the UK government has to formulate and regularly review a national autism strategy to ensure support regarding employment, healthcare, and education. Also, Section 1 of the Care Act 2014 imposes a duty on local authorities to promote individual well-being, which includes social care support for adults with autism, reinforcing workplace assistance, and independent living.

In contrast, Malaysia has no specific autism legislation, relying mainly on the Persons with Disabilities Act 2008, which lacks strong mechanisms for enforcement. Malaysian law does not impose clear legal obligations on employers to accommodate autistic employees, unlike the UK's mandatory reasonable adjustments under the Equality Act 2010. In this line, Malaysia is supposed to provide a similar framework by incorporating clearly stated employment protection under national legislation, such as the amendment to the Employment Act 1955, including specific provisions on making workplace adjustments for persons with autism.

Malaysia could also offer a scheme, like the Access to Work system in the UK, which provides funding for adapting the workplace and special job coaching for autistic people. Setting statutory standards on job training schemes, incentives for employers, and clear legal protection through a revised Persons with Disabilities Act would ensure greater access to work. The same work accessibility for persons with autism will similarly be better realized if Malaysia implements a comprehensive national autism strategy inspired by the UK experience.

When it comes to the criminal justice system, is recommended that Malaysia implement a comprehensive legal framework that specifically accommodates autistic individuals within the criminal justice system. This can be achieved by establishing Mandatory Autism Assessments for individuals charged with serious offenses, including drug-related cases. These assessments should be conducted by qualified mental health professionals or specialists in neurodevelopmental disorders to ensure that the defendant's cognitive and communicative challenges are adequately considered.

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Cloud ERP Implementation and Firm Performance: Innovation Capability as a Mediator and Top Management Support as a Moderator

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Abstract: This study empirically investigates the impact of Cloud ERP systems on firm performance in small and medium-sized enterprises (SMEs), focusing on the mediating role of innovation capability and the moderating role of top management support. The purpose is to understand how the adoption and utilization of Cloud ERP influence financial outcomes, operational efficiency, innovation capabilities, and overall competitive advantage in SMEs. A quantitative research approach was employed, collecting data through a structured questionnaire distributed to 450 SME managers in KSA, yielding 198 valid responses. Statistical analyses, including regression, mediation, and moderation analyses using SPSS, were conducted to examine the relationships between Cloud ERP implementation, innovation capability, top management support, and firm performance. The findings indicate that Cloud ERP implementation significantly enhances firm performance in SMEs. Innovation capability partially mediates the relationship between Cloud ERP implementation and firm performance, suggesting that ERP systems foster innovation, contributing to improved organizational outcomes. Furthermore, top management support moderates these relationships, highlighting its critical role in maximizing the benefits of ERP investments. This study contributes to the literature by providing empirical evidence of the transformative effects of Cloud ERP systems on SME performance, elucidating the mechanisms through which ERP adoption drives innovation and organizational success. The study's originality lies in its comprehensive examination of both direct and indirect pathways linking Cloud ERP to firm performance. It underscores the importance of strategic management and technological integration in enhancing SME competitiveness in the digital era.

Keywords: *Cloud ERP systems, Firm performance, Innovation capability, Top management support, ERP Implementation*

1. Introduction

ERP systems are essential for modern business management. Finance, HR, supplier management, and CRM are on one platform (Haddara et al., 2022). Large companies use traditional ERP systems to improve data precision, operations, and decision-making. Cloud computing changed ERP systems (Paulsson & Johansson, 2023). Cloud ERP systems, or SaaS ERP, store applications and data in the cloud (Nordli et al., 2023). Cloud ERP systems reduce SMEs' beginning costs, IT infrastructure needs, and scalability and adaptability (AlMuhayfith & Shaiti, 2020). Cloud ERP is a deliberate step to digitally transform and adapt to market demands, not just a technology upgrade. For SMEs, cloud ERP systems provide real-time analytics, mobile accessibility, and easy third-party connectivity (Christiansen et al., 2022). These systems enable SMEs to adapt to consumer needs and make data-driven decisions (Hustad & Stensholt, 2023). Cloud ERP systems provide SMEs scalability without high infrastructure or software costs. Their market growth ambitions are supported (Salas, 2023). Complex supply chains, regulatory frameworks, and consumer demands challenge global SMEs to manage efficiently. Scalability is useful. Many benefits of cloud-hosted ERP systems have transformed business operations and resource management. Cloud ERP saves money (Hansen et al., 2023). Traditional ERP systems need large upfront investments in hardware, software licenses, and IT infrastructure. Cloud ERP is subscription-based. Thus, SMEs can acquire complicated ERP functions without major capital expenditure and it is useful for IT budget optimization (Jayeola et al., 2022). In terms of scalability, Cloud ERP has a huge advantage. Cloud-based solutions enable businesses to scale as needed. Cloud ERP systems offer more flexibility and variety than on-premises systems. This advantage is especially useful when expanding into new markets, scaling up users, or adding new features. SMEs with seasonal or variable demand benefit most from scaling. It lets them change their resources and skills without disrupting operations (Tavana et al., 2020). Cloud ERP systems boost accessibility and employees can access ERP systems and data from anywhere with an internet connection, enabling remote work and mobile workforce initiatives. Accessibility enhances user responsiveness, real-time decision-making, and collaboration, making an organization more efficient and adaptive.

In this globalized economy, business performance is vital due to increased competition, changing client needs, and rapid technological advancement. Financial results, operational efficiency, market share, customer satisfaction, and creativity determine company performance (Vujanović et al., 2022). Technologies like cloud ERP systems increase and maintain corporate performance. By supporting improved cost management, revenue forecasting, and reporting, Cloud ERP systems enhance the financial performance of new businesses. (Jayeola, Sidek, Abdul-Samad, Hasbullah, Anwar, et al., 2022b). Real-time financial data helps organizations optimize resource allocation, make informed decisions, and identify growth opportunities and this improves financial stability and profitability (Ullah et al., 2020). Cloud ERP boosts operational efficiency, which affects a company's performance. Integrated data management, automated workflows, and improved corporate procedures can improve operational efficiency, reduce inefficiencies, and reduce errors. Organizations must react swiftly to market, consumer, and supply chain changes to optimize productivity and performance (Gupta et al., 2020). Additionally, cloud-based ERP systems enhance organizational creativity. Data integration and departmental collaboration in ERP systems help firms innovate in product, service, and business models. Technology adaptation and innovation are essential to compete and satisfy clients in a digital-first environment.

Cloud-based ERP systems enhance productivity, flexibility, and competitiveness. Cloud ERP has several benefits; however, more empirical research is needed to assess its effects on firm performance across dimensions (Paulsson & Johansson, 2023). It is necessary to statistically evaluate the effects of Cloud ERP systems on financial results, operational efficiency, innovation, and organizational performance. Cloud ERP research may assess ROI, provide adoption and integration strategies, and inform stakeholder strategy (Wang et al., 2021). Experimental study can help determine where Cloud ERP systems operate best in firms. ERP systems depend on industry, organization size, region, and technology. Empirical research may illuminate the complexities and assist organizations in optimizing their ERP approach to maximise advantages and minimise hazards (Feng et al., 2023). Empirical assessments also provide longitudinal ERP research on performance benefits and strategic results. A longitudinal methodology is needed to assess ERP-driven transformations' adaptability to changing technologies, organizational resilience in dynamic market situations, and change longevity.

While ERP systems affect organizational results, these variations highlight key topics for future study. First and foremost, innovation is becoming increasingly important for a company's long-term sustainability and competitiveness. There is little empirical data on how ERP systems boost organizational innovation. Understanding how ERP systems boost innovation capability helps establish ways for ongoing innovation and adaptation. Integrating data across functions, allowing department cooperation, and supporting agile decision-making are examples (Cosma et al., 2024). It is also known that ERP projects need senior management support. The moderating effect of this support on ERP systems and business performance has not been fully studied. Effective leadership is needed to link ERP methods to business goals, secure resources, facilitate cultural change, and overcome resistance. Practitioners and researchers would benefit from empirical studies on how ERP systems moderate strategic alignment, resource allocation, and communication, which are components of top management support, to improve performance outcomes (Sari et al., 2021). Further research is needed to determine how innovation capability and senior management support affect ERP outcomes. How do firms use ERP systems' new features, and how does senior management encourage them? These interrelationships allow the identification of synergistic effects that boost ERP investment value and increase performance in competitive markets (Xie et al., 2022).

The primary aim of this study is to examine the impact of Cloud ERP implementation on firm performance, focusing on the mediating role of innovation capability and the moderating role of top management support. Specifically, the study seeks to:

- Evaluate the direct effect of Cloud ERP implementation on firm performance.
- Investigate whether innovation capability mediates the relationship between Cloud ERP implementation and firm performance.
- Assess whether top management support moderates the impact of innovation capabilities on firm performance.

By addressing these objectives, the study aims to provide a comprehensive understanding of how Cloud ERP systems can influence firm outcomes and the conditions under which these effects are enhanced or diminished. This research has major theoretical and practical implications for politicians, academics, and industry experts. The study examines how Cloud ERP systems affect corporate performance in small and medium-sized enterprises, filling critical gaps in the literature. This study enhances management, technology adoption, and innovation research theoretical frameworks. It does so by performing experimental research on these elements' linkages. The study seeks to illuminate how firms may use Cloud ERP systems to grow and compete. This study is also useful for SMEs and executives implementing ERP and digital transformation efforts. Understanding the causes and impacts of Cloud ERP installation can help organizations enhance ERP strategy, operational efficiency, and decision-making. Understanding innovation capability and top management support can help firms overcome implementation obstacles, connect ERP investments with strategic goals, and foster a creative culture that promotes market adaption and continuous development. Last, this study has major implications for industry stakeholders and governments promoting technical innovation and SMEs. This analysis may influence government decisions on digital infrastructure investments, technology adoption incentives, and support systems to boost SMEs' worldwide competitiveness. Cloud ERP systems boost firm performance and innovation when promoted by governments. This boosts SME growth, job generation, and economic success.

2. Literature Review

Cloud ERP Systems

Strategic Alignment of Cloud ERP

The strategic alignment of an organization's information systems supports and advances its goals. This alignment requires Cloud ERP systems that integrate several company operations (Lee & Wang, 2019). Divisional integration improves strategic and operational decisions. Scalable and flexible Cloud ERP systems align strategies. Cloud ERP systems can readily alter capacity to meet company demands, unlike on-premises systems. Without IT infrastructure, companies can grow quickly and respond to market changes (Wang et al., 2021). Cloud ERP support systems are updated automatically, adding functionality and security. This boosts growth and innovation. Cloud ERP systems include reporting and analytics. To make data-driven decisions, these systems measure and evaluate key performance indicators (KPIs). Inventory, client orders, and financial performance are monitored in real time for accurate forecasting and resource allocation (Cosma et al., 2024). Cloud-based ERP systems eliminate data silos and provide all departments with the same information, increasing strategy collaboration. Cloud ERP systems promote enterprise-wide cooperation and communication, improving strategy alignment (Tavana et al., 2020). Cloud-based systems are accessible from any internet-connected device. Remote accessibility ensures that all employees with scattered teams or many locations can access the information they need (Feng et al., 2023). Better communication improves processes and aligns departmental goals with company goals.

Cloud ERP Usage

Due to their efficiency and productivity, Cloud ERP systems are used daily for reporting, analytics, process automation, and data input. Cloud ERP systems' simple interfaces save learning time and encourage organization-wide utilization (Jayeola et al., 2020). Adopting Cloud ERP requires process automation. Cloud-based ERP systems streamline financial reporting, inventory management, and order processing. Automation increases efficiency and decreases errors, resulting in more reliable and accurate data (Jayeola et al., 2022). Thus, workers may spend more time on strategic tasks like data analysis and improvement opportunities. Data accessibility is crucial for Cloud ERP. Cloud ERP systems centralize data storage, allowing authorized users to access data anytime, anywhere. This accessibility allows personnel to quickly obtain current information, which improves customer service and decision-making (Christiansen et al., 2022). Salespeople may track inventory and delivery times in real time. This helps them provide correct information and improve service. Cloud ERP efficiency and effectiveness depend on training and support. Firms must invest in training to ensure staff proficiency with the system. User communities and support centers can help solve problems and keep users engaged.

Firm performance

Firm performance encompasses the financial and non-financial metrics of a company's efficiency and profitability. Non-financial variables include operational efficiency, customer satisfaction, market share, and

employee productivity (Liu et al., 2023). Profitability, ROI, revenue growth, and cost reduction are financial metrics. Business performance must be understood and improved to stay competitive and sustainable. A company's success is usually measured by its financial performance. Profitability, revenue growth, and ROI quantify a company's resource efficiency. Company profitability, measured by net income or profit margins, shows its ability to turn revenues into profits (Liu et al., 2023). For market share and economies of scale, the company must constantly grow revenues. Revenue growth proves this. Stakeholders must measure capital allocation efficacy using ROI and compare ROI to investment cost (Iioka & Yamada, 2023). Financial performance can be considerably improved by Cloud ERP systems. Cloud ERP systems integrate multiple organizational processes and provide real-time data to improve operational efficiency and decision-making. Gupta et al. (2020) found that ERP systems improved financial performance parameters, including ROI and profitability. Eliminating repeats and optimizing operations saves money and improves data accuracy and visibility, enhancing financial planning and revenue management. Non-financial performance criteria, however intangible, are vital to assessing a company's long-term potential and health (Guderian et al., 2023). An organization's capacity to properly manage its internal operations to supply products or services is key to operational efficiency. By optimizing resource allocation, minimizing human error, and automating tedious processes, cloud-based ERP systems increase operational efficiency (Chopra et al., 2022). This efficiency lets companies respond quickly to market changes and customer needs, boosting their competitiveness. Customer pleasure is a key non-financial indicator of loyalty and retention.

Satisfied customers are more likely to recommend and buy again, boosting revenue. Cloud-based ERP systems maximize customer satisfaction by simplifying order fulfillment, providing accurate and timely information, and improving customer service (Gessa et al., 2023). By having current inventory and order status information, sales and customer support can quickly and properly respond to customer inquiries. A company's market share determines its industry competitiveness. Greater market share generally leads to economies of scale, consumer loyalty, and brand exposure. Cloud supports strategic initiatives, including product innovation, market expansion, and mergers and acquisitions, helping companies grow their market share (AlMuhayfith & Shaiti, 2020). Cloud ERP systems' data analytics and reporting features help organizations identify market opportunities and trends and streamline growth strategy formulation and implementation. Employee productivity is a key non-monetary performance indicator. High productivity indicates that employees can efficiently manage their time and resources to achieve corporate goals. Cloud ERP systems improve efficiency by optimizing procedures, reducing administrative costs, and encouraging collaboration (Akrong et al., 2022). Providing staff with a single system with all essential information and tools can improve task efficiency and eliminate errors.

Innovation Capability

A company's innovation capability is its ability to create and improve new products, services, and processes. Building a competitive edge and sustaining success is essential in today's dynamic corporate market. Innovation capability requires both ideation and implementation (Asbari et al., 2020). Strong innovation abilities help companies adapt to market changes, meet customer wants, and seize new opportunities. Innovation capability includes knowledge management, technological expertise, business culture, and leadership. Organizations must create, share, and use knowledge, making knowledge management essential (Chiu & Lin, 2022). Information-efficient companies can innovate using their knowledge and expertise. Technological skills include innovation and implementation which includes integrating new technology into a company's operations, funding research and development, and implementing the (Füller et al., 2022). Organizational culture greatly affects innovation, which is more likely in an environment that encourages experimentation, risk-taking, and learning from mistakes. A culture like this encourages creativity and lets people try new things without worrying about the consequences (Gede et al., 2020). Leadership boosts a company's innovative capability. Executives who emphasize innovation, provide strategic guidance, and efficiently allocate resources can boost this capability.

Top Management Support

Effective deployment of advanced systems, such as Cloud ERP (Enterprise Resource Planning), necessitates the endorsement of senior executives. This support comprises senior executives who promote the endeavor, provide resources, and foster a change-friendly environment (Lu et al., 2021). Senior management is essential to aligning the ERP system with corporate goals. This alignment helps acquire organization-wide support and

agreement (Yousaf et al., 2021). This congruence ensures that the ERP system directly supports goals like operational efficiency and customer service (Christiansen et al., 2022). Top management must offer the necessary financial, human, and temporal resources for ERP implementation. Allocating enough funding emphasizes the project's importance and lowers budgetary constraints. Successful change management is another important part of senior management support. Leaders must exhibit their dedication to the success of the project, address any concerns, and proficiently communicate the benefits of the new system (Elbanna & Newman, 2022). This results in smoother transitions by cultivating trust and minimizing resistance to change. In addition, the top management fosters a culture within the organization that promotes innovation and enhancement. The organization fosters a culture that places great importance on improving processes and advancing technology by promoting the implementation of Cloud ERP (Jo & Bang, 2023). Staff members maintain their engagement and proficiency in the system by actively promoting continuous training and development. Furthermore, the active participation of senior management is crucial in addressing problems and reducing the potential risks linked to the implementation of an ERP system (Jayeola et al., 2022). They can quickly address issues and establish ways to avoid hurdles, keeping the project on time.

Cloud ERP System and Firm Performance

Organizational performance and Cloud ERP systems have been studied extensively. This study demonstrated that the efficient use of these systems and approach synchronization increases monetary and non-monetary performance. Cloud ERP systems' business plans are integrated. Plan resources and actions to reach a goal. Collaboration between Cloud ERP systems improves efficiency, customer service, and creativity. When combined, Cloud ERP systems enhance decision-making, operations, and resource management (Chopra et al., 2022). Strategic alignment and performance monitoring depend on Cloud ERP. Utilize Cloud ERP systems for automated workflows, real-time data access, and analytics. Supply chain optimization, market adaption, and customer relationship management benefit. Cloud ERP systems boost productivity, efficiency, and cost reductions (Gupta et al., 2020). ERP systems improved financial performance measures like profitability and ROI through better resource allocation and process optimization, according to Chavez & Duberg (2021). Beyond financial performance, Cloud ERP systems let businesses adapt and develop more swiftly. Interconnected Cloud ERP systems improve department collaboration and knowledge exchange, enabling faster market response and more creative solutions (Jayeola et al., 2022). ERP systems on the cloud merge data and operations, lowering organizational barriers and enhancing agility. Markets change quickly, so be agile.

H1: *Cloud ERP implementation has a significant impact on firm performance*

Innovation Capability as a Mediator

The invention has been thoroughly studied to lessen the impact on business performance of Cloud ERP systems' business performance impact. The ability of Cloud ERP systems to boost company performance and creativity was highlighted. By creating, merging, and exploiting new technology and ideas, innovative capabilities help businesses create value. Cloud ERP systems provide real-time data access, cross-departmental cooperation, and creative analytics (Yousaf et al., 2022). Research shows that innovative companies employ Cloud ERP systems wisely. These traits enable companies to adjust quickly to market changes, develop new products, and enhance operations. Cloud ERP systems increase customer service, accelerate technology adoption, and streamline workflows (Rossetto et al., 2023). According to Chavez & Duberg (2021), innovative ERP systems improve organizational performance by fostering continual improvement and technology adaptation. Innovation involves new goods, processes, and organizational behaviors. Cloud ERP systems automate repetitive tasks, optimize resource allocation, and boost productivity, enabling process innovation (Nguyen et al., 2021). High efficiency permits resource reallocation to innovative projects like new company models or user experience improvements. Cloud ERP systems can help companies establish a culture of innovation and long-term performance improvements.

H2: *Innovation capability mediates the relationship between cloud ERP implementation and firm performance*

Top Management Support as a moderator

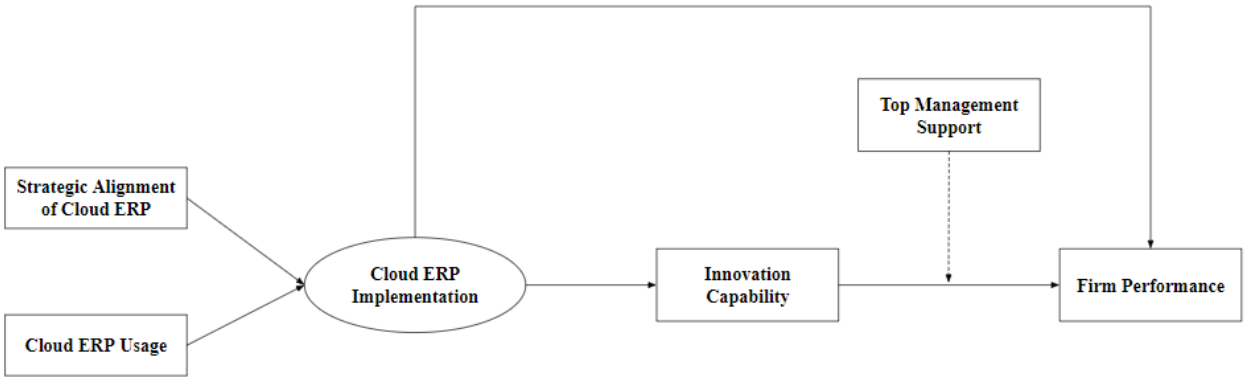
A company's capacity to transfer its innovative potential into measurable performance outcomes depends on top management support. This support moderates the company's inventiveness and performance. Top management support means senior executives approve and support innovation. This entails giving tools and encouraging experimentation and risk-taking. According to Lu et al. (2021), this support is essential for ensuring that the firm's strategic goals are aligned with the effective application of innovative capabilities.

Senior management support increases the relationship between a company's performance and its potential to innovate by developing an innovative culture, according to research. Top Management's support for innovation reduces creative barriers, including fear of failure and change. This support comprises financial resources and innovation-promoting policies and processes, and it combines strategic advice and mentoring (Lutfi et al., 2023). Innovation-focused leaders who invest in R&D foster the discovery and implementation of innovative and creative ideas. Top executives must help bridge the gap between market recognition and innovation. Top management oversees strategy and links innovation initiatives to corporate goals to integrate creativity into the organizational plan. This integration helps creative abilities become commercially viable goods, services, and procedural changes that improve business effectiveness (Fang et al., 2022). Senior management may support interdepartmental collaboration to help innovation advance from idea to implementation. Research suggests that top-management-supported innovation improves performance. Hussain et al. (2020) found that senior management support affects business performance with exploratory and exploitative innovation and this implies that devoted leaders boost innovation. In fast-paced, competitive environments, this help is essential for companies to develop rapidly and effectively. Innovation's impact on organizational performance is considerably reduced by senior management's support (Jayeola et al., 2022). By synchronizing the firm's strategy, allocating the necessary resources, and creating a supporting culture, top management improves the firm's ability to transfer its innovative potential into improved performance outcomes. Moderation is essential for innovation programs to succeed and provide a lasting competitive advantage and improved business performance.

H3: *Top management support moderates the relationship between innovation capabilities and firm performance*

Based on the above literature and discussion, we developed the following conceptual framework, as shown in Figure 1.

Figure 1: Conceptual Framework



3. Methodology

Research Design

This quantitative study examines how Cloud ERP systems affect corporate performance. Moderators and mediators of this study are innovative skills and top management support. The questionnaire was distributed among SME managers in KSA. The questionnaire used a Likert scale to assess Cloud ERP adoption, strategy alignment, innovation potential, senior management support, and corporate performance. For cross-sectional studies, data was collected at a certain time to evaluate variable relationships. This method reveals how KSA SMEs use and perceive Cloud ERP systems and how they affect organizational performance. Data from the study's quantitative correlation analysis supports theoretical hypotheses. The proposed theoretical framework will be examined using structural equation modeling (SEM) to determine mediation and moderation effects. To test hypotheses and find data relationships, regression and correlation analysis will be performed.

Population

KSA SME managers are the study's population and SMEs were chosen as the target group because of their huge representation across various industries and their considerable impact on the KSA economy. These enterprises significantly impact economic growth, innovation, and employment. Managers of small and medium-sized enterprises (SMEs) were the study's major participants since they have a big impact on how Cloud ERP systems are implemented. Their opinions are vital to understanding how their companies install, use, and comprehend Cloud ERP systems. This study examines how ERP systems affect corporate performance by focusing on managers who make operational and strategic decisions regarding them. KSA's SMEs span industries and organizational structures. These differences allow SMEs to analyze the adoption and use of Cloud ERP systems in different contexts, revealing the common problems and specific opportunities they encounter while employing technology to build their businesses.

Data Collection

This study collected data by sending structured survey questions to KSA SME administrators. The questionnaire collected numerical data on the organization's ability to innovate, where ERP systems align with business goals, opinions on Cloud ERP systems, top management support for ERP initiatives, and firm performance indicators. The survey comprised properly constructed multiple-choice and Likert-scale questions that were relevant and easy to understand to the study's research aims. The newest literature and theoretical frameworks on organizational performance, innovation potential, and Cloud ERP systems informed the queries. Small groups of managers pre-tested the questionnaire before dissemination. This was done to improve terminology, clarify directions, and ensure readability. Potential responders from professional networks, industry associations, and company directories received 450 questionnaires. A given amount of time was spent collecting data. Convenience-sampled administrators who actively consider and use ERP systems in their organizations. Out of 450 issued surveys, 198 were completed, a 44% response rate. Every questionnaire was checked for consistency and completeness before being included in the final dataset for analysis. The high response rate and meticulous filtering of responses ensure that the sample accurately represents KSA small and medium-sized firm (SME) management, making the data reliable and valid.

This study has four latent variables: Cloud ERP Implementation, Top Management Support, Innovation Capability, and Firm Performance. The component is measured using a 5-item Likert scale. All variables are measured by their items. For each variable, the questionnaire provides specifics. Researchers directly measured this study's variables from their relevant items. Innovation capability was measured by using a 6-item scale from Yousaf et al., (2022). The 13-item Cloud ERP Implementation scale was adopted from (Jayeola, Sidek, Sanyal, Hasan, Singh, et al., 2022). The top management support was measured using 6-item scales from (Jayeola, Sidek, Sanyal, Hasan, Singh, et al., 2022). The 6-item scale was used to measure firm performance adopted from Chavez & Duberg, (2021).

Data Analysis

This study evaluated data using SPSS, a popular quantitative social science software. The data was analyzed to meet study goals and test hypotheses. First, frequencies, percentages, means, and standard deviations were utilized to summarize sample characteristics and key variables. Cloud ERP systems, strategy alignment, innovation, top management support, and corporate performance are these variables. Descriptive statistics first assessed the data and identified abnormalities and extreme results that needed further analysis. After that, correlation analysis examined variable relationships. Pearson correlation coefficients were utilized to determine the degree and direction of correlations between variables, such as the association between Cloud ERP adoption and company performance, strategic alignment and inventive skills. The hypothesized correlations and the extent to which Cloud ERP systems influenced business performance directly and indirectly through creative capacities were examined using regression analysis. This study used SPSS to analyze how Cloud ERP systems affect KSA SMEs' performance. The study's empirical findings caused theoretical advances and management and policy implications.

4. Results

Descriptive Statistics

Table 1 shows descriptive statistics for cloud ERP installation, company performance, top management support, and innovation capability. Based on feedback from 198 KSA SME managers. From 1 to 5, cloud ERP adoption had a mean score of 3.85 and a standard deviation of 0.62. Respondents' companies implemented cloud ERP extensively. The mean firm performance score is 4.10, with a standard deviation of 0.70. Overall, participating SMEs deliver positive performance results, although there is significant variety. Senior management at the analyzed firms supported ERP operations with a mean rating of 4.15 and a standard deviation of 0.60 and the range is from 1 to 5. These companies have a relatively high and variable innovation capability, as seen by their Innovation Capability score of 3.90 and standard deviation of 0.65. The descriptive statistics detail cloud ERP adoption, corporate performance, top management support, and innovation capabilities. These figures show how these essential aspects interact and offer a clear picture of the landscape.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum	N
Cloud ERP Implementation	3.85	0.62	1	5	198
Firm Performance	4.10	0.70	1	5	198
Top Management Support	4.15	0.60	1	5	198
Innovation Capability	3.90	0.65	1	5	198

Normality Assessment

Table 2 shows the skewness and kurtosis values used to analyze the normality of cloud ERP installation, company performance, top management support, and innovation capability. The skewness score of -0.05 indicates a leftward distribution of cloud ERP implementation responses. Kurtosis of -0.10 suggests a somewhat less peaked distribution than the normal distribution. A kurtosis score of -0.15 indicates a less peaked distribution than a normal distribution, while a skewness value of 0.08 indicates a modest right skewness. Top management support skewness is -0.07, showing a little left skew. The kurtosis is -0.05, indicating a near-normal distribution. Skewness of 0.12 and kurtosis of 0.10 indicate that the Innovation capability distribution is slightly greater than average. All variables have near-zero skewness and kurtosis, indicating that data distributions are nearing normalcy. This supports parametric statistical methods in future studies.

Table 2: Normality Assessment

Variable	Skewness	Kurtosis
Cloud ERP Implementation	-0.05	-0.10
Firm Performance	0.08	-0.15
Top Management Support	-0.07	-0.05
Innovation Capability	0.12	0.10

Correlation Analysis

Table 3 shows the Pearson correlation coefficients between cloud ERP installation, company performance, top management support, and innovation capability. Cloud ERP implementation positively correlates with company performance ($r = 0.65$, $p < 0.01$), indicating better outcomes with higher levels. This study found that KSA SMEs that successfully implement cloud ERP systems may benefit. The installation of cloud-based ERP systems is positively correlated with the performance of top ERP systems ($r = 0.60$, $p < 0.01$) and company performance ($r = 0.75$, $p < 0.01$). This shows that ERP implementation requires top-level executive support, which boosts firm performance. There are moderate positive correlations between innovation capability and corporate performance ($r = 0.62$, $p < 0.01$) and cloud ERP implementation ($r = 0.55$, $p < 0.01$). Firms with superior innovation skills integrate ERP systems better and achieve higher performance. The correlations between variables in this study demonstrate context-specific associations. The positive correlations between cloud ERP installation, innovation capability, senior management support, and company performance demonstrate the interdependence of these components in organizational success. In small and medium-sized enterprises (SMEs), combining Enterprise Resource Planning (ERP) strategies with wider business goals, fostering strong leadership backing, and fostering innovative capabilities can improve operational efficiency and

competitiveness. This matrix's substantial connections reveal aspects of cloud ERP systems and organizational performance measures that influence strategic decision-making and resource allocation in KSA SMEs.

Table 3: Correlation Matrix

	CERPI	FP	TMS	IC
Cloud ERP Implementation	1.00			
Firm Performance	0.65	1.00		
Top Management Support	0.60	0.75	1.00	
Innovation Capability	0.55	0.62	0.55	1.00

Reliability Analysis

Table 4 shows the reliability analysis for the study's major variables, which used Cronbach's Alpha to quantify internal consistency. Cloud ERP systems have a 0.87 Cronbach's Alpha coefficient, indicating reliability. This shows that cloud ERP adoption items consistently measure the idea, resulting in reliable management responses. At 0.88 for six items, the firm's performance is reliable. The strong internal consistency of the measure used to assess company performance shows that the scale can capture numerous facets of performance outcomes in SMEs. The Top Management scale's Cronbach's Alpha is 0.80, suggesting strong reliability. The measure appears acceptable for measuring senior management's ERP project support. The five questions used to gauge the firm's capability for innovation have outstanding reliability and validity, as indicated by Cronbach's Alpha coefficient for Innovation Capability, which is 0.86. All variables in this study have reliability coefficients above 0.70. This means the measurement equipment can be examined. Dependability is needed for data analysis to effectively reflect the dynamics of assessed SMEs. These variables are internally consistent, allowing regression and structural equation modeling to examine the relationships between cloud ERP implementation, innovative capabilities, top management support, and firm performance in KSA SMEs.

Table 4: Reliability Analysis

Variable	Cronbach's Alpha	Number of Items
Cloud ERP Implementation	0.87	13
Firm Performance	0.88	6
Top Management Support	0.80	6
Innovation Capability	0.86	5

Outer Loadings

Table 5 shows the loadings of the study's main factors: cloud ERP installation, corporate performance, top management support, and innovation capability. The peripheral loadings show the strength of the association between each item and its relevant construct, assessing the measurement model's validity. The strategic alignment factors for cloud ERP adoption have outside loadings of 0.76 to 0.85, indicating accurate measurement and strong correlations. Cloud ERP-related characteristics exhibited considerably higher external loadings, 0.86 to 0.90. This proves these indicators' accuracy in measuring ERP deployment in firms and shows strong relationships. The external loadings of Firm performance elements range from 0.83 to 0.90, indicating significant correlations and performance-measuring instrument reliability. The items' strong loadings imply that they accurately represent numerous aspects of company performance, which aids in idea evaluation. The outside loadings of top management support items varied from 0.77 to 0.85, confirming strong correlations and that these items accurately assess senior management ERP support. Finally, the innovation capability components' outer loadings ranged from 0.82 to 0.89, showing strong correlations and accurate representation of the firm's innovation capability. External loadings for all items and constructs show robust convergent validity, demonstrating that construct-specific items operate well. Significant external loadings reinforce the study's measuring paradigm and allow for further inquiry. Advanced statistical methods like structural equation modeling can be used to explore the relationships between cloud ERP installation, inventive capabilities, top management support, and business performance. Make sure each item accurately depicts its notion. The study's conclusions are bolstered by robust data and strong outside loadings. These criteria shed light on ERP installation and organizational performance in KSA SMEs.

Table 5: Outer Loadings

Variable	Items	Outer Loading
Cloud ERP Implementation	CERP1	0.82
	CERP2	0.85
	CERP3	0.79
	CERP4	0.81
	CERP5	0.76
	CERP6	0.77
	CERP7	0.80
	CERP8	0.83
	CERP9	0.88
	CERP10	0.90
	CERP11	0.86
Firm Performance	FP1	0.85
	FP2	0.83
	FP3	0.89
	FP4	0.88
	FP5	0.90
	FP6	0.84
Top Management Support	TMS1	0.78
	TMS2	0.80
	TMS3	0.82
	TMS4	0.79
	TMS5	0.85
	TMS6	0.77
Innovation Capability	IC1	0.86
	IC2	0.88
	IC3	0.84
	IC4	0.89
	IC5	0.82

R-Square

Table 6 shows the study's significant variables' R-squared values. These numbers show how much the regression models' independent factors explain each dependent variable's variation. The R-squared value of 0.65 shows that independent characteristics like cloud ERP installation, innovation capability, and senior management support explain 65% of company performance variation. This study shows that these factors greatly affect KSA SMEs' performance. A higher R-squared value indicates a better company performance prediction model. This shows that organizational success requires supportive management, innovative capabilities, and effective ERP adoption. The analysis indicated that the independent variables may explain 45% of innovation capability variation in SMEs. The innovative capability R-squared score of 0.45 shows this. This emphasizes the importance of managerial support and cloud ERP installation in fostering innovation. The moderate R-squared value shows how these variables affect the firm's ability to innovate and adapt to market changes, which is essential for staying competitive in today's business environment. How well the proposed model predicts KSA SMEs' performance and innovative capability is shown by R-squared values. The findings show that aligning strategies and using ERP systems improve performance and innovation. This is proven by how cloud ERP systems, innovation, and management support drive corporate outcomes. Understanding what drives performance and innovation helps boost operational efficiency and market competitiveness. They can prioritize investments and projects with this knowledge.

Table 6: R Square

Variable	R Square
Firm Performance	0.65
Innovation Capability	0.45

Regression Analysis

Table 7 shows the regression study of cloud-based ERP systems and KSA SMEs' performance. Cloud ERP installation boosts business performance, according to the beta coefficient of 0.35. This correlation is supported by a 3.45 t-value and p-value < 0.01. ERP systems must be integrated with organizational activities, and larger cloud ERP installations improve company performance. The positive beta coefficient suggests that each cloud ERP installation improves business performance by 0.35 units, taking other model components into account. This supports theoretical assumptions and earlier research that ERP systems improve operational efficiency, decision-making, and business performance. The statistically significant t-value and p-value strongly suggest that this relationship exists. KSA SMEs seeking a competitive advantage and sustained growth through technical expenditures can exploit these insights. Enterprise Resource Planning (ERP) systems help increase SMEs' performance. Setting deployment priorities and aligning ERP operations with organizational goals can do this. Regression analysis shows cloud ERP systems' strategic corporate performance benefits. It also helps managers and decision-makers employ technology to compete in dynamic markets.

Table 7: Regression Analysis

	Beta Coefficient	t-value	p-value
Cloud ERP Implementation -> Firm Performance	0.35	3.45	<0.01

Mediation Analysis

Table 8 indicates how innovation capability mediates cloud ERP adoption's indirect impact on business performance. Cloud ERP adoption boosts business performance by boosting innovation capability (coefficient = 0.15, SE = 0.04, t = 3.50, p = 0.01). This suggests that cloud ERP's impact on company performance depends on innovation. A positive coefficient shows that cloud ERP boosts innovation and performance. The mediation effect is significant and unlikely to be random, as shown by the standard error (SE) and t-value of this indirect link. Innovation ERP systems assist cloud ERP systems boost SME performance. ERP systems enable SMEs to compete in competitive marketplaces by simplifying operations, enabling data-based decision-making, and fostering innovation. This mediation analysis supports the idea that ERP systems directly impact corporate performance and indirectly impact organizational capacities like innovation. These insights can help managers and practitioners strategically align their efforts to implement ERP systems with initiatives to improve innovative skills. This maximizes the impact of firm performance. To succeed in a fast-changing business environment, companies must grasp how ERP systems affect success and innovation. This knowledge helps organizations allocate resources and perform actions.

Table 8: Mediation Analysis

	Coefficients	Standard Error	t-value	p-value
Cloud ERP Implementation -> Innovation Capability -> Firm Performance	0.15	0.04	3.50	0.01

Moderation Analysis

Table 9 shows the moderation analysis results. This study examined how innovation capability (IC) and top management support (TMS) affect firm performance (FP) in KSA SMEs. The coefficients indicate that innovation capability and top management support boost corporate performance. The coefficient is 0.18, with a 0.05 standard error. T = 3.60, p = 0.005. This study shows that senior management support boosts business performance and innovative capability. A positive coefficient shows that senior management support and excellent innovation capability boost a company's performance. The standard error (SE) and t-value show that this interaction effect is statistically significant and unlikely to represent random variation. These findings demonstrate the importance of senior management in creating an innovative environment in small and medium-sized enterprises. Good leadership and a supportive company culture are essential to unleash inventive skills and create corporate success and a competitive edge. Senior management may maximize innovation's positive impact on business performance by nurturing innovative capability and providing resources and support. Practically, these findings suggest combining management support programs with ERP systems and other technical investments to boost creativity. These findings can help SMEs create innovative cultures and ensure that leadership supports creative pursuits. Top management support moderates how

organizational dynamics affect KSA SMEs' strategic decision-making and resource allocation, which helps explain how organizational dynamics affect performance.

Table 9: Moderation Analysis

	Coefficients	Standard Error	t-value	p-value
IC * TMS -> FP	0.18	0.05	3.60	0.005

Discussion: The study examined how innovation capability, cloud ERP systems, senior management support, and business performance affect KSA's SMEs. Synthesizing empirical findings, the debate considers theory, practice, and future research. Cloud ERP systems improve business performance, according to Hypothesis 1. Previous study shows that ERP systems improve business efficiency, effectiveness, and performance (Jayeola, et al., 2022). The findings of this study support Hypothesis 1. The regression study shows a statistically significant positive correlation between Cloud ERP installation and firm performance. As a result, it can be concluded that the performance of small and medium-sized firms (SMEs) using Cloud ERP systems has improved in areas like operational efficiency, financial viability, and customer satisfaction. This supports other studies indicating that ERP systems improve decision-making, resource allocation, and operations, boosting performance (Garg et al., 2024). Cloud ERP systems streamline operations, increase data accuracy, and foster interdepartmental collaboration by merging business activities into a single platform.

For KSA SMEs, Cloud ERP systems may cut expenses, increase productivity, and give them more strategic options. This is helpful since KSA SMEs have operational challenges and few resources (Gupta et al., 2020). Several key mechanisms support Cloud ERP's positive impact on company performance. ERP systems originally gave managers real-time access to integrated data to make quick, informed choices. This capability maximizes resource allocation and operational effectiveness, which boosts organizational performance. (Chopra et al., 2022). Cloud ERP systems also standardize and automate company processes, boosting workflow, and reducing duplication, and errors. Operations optimization reduces costs, shortens lead times, and improves customer response. These enhancements boost performance indicators. Cloud ERP systems can scale and adapt, allowing SMEs to respond quickly to changing market conditions and client needs. Innovation and responsiveness promote success in fast-paced corporate environments; therefore, agility is essential. (AlMuhayfith & Shaiti, 2020). The findings show the importance of strategically aligning Cloud ERP with the company's goals. To optimize ERP investment benefits, deployment approaches must consider company readiness, stakeholder involvement, and change management. However, Cloud ERP deployment may face challenges such as upfront costs, data security concerns, and internal resistance to new systems. To smoothly integrate ERP systems into daily operations, these challenges must be actively managed and strategies created. The empirical evidence supports Hypothesis 1, showing that Cloud ERP improves KSA SMEs' performance. The findings provide empirical data on how ERP systems increase organizational performance.

Hypothesis 2 connects KSA SMEs' Innovation Capability to Cloud ERP Implementation and Firm Performance. ERP systems improve operational efficiency, data-driven decision-making, organizational innovation, and performance (Bansal et al., 2023). Data from this study support Hypothesis 2. Through Innovation Capability, the mediation study demonstrates an indirect influence of Cloud ERP Implementation on Firm Performance. ERP systems promote business performance by fostering innovation. Cloud ERP systems centralize business tasks, enhancing data accuracy, collaboration, and operations. Innovative problem-solving and product development are supported by these traits (Ottoni et al., 2024). By giving users immediate access to integrated data and analytics, Cloud ERP implementation boosts Innovation Capability. This capability is essential for identifying innovation possibilities and developing new products and services. Businesses learn about market trends, consumer preferences, and operations. ERP systems encourage information sharing and collaboration, reducing department isolation and boosting creativity (Balsmeier & Woerter, 2019). ERP systems let workers adapt to market changes and form productive teams using departmental data. Cloud ERP systems allow SMEs to adapt swiftly to market and client changes. Staying competitive requires innovation and quick response to new company opportunities (AlMuhayfith & Shaiti, 2020).

Innovation capability can be improved by linking ERP implementation to strategic goals. Interdisciplinary innovation teams, innovative thinking, and training may help organizations implement ERP systems for innovation (Tahirkheli, 2022). Innovation with ERP systems requires understanding the challenges. Lack of

skilled workers, cultural aversion to change, and technology and infrastructure investments are obstacles. To solve these issues, the company needs aggressive leadership, effective change management, and a dedication to innovation. Finally, the empirical results substantially support Hypothesis 2, which states that Innovation Capability affects KSA SMEs' Cloud ERP Implementation and Firm Performance. The findings expand current studies by showing how ERP systems can boost an organization's innovation and commercial performance. Additional contextual factors and variables should be studied to better understand mediation. We would better understand ERP-enabled innovation in small and medium-sized enterprises.

Hypothesis 3 argues that top management support affects SMEs' innovation capability and performance. Moderation analysis strongly supports this theory, indicating that inventive talents and top management support interact to improve corporate performance. Senior management support shows that IC (intellectual capital) and FP (financial performance) are positively correlated (Lutfi et al., 2023). Innovative ventures require effective leadership and a culture that supports them. According to Nguyen et al., (2022), senior leaders that support innovation allocate resources, encourage creativity and risk-taking, and provide a clear vision. Innovation-friendly leaders boost business performance by fostering innovative ideas and execution. By tying strategic and innovation goals together, top management makes it easier for innovation talents to affect financial performance (Maroufkhani et al., 2020). Executives ensure that creative activities contribute to business goals and demonstrate their importance by fostering and implementing innovation into strategic planning. This alignment ensures proper resource allocation and innovation support. Leadership support also promotes trust and transparency, reducing innovation barriers (Hoonsopon & Puriwat, 2021). Leadership that fosters innovation encourages employees to explore and learn from their mistakes. Continuous improvement and flexibility are key to keeping ahead in changing markets. Investment in leadership development and supportive environments can increase innovation performance and capability. Feedback mechanisms, recognition of invention, and explicit innovation goals promote ongoing progress in leadership.

5. Conclusion

This study reveals that cloud ERP systems, innovation systems, and senior ERP management support boost KSA SMEs' performance. Survey data from 198 SMEs was extensively studied in this study. Cloud ERP increases organizational productivity and performance, the study revealed. Study: ERP deployment promotes strategic agility, financial performance, and operational efficiency. ERP (Enterprise Resource Planning) systems speed up business operations, enhance decision-making, and give businesses a competitive edge in a globalized market, according to research. This discovery supports this. By centralizing data management and offering real-time analytics, Cloud ERP systems help SMEs optimize resource allocation, reduce costs, and adapt to market changes quickly. The mediation study also showed that innovation capability mediates the association between ERP installation and business performance. Strong ERP systems, which leverage efficient procedures and integrated data to support continuing improvement and product and service development, foster innovation, according to this poll. ERP systems boost operational efficiency and foster constant innovation, laying the framework for sustained growth and competitiveness. The study found that senior management endorsement considerably impacts innovation capability's positive impact on business performance. Research shows that excellent leadership, which aligns innovation objectives, allocates resources, and has a clear vision, considerably boosts innovation efforts in SMEs. Top management must foster a supportive culture and encourage risk-taking and creativity to foster innovation and organizational success. The relationship between cloud ERP systems, innovation capability, and top management support in KSA SMEs is revealed by this study. Technology spending should be linked to leadership efforts to boost organizational flexibility and innovation. This paper helps SMEs use ERP systems to expand, innovate, and compete in the digital economy.

Implications

KSA Cloud-based ERP systems boost operational efficiency and performance for SMEs. SMB ERP solutions must be properly designed and implemented, according to the findings. By centralizing data management, automating processes, and giving real-time insights, Cloud ERP systems aid SMEs in optimizing resource allocation, operating expenses, and productivity. Practical advice that SMEs employ ERP installation methods that support their goals. To compete, SMEs must regularly assess and upgrade their ERP systems and train people. The research emphasizes ERP systems' role in business innovation potential. ERP systems streamline cross-functional procedures and foster growth. Data and efficient procedures across operations, goods, and

services help SMEs innovate. Practical results show that an organizational culture that encourages information sharing, experimentation, and creativity is necessary. All employees should be encouraged to be creative, share ideas, and innovate to compete in changing markets. ERP systems and innovation capability require organizational support and leadership, according to a study. Effective leaders innovate, distribute resources, and align ERP deployment with company goals. Open communication between leaders and personnel, letting managers push ERP projects, and financing SME leadership development are realistic suggestions. By encouraging trust, openness, and collaboration, innovative ERP systems may boost employee engagement and strategic goals. SMEs can quickly adapt to market and consumer developments thanks to Cloud ERP systems. ERP system flexibility, scalability, and development help. To keep up with new technology and company needs in changing markets, SMEs must regularly review and update their ERP systems. Digital transformation and change management can help companies thrive despite technological hurdles. Beyond practical applications, the study's theoretical implications explain ERP systems' effects on organizational performance. This study expands theoretical frameworks by emphasizing leadership support, technological acceptability, and innovation capability in corporate performance improvement. Theory suggests more research on contextual elements, industry-specific obstacles, and moderating variables that affect ERP adoption success. ERP implementation's long-term effects on organizational resilience, customer satisfaction, and stakeholder value should be studied. This will improve theoretical understanding and inform strategic decision-making in SMEs and other settings.

Limitations and Future Direction

Limitations: This study acknowledges restrictions that limit its applicability and comprehension. This study initially sampled 198 KSA SMEs. Although suitable for statistical analysis, this method may not accurately represent the large range of SMEs in different industries or regions of the country. Other contexts are unlikely to benefit from the study's conclusions. Cloud ERP installation, innovation capability, leadership support, and business performance are understood through mediation and moderation analysis. However, longitudinal investigations are needed to determine these relationships' long-term persistence and direction. Self-reported questionnaire data may also introduce respondent and common method biases. To overcome these issues, future research should leverage many data sources and objective performance standards. The investigation focuses on small and medium-sized companies (SMEs) in a specific setting rather than contextual or industry-specific factors that could affect ERP systems' adoption and innovation. Industry regulatory regimes, market dynamics, and technology infrastructures may affect the findings' validity and applicability. To overcome these constraints, future studies should compare industries, geographies, and organizational sizes. This enhances the findings' external validity.

Future Directions: To advance this study's findings, future research should explore additional methods. Comprehend the long-term effects of cloud ERP on firm performance and innovative capability. These studies can illuminate ERP-driven innovations' long-term viability and success factors. Enhancing quantitative analyses with qualitative methods like interviews or case studies would help comprehend organizational dynamics and managerial perspectives that affect ERP deployment and progress. We may learn how ERP systems affect innovation performance through business culture, digital preparation, and strategy alignment by comparing different situations. Understanding how ERP affects corporate performance in varied organizational settings requires more analysis which includes company culture, labor skills, market conditions, and top management support. Future ERP frameworks may embrace blockchain, AI, and IoT. Technology-driven ERP systems may affect strategic and operational decisions. Studying SMEs' ERP processes following worldwide disasters like COVID-19 may be enlightening. SMEs' ERP systems enable remote work, organizational resilience, and digital change. This is crucial for SMEs to survive changes and competition. Cloud ERP installation, innovation capability, leadership support, and firm performance in KSA SMEs are examined in this study. We must address these limits and pursue these research possibilities to better understand and help SMEs use ERP systems for sustained growth and a competitive edge in a fast-changing business environment.

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Measuring Financial Management and Bankability of Small Business Mumpreneurs through Triangulation Study

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Abstract: Women's entrepreneurship can help to achieve "No Poverty" (SDG 1) and "Gender Equality" (SDG 5) under the targeted area of the 17 Sustainable Development Goals 2030. The business sector contributes significantly to the country's economic development. The primary purpose of this study is to explore the financial management practice and bankability of B40 mumpreneurs. The design of this study uses a mixed-method approach based on a semi-structured interview of 23 respondents and a survey study of 200 B40 entrepreneurs. All recorded data were transcribed for thematic data analysis. The survey study has been examined using AMOS SEM analysis. The triangulation method is employed to check the completeness of the interview and survey data and ensure that the data is valid. The results discovered that financial management is at a low level, with several issues having been identified. These include poor credit score, lack of financial knowledge and skills, failure to calculate proper selling price, poor business financial management, using a personal account for business matters, poor business audit, lack of savings and investments, and underutilization of financial tools. The survey showed a significant relationship between poor financial management and low bankability levels.

Keywords: *Financial management, bankability, women entrepreneurs, triangulation, B40*

1. Introduction

The financial crisis caused by the COVID-19 pandemic has turned the world's attention toward the importance of financial literacy among individuals (Sabri et al., 2023). The COVID-19 pandemic that hit the whole world, including Malaysia, is a health crisis that threatens the survival and well-being of the community and puts financial pressure on the individuals involved (Shibata, 2021). For small entrepreneurs, this situation puts pressure on their businesses. Financial pressure occurs due to reduced customers, the need to pay rent for the premises, and cash flow problems (Wang et al., 2021). A Department of Statistics Malaysia study showed that 71.4% of working respondents have savings that are only enough for less than a month. Only 2.4% of self-employed respondents have more than six months of savings (Hamid & Loke, 2021). Individuals who are financially blind will experience problems and tend to make wrong decisions in their economic management (Khan et al., 2023).

Small businesses need a distinctive financial management pattern (Mohd Noor et al., 2024b). Financial management capability involves a dynamic learning process influenced by external and internal environmental factors such as attitude, skills, knowledge, business planning, and experience (Barbosa et al., 2020). Incorrect financial management will cause the business to experience bankruptcy or loss (Burns, 2022). Even if entrepreneurs are not as efficient as accountants, they must understand the implications and effects of effective financial management on their businesses (Noor et al., 2024c). Tuffour et al. (2022) stated that financial management requires specific technical skills.

Noor et al. (2024b) found that most female entrepreneurs must update sales records or use auditors' services. Some need more planning time because they are too busy with other daily affairs and believe financial planning is more suitable for large businesses (Kappal & Rastogi, 2020). Most small businesses fail to obtain financing simply because of poor record-keeping (Kajal et al., 2021). According to a study by Yakob et al. (2021), most entrepreneurs in Malaysia do not update their purchase and sale transaction records and do not use the services of an auditor. Businesses go bankrupt due to failing to manage their finances properly, and some are unable to

distinguish between personal and business finances, causing business capital to disappear and close (Ismail et al., 2021). Despite the various focuses and opportunities, many entrepreneurs still face significant challenges, such as access to financing, which hinder growth and prevent them from competing with large-scale companies (Zayed et al., 2022). Improper financial management will cause firms to experience bankruptcy or losses. According to Ismail et al. (2021), entrepreneurs need to have knowledge and understanding related to financial management to reduce the risk of failure. Sound financial management will help ensure that all existing business resources are used efficiently and effectively and provide optimal returns. Usually, entrepreneurs who start their small businesses do not get formal training or awareness about record keeping, and they will put the records aside because they need to know their importance (Hasan et al., 2023; Mohd Noor et al., 2024). Some commercial banks make it mandatory for future micro-entrepreneurs to prepare a comprehensive business plan before applying for a bank loan. Entrepreneurs with this experience are very advantageous in managing a business, especially those involving financial management, to prevent financial leakage (Iram et al., 2023). Most small businesses do not make it through the first five years if they do not have enough experience (Wang et al., 2020). To understand the financial management of B40 mumpreneurs more clearly, the researchers examine the practice of financial management and how this could impact the bankability level and provide strategies and approaches to empower B40 mumpreneurs' financial well-being.

B40 refers to the group with an income range between RM4,850 and below. This group is very vulnerable to high risks when economic pressure occurs in a country (Joo et al., 2021). Low income hurts the psychological aspects of individuals' and families' well-being. The increase in financial pressure not only causes the deterioration of parents' mental health but also contributes to conflict in the family, leading to cases of divorce, domestic violence, and neglect of responsibility towards children (Johan et al., 2021; Morgan & Long, 2020). Mumpreneurs are described as mothers involved in entrepreneurial activities. Being a working wife and mother is very tiring and stressful. Most B40 entrepreneurs are working within the informal economy.

The 2021 Informal Sector Employment and Informal Employment Survey reported that 955,400, or 73.4 percent, are self-employed individuals who run micro-sized businesses or are informal entrepreneurs (Uchiyama et al., 2022). Among the main criteria of the informal sector is the size of the workforce, which is less than ten people and is not registered under the defined law, and most businesses are not eligible for loans and assistance due to low education, poor credit score, and poor business management, especially financial aspects (Dell'Anno, 2022). This study hopes to help the relevant agencies and parties formulate further financial well-being and literacy policies. This study could also fill previous studies' evidence, population, and methodological gaps. Past studies have heavily examined financial literacy among young people and the public in general, yet the context of low-income groups or B40 mumpreneurs is often overlooked.

2. Literature Review

Financial Management

A former Prime Minister of Malaysia, Tun Dr. Mahathir Mohamad, has launched the National Financial Literacy Strategy 2019-2023. This initiative was launched to improve the financial literacy of Malaysians and encourage responsible financial habits among the community. It is spearheaded by the combination of Bank Negara Malaysia and the Securities Commission in the Financial Education Network (FEN) platform. Financial literacy skills are essential to protect from unfair offers or fraud in an increasingly complex financial environment. In addition, there are several main strategies outlined by FEN to achieve the objective of financial literacy in society. Among them are instilling good values from a young age, increasing public access to information, financial tools, and resources related to financial management, inculcating positive financial habits among the target group, empowering retirement and long-term financial planning practices, and wealth planning (Sabri et al., 2023). FEN members will carry out this effort consistently and welcome the cooperation of other public and private sectors. Based on the OECD/INFE 2023 International Survey of Adult Financial Literacy, financial literacy is diverse across socio-demographic groups (Kiril, 2020). For example, financial literacy levels are higher among adults with higher incomes and educational levels. Moreover, self-employed adults have lower levels of financial knowledge than adults who are employed, and men have slightly higher financial literacy on average than women. Thus, B40 mumpreneurs are a vulnerable group that is highly exposed to financial risks. The report of the average financial literacy scores for 40 participating countries and economies also shows Malaysia's overall average financial literacy score is 61 out of 100 (Kiril, 2020).

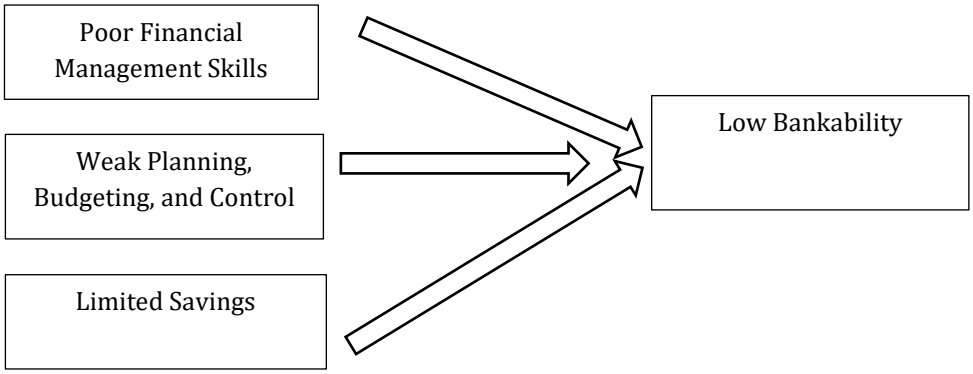
A study on financial management among small businesses has received attention in past studies. Financial management is essential for small businesses to ensure competitiveness (Barbosa et al., 2020). Entrepreneurs with financial literacy understand what is happening in the financial world and can make effective decisions (Burns, 2022). With financial management, businesses can grow into bigger businesses. Academics believe entrepreneurs are always involved in decision-making activities that impact business finances (Bartolacci et al., 2020; Tuffour et al., 2022). Therefore, entrepreneurs need financial skills to ensure effective decisions (Kappal & Rastogi, 2020). Rachidi and El Mohajir (2021) consider financial management to include awareness and knowledge as well as financial instruments and their use in business and daily life. Making the right financial choice is a critical decision with long-term financial consequences in an individual's life (Morgan & Long, 2020). Several skills show financial management, which is crucial to improving the entrepreneur's bankability. These include 1) the preparation of calculations, 2) managing savings, 3) financing skills, 4) budget preparation, and 5) record keeping (Oggero et al., 2020). Financial management tools will help entrepreneurs analyze their business performance over time. As an entrepreneur, they have a goal to grow the business. To achieve that goal, they need financing capital from banks, financial companies, and other financial institutions. Financial statements increase the chances of getting a loan (Gudjonsson et al., 2020). Recording can prevent the issue of bad debts or the risk of the company going out of business.

Bankability

Lack of financial literacy is evident in many aspects of Malaysians' lives. Many people think it is necessary to shop to avoid being left behind. From credit cards to simple payment schemes such as buy first and pay later (BNPL), many need help to make the payment. Bankability is the ability of an individual or a business to generate cash flow and attract financing or investment. One way to examine the bankability status is through credit scores. Credit scores are essential in determining loan or credit card approval, interest rates, and terms offered. A favorable credit score signals to credit providers that you are a responsible borrower and more likely to repay the debt on time (Gopal & Schnabl, 2022). Understanding and managing the credit score in Malaysia is vital to unlocking financial opportunities. A healthy credit score can open the door to achieving personal and business goals, while a low score can limit financial options (Nicolas, 2022). A credit score, essentially a numerical expression based on an analysis of the level of a person's credit file, represents an individual's creditworthiness. In Malaysia, credit scores range from 300 to 850, with higher scores indicating better credit health (Wasiuzzaman et al., 2020). The most basic credit report is a personal credit report from Bank Negara Malaysia (BNM), the Centralized Credit Reference Information System (CCRIS) report. The CCRIS does not display the credit score and only the most basic information for reference. A more detailed report, such as credit score, trade references, legal information, and others, could be retrieved from a third party such as Credit Bureau Malaysia, CTOS Data System, or RAM Credit Information (RAMCI). Some banks also have a way of calculating their credit scores. Financial institutions will also not reveal how they calculate individual credit scores to prevent irresponsible parties from misusing this information. Therefore, there is no standard way or method to calculate an individual's credit score (Wasiuzzaman et al., 2020).

A good credit score is essential for several reasons. It affects the ability to get personal, home, and business loans (Łasak, 2022). The role of financial technology and entrepreneurial finance practices in funding small and medium-sized enterprises. Lenders see a high credit score as an indicator of low risk, often resulting in better loan terms, such as lower interest rates and higher loan limits (Bartolacci et al., 2020). Paying bills on time, including credit card bills and loans, is the easiest way to improve the credit score. Entrepreneurs can consider setting up automatic payments or reminders to ensure they do not miss the due date. The amount of credit used should be below 30%, and the length of the credit history also contributes to the credit score. Keeping old accounts open can positively affect the score if they are in good standing. A healthy credit score is an invaluable asset, whether the individual is aiming for a home loan, looking to grow a business, or simply striving for financial stability (Bartolacci et al., 2020). In the business world, capital should not be acquired through debt unless it involves a significant business deal (D'Amato, 2020). Unfortunately, some run a business with all their capital obtained through debt. This situation will reduce the profit rate because they must pay a specific loan price. Business capital is not only in the form of money. Therefore, it must be understood that the more critical capital is a person's ability in terms of skills, experience, will, contacts, relationships, and the strength of the goods to be traded. This study believes that good financial management leads to better credit scores (i.e., bankability), resulting in better business performance and sound financial well-being. Figure 1 shows the study's conceptual model.

Figure 1: Research Model



3. Methodology

This study has employed a mixed-method approach to perform triangulation. By combining various methods, the potential for bias or errors that may appear from using only one method or source can be minimized (Strijker et al., 2020). If various methods produce consistent or similar findings, this increases confidence that the findings are valid and reliable. Using various methods, the researchers can obtain a complete and more diverse picture of the phenomenon being studied, enabling a more in-depth and holistic interpretation. Thus, triangulation becomes one of the most valuable tools in research as it ensures that research findings are supported by strong and comprehensive evidence, increasing the credibility and relevance of research results in the eyes of stakeholders and the academic community (Singh et al., 2024).

First, the researchers used semi-structured interviews to explore the current financial management practice. Twenty-three B40 mumpreneurs in Kuala Lumpur, Malaysia, were involved in the research and were selected using a purposive sampling technique. Unlike quantitative research, the sample size in qualitative research is generally not determined. This is due to the sample size required for the study being adapted to the availability of complete information or data needed by researchers (Hennink & Kaiser, 2022) or, in other words, achieved saturation or no new information being found. Kuzel (1999) divided the sample size estimate based on the sample category. As many as 6-8 data units are required when using a homogeneous sample, and 12-20 data units on a heterogeneous sample type (as cited in Malterud et al., 2021). The researchers used face-to-face interviews as a tool or instrument to conduct research. The interview protocol is adapted from studies by Fuzi et al. (2024) and Noor et al. (2024a). The researchers analyzed the data with a thematic qualitative approach. Table 1 shows the information on the study's key informants.

Table 1: Key Informants Information

No.	Key Informant Code	Age	Period of Business	Bank Loan
1	A1	40	More than five years	No
2	A2	45	More than eight years	No
3	A3	39	More than five years	No
4	A4	35	Less than two years	No
5	A5	42	Less than two years	No
6	A6	40	More than five years	No
7	A7	37	More than five years	No
8	A8	38	More than five years	Yes
9	A9	40	More than five years	No
10	B1	41	More than five years	No
11	B2	45	More than five years	No
12	B3	35	More than five years	No
13	B4	33	More than five years	No
14	B5	31	More than five years	No
15	B6	40	More than five years	No
16	B7	44	More than five years	No

17	B8	42	More than five years	No
18	B9	38	More than five years	No
19	C1	40	More than five years	No
20	C2	42	More than five years	No
21	C3	46	More than five years	No
22	C4	37	More than five years	Yes
23	C5	37	More than five years	No

For the second phase, questionnaires were distributed to 200 B40 mumpreneurs using stratified sampling. The sampling frame of this study was the Federal Territory of Kuala Lumpur, Malaysia. Kline (2015) offered sample size guidelines for analyzing the structural equation model (SEM), suggesting that a sample over 200 is considered significant. B40 mumpreneurs are coming from PPR localities such as PPR Desa Tun Razak, PPR Desa Petaling, PPR Laksamana, PPR Muhibbah, PPR Cempaka, PPR Seri Pantai, PPR Kerinchi, and others. In this study, the participants must be 18 years old and above, care for their own or foster children, and actively participate in the business as full-time or part-time entrepreneurs. Table 2 summarises the demographic profile of the study. According to Table 2, researchers have focused on five demographic aspects. The age aspect shows that most respondents were equal to or more than 35 years old. Most of this study's respondents were Malays, followed by Indians. In addition, in terms of educational level, secondary school level or *Sijil Pelajaran Malaysia* (SPM) has been recorded as the most significant number, more than half of the study respondents. In addition, most respondents have 3 to 4 children. This study also found that most of the respondents were full-time entrepreneurs. The instrument items were adapted from studies by Jusoh and Abd Talib (2018) and Moko et al. (2022), as well as credit score criteria used by banks. In this research, the researchers used the analysis method of Structural Equation Modelling (SEM). Table 3 summarizes the instrument items used.

Table 2: Demographic Profile of the Respondent

No.	Profile	Frequency (n)	Percentage (%)
1	Age		
	18 -24 years	57	28.5
	25-29 years	41	20.5
	30-34 years	2	1
	≥35 years	100	50
2	Races		
	Malay	167	83.5
	Chinese	0	0
	Indian	33	16.5
	Others	0	0
3	Highest Educational Level		
	Primary School	5	2.5
	Secondary School	182	91
	Undergraduate	13	6.5
	Postgraduate	0	0
4	Number of Children		
	1-2	14	7
	3-4	119	59.5
	More than 4	67	33.5
5	Business Orientation		
	Full-Time Entrepreneur	113	56.5
	Part-Time Entrepreneur	87	43.5

Table 3: Variable Items

Variables	Items
Poor Financial Management Skills	FM1: I do not draft a business plan FM2: I do not prepare an income statement FM3: I do not prepare financial statements FM4: I do not use a ledger or balance sheet FM5: I do not use financial tools or worksheets to make decisions
Weak Planning, Budgeting, and Control	PBC1: I do not have financial goals to achieve within a year or PBC2: in my business PBC3: I do not prepare a budget for my income and expenses PBC4: I do not compare financial goals with my performance
Limited Savings	S1: I do not have any specific plans to save S2: I do not make any savings S3:I do not save a fixed amount
Low Bankability	B1: I do not have insurance coverage such as Takaful insurance and others. B2: I do not have a secured loan with the bank (e.g., home loans, car loans, and others. B3: I do not have unsecured loans (e.g., personal loans, credit cards, and others). B4: I have always been late in paying my loans. B5: My debt ratio is high (i.e., income is less than debt). B6: I do not persistently pay my business bills (e.g., phone or Internet).

4. Findings

Semi-Structure Interviews

The semi-structured interviews first revealed low financial management capability among B40 mumpreneurs. Most do not know about the ledger, balance sheet function, or income statements. They are also unaware of expenses and do not distinguish between personal and business expenses. This makes it difficult for them to accurately check, control, and evaluate the business performance. By recording all transactions accurately and promptly, entrepreneurs will be able to understand the financial health of the business better. However, most informants do not issue a receipt every time a transaction takes place and feel uncomfortable issuing a receipt because it makes things more complicated for them. Thus, the transactions are not recorded, which affects their awareness of the inflow and outflow of money in their business. The interviews also revealed that most informants do not use the proper systems and tools to manage their business finances. Among the verbatim quotes are the following:

"I did not issue any sales receipts. Just accept the order, and the customer pays. I handed over the order to the customer. I just estimated I would receive five orders monthly, and the sales estimate is RM500 per month" (A1).

"Alaa... a small business like mine does not need complicated records. I have a ledger book. There is no need to count money in and out. My business only receives a small monthly profit" (B4).

"I do this business only using my personal bank account. I am too lazy to create a business account. Sometimes, they are desperate because of the narrowness of life. Indeed, I use my business money for personal purposes" (C2).

Most informants also express concern about the inability to determine the selling price per unit. More than 20 mumpreneurs are worried about the risk to their business with the rising and unstable price of raw materials. This worsens when the economic situation worsens or the festive season approaches. Informants do not include additional costs when estimating their selling price. These costs may include utility bills, marketing/advertising, transportation, employee salaries, business licensing, and permit fees. If they do not calculate all these costs, they may not be able to determine the appropriate selling price and make the desired profit. They also may end up setting an uncompetitive selling price.

To assess the informants' financial experience, they agreed they gained financial management experience through the experience of running a business. Not all informants have any academic qualifications in the field of business that can help provide expertise in financial management. This explains that mumpreneurs get

financial management competencies through their own experience without involving any academic qualifications. Moreover, 10 out of 23 informants have attended business/entrepreneurship courses to learn how to properly and systematically manage finances. However, the application of knowledge is minimal without any monitoring or guidance from mentors or training providers. Among the verbatim quotes are the following:

"I have gone through financial management training before. They teach how to record outgoing and incoming money. I did, but only for a moment. After that, I was not consistent. A small business like mine does not even have enough capital. Difficult taking care of finances. I was forced to use business money for family emergencies" (C1).

"I have never attended any financial management training. Most are expensive, and I fear the formality because I am illiterate. I only learn by experience. I asked my children to do it if I wanted to make a QR code payment. Even simple accounting is not my forte" (A7).

Some informants also expressed their frustration with the current financial training and campaign. Among the verbatim quotes is the following:

"I suggest that training organizers or authorities come to our flat to hold a financial literacy campaign. This is not only for traders but also for the people in PPR. I am worried that young people are not good at managing their finances. Every month, the salary ends like that. Do not do campaigns in shopping malls. We have no vehicles and enough money to attend" (B2).

All informants also admitted that the business audit was not performed and that they did not intend to hire audit auditors or officers. Moreover, only some intend to register their businesses because they are afraid of preparing annual business statements and reports. The registration also potentially causes them to pay taxes and lose some privileges to receive assistance for the B40 group. The interview data also revealed that the informants' poor credit scores led to lower bankability. Only two informants have received business loans; the rest are not eligible due to poor payment history, monthly late payments, involvement in a legal case, and high debt ratios. Making payments on time reflects the credibility of a prudent payer.

The main challenges for small businesses are the need for more capital and the difficulty obtaining financing or loans from outside parties. The lack of financial resources to finance the business is a threat to expand the business. There are several factors why banks are less interested in funding small businesses. Most small B40 entrepreneurs do not have substantial collateral, low rates of return, no business records, or questionable financial status, and the majority do not have an organized management system. Poor financial management is the highest challenge faced by B40 entrepreneurs. This challenge also makes it difficult for entrepreneurial agencies to provide additional capital assistance.

Finally, all informants have admitted that they do not have any emergency savings, insurance, or investments. Among the verbatim quotes are the following:

"I am not eligible to receive bank loan assistance because I have been blacklisted for non-payment of loans. I am also a guarantor for my husband's car, which has been towed for a year for non-payment. So, for business, I use a lot of personal savings and borrow from friends" (B3).

"How many times have I wanted to take out a business loan but was rejected by the bank due to the large debt? Therefore, I only expect financial assistance from agencies such as Zakat and Amanah Iktihar Malaysia (AIM). Even business money rarely produces profit. There is only enough to eat every month. I have been doing this for almost five years. Nothing changes and improves" (A7).

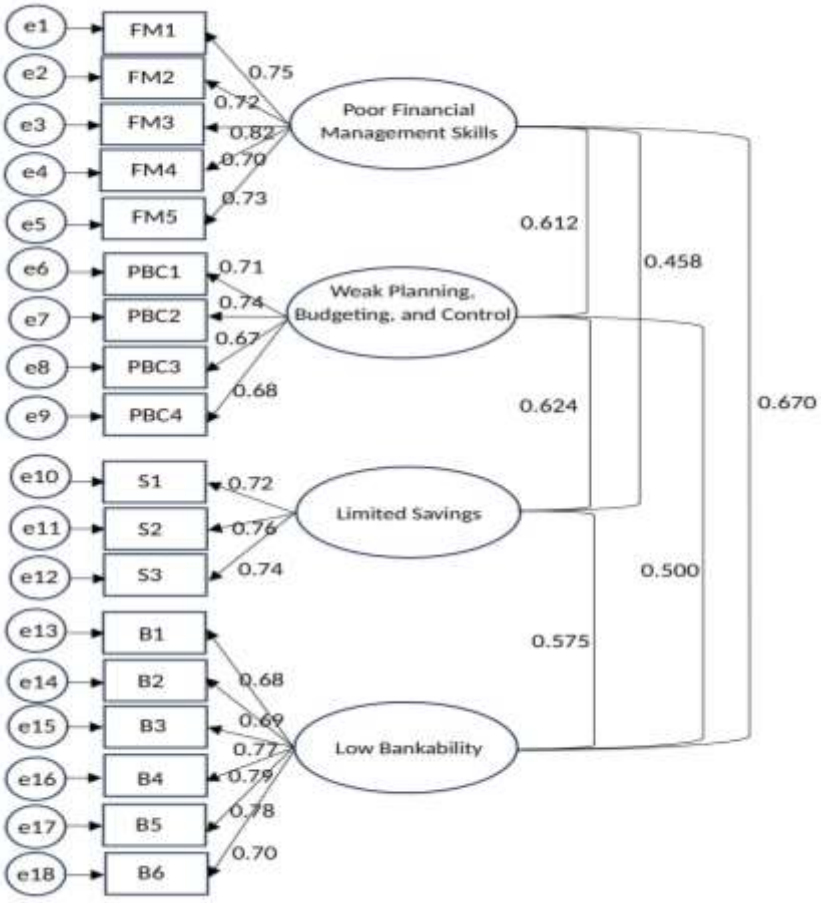
Non-eligibility for business loans occurs due to non-payment of personal loans. Lately, we can see how our society has been very eager to go into debt to get what it needs and wishes for. Being in debt to half the people has become a culture that is considered healthy, especially in showing luxury and boasting about the property and goods they have.

Survey Findings

Confirmatory Factor Analysis (CFA)

According to Hoque et al. (2017), construct validity shows how much a statement in the item used can measure the construction the researcher wants to measure. Construct validity is achieved when all the fitness indexes of the construction meet the specified level. To determine the fitness model, the value for Comparative Fit Index (CFI), Goodness Fit Index (GFI), and Tucker Lewis Index (TLI) is expected to be ≥ 0.90. The size of the expected Root Mean Square Error of Approximation (RMSEA) value ≤ 0.08. The value of chi-square ($\chi 2/df$) ≤3 It is considered acceptable (Hair et al., 2011). For this study, various indicators of the confirmatory model were acceptable ($\chi 2/df = 2.115$, $p < 0.001$, GFI = 0.940, TLI = 0.930, CFI =0.960, and RMSEA = 0.058). Figure 2 shows the CFA model.

Figure 2: CFA Model



Convergent and Discriminant Validity

To identify the convergent validity, the researchers need to ensure that the Composite Reliability (CR) value is ≥ 0.6 and the Average of Variance Extracted (AVE) values are ≥ 0.05 (Hair et al., 2011). Table 3 describes Factor Loading, AVE, CR, and Cronbach's alpha for the study variables. Based on Table 4, the factor loading for each study item was more than 0.60, and AVE, CR, and Cronbach's Alpha values were within the acceptable range (Hair et al., 2011).

Table 4: Factor Loading, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach Alpha's

Variable	Items	Item Loadings	AVE (≥ 0.50)	CR (≥ 0.60)	α (≥ 0.70)
Poor Financial Management Skills	FM1	0.75	0.620	0.860	0.788
	FM2	0.72			
	FM3	0.71			
	FM4	0.70			
	FM5	0.73			
Weak Planning, Budgeting, and Control	PBC1	0.71	0.689	0.808	0.880
	PBC2	0.74			
	PBC3	0.67			
	PBC4	0.68			
Limited Savings	S1	0.72	0.745	0.825	0.850
	S2	0.76			
	S3	0.74			
Low Bankability	B1	0.68	0.707	0.830	0.876
	B2	0.69			
	B3	0.77			
	B4	0.79			
	B5	0.78			
	B6	0.70			

Discriminant validity explains the extent to which a construct does not have a strong relationship with another construct in the same model. According to Hoque et al. (2017), discriminant validity for a construct can be achieved if all diagonal values of the matrix are more significant than other values in row and column cells. The diagonal value of the matrix is the square root of the average variance extracted (AVE). In contrast, the values in the metric are the correlations between the constructions in the model. From Table 5, the discriminant validity is achieved.

Table 5: Discrimination Validity

No.		1	2	3	4
1	Poor Financial Management Skills	**0.787**			
2	Weak Planning, Budgeting, and Control	0.612	**0.830**		
3	Limited Savings	0.458	0.624	**0.863**	
4	Low Bankability	0.670	0.500	0.575	**0.840**

Note: Values in the diagonal show the square root of AVE

Structural Model Analyses

As shown in Table 6, it was discovered that poor financial management (β =0.427, p<0.001), weak planning, budgeting, and control (β =0.309, p<0.001), and limited savings (β =0.189, p<0.001) have a significant association with low bankability of B40 mumpreneurs.

Table 6: Results of Structural Analysis

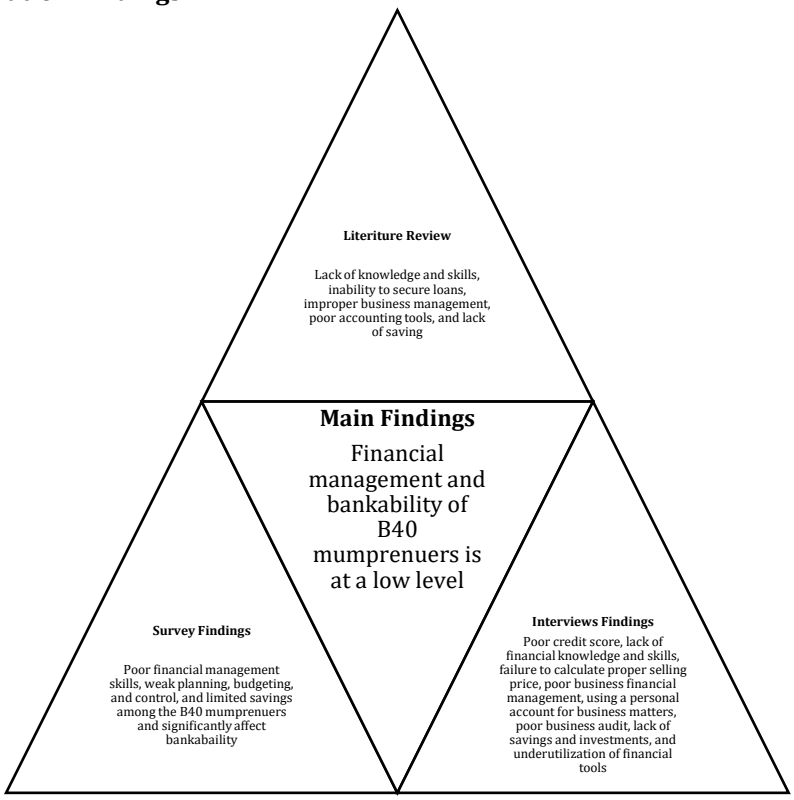
Path	β	S.E.	p
Poor Financial Management Skills → Low Bankability	0.427	0.061	***
Weak Planning, Budgeting, and Control → Low Bankability	0.309	0.059	***
Limited Savings → Low Bankability	0.189	0.041	***

Discussion

The interview results first discovered that financial management is at a low level, with several issues having been identified. These include poor credit score, lack of financial knowledge and skills, failure to calculate proper selling price, poor business financial management, using a personal account for business matters, poor business audit, lack of savings and investments, and underutilization of financial tools. The survey showed a

significant relationship between poor financial management and low bankability levels, supporting the identified significant issues. A lack of knowledge about financial management can cause a person not to give priority to saving activities. Figure 3 portrays the outcome of the study.

Figure 3: Triangulation Findings



To overcome this problem, it is essential to start by improving the knowledge of financial management, making a budget, setting realistic savings goals, and ensuring that every expenditure follows the financial budget that has been set. The quality of financial management education is one of the aspects that should be given attention. The quality of education is essential, and it is the responsibility of all parties. Quality education will produce educated and qualified entrepreneurs (Noor & Omar, 2024c). To identify the quality of financial management education, the training providers can apply the service quality (SERVQUAL) dimension. A Training Needs Analysis (TNA) needs to be conducted to ensure the effectiveness of financial literacy training (Noor & Omar, 2024c). It is a systematic examination process to reveal disparities between current proficiency levels and the skills/ knowledge required. The purpose is to facilitate identifying and prioritizing training requirements that align with overall objectives. The content of the training may include 1) learning how to distinguish needs from wants, 2) knowing how savings, 3) the skill of developing an action plan, 4) earning money covers various topics around livelihood, employment, and entrepreneurship, 5) exploring options of investing money, and 6) understanding cost of borrowing. In financial education, it is not enough to know; it is necessary to gradually learn to improve skills that can be used in practice and to use the acquired knowledge to change one's attitudes and behaviors.

Early primary, secondary, and tertiary education must also be inculcated because this young generation will become prospective entrepreneurs as well as a preventive approach rather than a cure approach. Currently, no specific subjects on entrepreneurship and finance are taught in secondary schools in Malaysia, resulting in young people not being exposed to aspects of managing their finances effectively. A unique curriculum or subject on entrepreneurship and finance needs to be introduced at the secondary school level. One unique aspect of the proposed Finnish strategy is an emphasis on preventing people from getting into difficult financial circumstances in the first place rather than just meeting everyone wherever they are in their financial journey (Finland's Bank, 2021). One of the indicators is that at least 80% can define inflation (knowledge); at least half

make a monthly budget for their finances and get pleasure from spending money at once (attitudes), evidencing their emphasis not only on knowledge but also on behavior and attitudes. Financial education officially became part of the secondary school curriculum in England in 2014. However, it was included in the Personal, Social, and Health Education requirements and is not a core, compulsory subject (Stillwell, 2016). Financial literacy and business management must focus on real-world case studies and applications instead of a theoretical basis. Most higher learning institutions have entrepreneurship courses as a mandatory subject, yet implementing business scenarios is only for a short period. In Australia, the government has invited banks to formulate and support the development of courses, and financial literacy has been integrated into various courses, not only in one separate course or one-off subject. Moreover, Finland has a nationwide mandatory financial literacy curriculum requires all ninth graders to participate in economic education, combining personal finance and macroeconomics (Kalmi & Russkanen, 2018).

More awareness campaigns and training must be implemented to penetrate the B40 community. This is crucial because some informants have revealed they are unable to join external campaigns or training due to difficulties such as no transportation, limited travel costs, and inability to leave their children or disabled family members. The government and relevant agencies such as the Financial Education Network (FEN), Bank Negara, Credit Counselling and Debt Management Agency, and nonprofit organizations (NGOs) have implemented various programs and strategies; however, these could be improved using a community-based approach. It would be better to conduct the training in local communities, such as areas in the People Housing Program (PPR) or villages. We need to pay attention to the low-income group or B40 who need an affordable protection plan and awareness to help them make the best choice for their future and their families. We must raise awareness and literacy among B40 and offer products commensurate with them (e.g., grants or free financial auditing services to mumpreneurs). The strategies that can be employed involve spreading the word through social media and reaching out to the community directly through a series of tours throughout Malaysia. The responsible bodies must always go to B40 or rural areas and give information about financial literacy. Another strategy is to create an adoption community (*komuniti angkat*) where the industry or higher learning institutions monitor the residents as a part of their community service and knowledge transfer. Innovative cooperation between industry partners and higher learning institutions can help improve financial well-being (Mohd Noor et al., 2023). Credit Counselling and Management Agency, Bank Negara Malaysia, and other agencies could hold motivational and counselling sessions through outreach programs.

The process of financial planning and managing personal finances is not easy. This process requires careful planning and consistent execution (Rachidi & El Mohajir, 2021). If entrepreneurs find it challenging to implement this process, they can use the services of a financial advisor or financial planner. The presence of apps for business financial management plays a vital role in managing finances more efficiently and quickly. With this app, mumprenuers can keep track of their daily expenses, organize a budget, and receive reminders when they are about to exceed a set budget limit. With the proper application, they can make more accurate decisions based on available financial data (Barbosa et al., 2020). Among the available apps are My Tabung oleh Bank Negara Malaysia, Touchstyle oleh Bank Rakyat, Monefy-Money Manager, Money Manager, and iSaveMoney. Knowing the business's cash inflows and outflows is essential to tracking the business's performance. Digital tools can help to evaluate expenses and budgets and to invest money wisely (Kappal & Rastogi, 2020; Łasak, 2022). Many financial tools offer bar graphs and charts to interpret complex data, making information easy to understand. The training workshops and campaign should also spread simplified information on using these tools (e.g., brochures, pamphlets, TikTok, and YouTube videos).

Mumpreneurs are encouraged to create a financial management formula and adopt the financial tools, record expenses, start building savings, and diversify bank accounts (e.g., emergency savings, personal account, and business accounts), wise in differentiating needs vs wants, pay off the debts, learn how to refinance or consolidate debt, keep the credit score healthy, consider investing, and seek advice and coaching from the expertise (Noor et al., 2024a; Tuffour et al., 2022). They need emergency savings, which refers to the money they can save from profits. Entrepreneurs must keep 50% of their profits as emergency savings (Burns, 2022). An example that has happened in our country is the COVID-19 pandemic and natural disasters that hinder the economy and the purchasing power of our society, which directly and indirectly impact the finances. The business risk is considerable if entrepreneurs do not have enough emergency savings. They must save money

for 3 - 6 months of monthly operating costs. They are advised to open a savings account specifically for emergency savings. This can make it easier to identify emergency savings and avoid unnecessary expenses.

Usually, when there is a situation where the price of raw materials fluctuates, entrepreneurs are afraid to raise prices because they are worried that customers will run away to buy from competitors. When this happens, the risk of the business being closed is higher because the business is absorbing the additional costs. The way to increase the selling price is when the price of raw materials changes. Entrepreneurs can also use a value-for-money strategy, where pricing a product is based on how much the customer believes it is worth. Another strategy is maintaining a lower price by reducing production, marketing, and advertising costs.

5. Conclusion

The study concluded that most B40 mumprenuers must be more assertive in managing business finance. In modern society, the financial system plays a vital role in enabling various transactions to meet our wants and needs as human beings. Understanding financial affairs is essential for a person to carry out business responsibilities. This does not mean that the entrepreneur must be an accountant or even an economist but must have the knowledge and skills to understand the impact of the decisions and actions. The financial management of any business requires high discipline and cannot be influenced by external elements with different interests. Therefore, various parties need to play their respective roles to help bring awareness to the community about good financial management. This concept of financial literacy needs to be applied in the education system through the subjects of Economics, Mathematics, or new subjects such as Finance taught at school. Current technological developments also need to be used as best as possible by increasing public access to information, financial tools, and resources related to financial management. Therefore, efforts to create a financially literate society need to be strengthened. When there are many financially literate individuals, the income gap can be reduced, and all Malaysians can feel the country's progress.

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Unveiling the Landscape of Sustainability and Earnings Management: A Bibliometric Analysis of Scholarly Research

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Abstract: Sustainability practices and reporting provide the necessary information regarding firms' initiatives to balance their ethical and moral behavior in conducting business to align with stakeholders' requirements, and the existence of earnings management could threaten the objectives. These two intertwined concepts need to be understood thoroughly. Notwithstanding the plethora of studies examining the intersection of sustainability and EM, a notable gap exists in exploring research frontiers and the resourcefulness derived from past publications in this domain. Thus, the study aims to perform a bibliometric analysis of documents within this domain and fill the gap that specifically reflects in exploring the research frontiers and resourcefulness from past studies of sustainability and EM. The study conducted a bibliometric analysis of the 282 documents on the Scopus database for the period of 2005 to 2022 for sustainability and EM topics. Advanced tools such as Microsoft Excel to analyze the data, VosViewer, Wordshift, Harzing Publish and Perish for visualization and metric analysis have been used. The results reveal an increasing trend in scholarly interest in this topic. It also elucidates the evolution of language, influential authors, institutions, countries (with the top 3 countries being South Korea, China, and Indonesia), and keyword clusters. The analysis conveys insightful information for future researchers exploring the dynamic landscape of this topic. In conclusion, the study of sustainability and EM is experiencing a growing trajectory from researchers. It is recommended that future studies consider other keywords and use another database.

Keywords: *Bibliometric analysis, sustainability, CSR, ESG, earnings management*

1. Introduction

Sustainability practices encompass the deliberate disclosure undertaken by organizations, wherein they publicly communicate their performance in environmental, social, and governance (ESG) domains, corporate social responsibility (CSR), or any conscientious and socially responsible initiatives integrated into their business operations. Sustainability practices reflect the firm's initiative to ethically and morally conduct the business while taking care of the various stakeholders' considerations. Implementing sustainability practices entails strategic endeavors to mitigate environmental impact, foster stakeholder relationships, and refine corporate governance methodologies. The overarching goal of sustainability practices is to provide transparency and accountability in organizations' actions, enabling investors, customers, and other stakeholders to make well-informed decisions regarding their support and engagement in business endeavors. The ascendancy of sustainability is not a recent occurrence in the fields of research, academia, and business. Sustainability is delineated as a type of development that involves meeting the immediate needs of the current generation while protecting future generations' needs (1987) has emerged as a pivotal global priority.

Concurrently, many studies have been performed on sustainability to elucidate an in-depth understanding of sustainability practices. Some investigations delve into the relationship between sustainability and firm performance (Bofinger et al., 2022; Gregory, 2022; Wong et al., 2021), while others inquire into the inherent competitive advantages of sustainability (Mohammad & Wasiuzzaman, 2021), with certain research concentrating on identifying the factors that influence sustainability practices (Hasan et al., 2022; Kuzey & Uyar, 2017). It is undeniable that adopting sustainability practices yields manifold benefits to firms, as demonstrated by previous scholarly investigations. Nevertheless, implementing sustainability, coupled with significant costs, has sparked concerns regarding the potential entanglement with EM practices within sustainable firms. Scholars posit that certain firms engaging in sustainability practices may manipulate their earnings to offset the substantial costs associated with sustainability. This deliberate adjustment of earnings is

seen as a means for these firms to secure their self-interest and provide a veneer for potentially opportunistic behavior (Ehsan et al., 2020; Nguyen, 2022).

Notwithstanding the plethora of studies examining the intersection of sustainability and EM, a notable gap exists in exploring research frontiers and the resourcefulness derived from past publications in this domain. Consequently, this study is driven by the motivation to undertake a bibliometric analysis of documents that specifically address the dimensions of sustainability and EM, framing its investigation through the lens of seven distinct research questions as follows:
RQ1: What is the current landscape of publications concerning sustainability and EM?
RQ2: Which languages are prominently used, and what are the prevalent categories of subjects in studies about sustainability and EM?
RQ3: What is the most active source title contributing to the sustainability and EM field?
RQ4: What are the frequently used keywords and their evolution and clustering themes in sustainability and EM research?
RQ5: Which countries and institutions published the highest level of publication output in sustainability and EM?
RQ6: Who are the prolific authors and what is the impact on the research domain?

To adequately answer the research questions, the study employed analysis within the Scopus database to delineate the comprehensive wealth of scholarly information, except for data for 2023.

Upon completion of the study, three significant contributions to the body of knowledge are expected to be conveyed. Primarily, bibliometric analysis helps researchers identify the future directions of sustainability and EM and the research gaps that researchers can later exploit. Future scholars may regard this study as a foundation for expanding their comprehension and awareness of the development and manifestation of sustainability and EM. Next, VOSviewer provides text mining capabilities that are useful in creating and presenting co-occurrence networks comprising crucial terminologies extracted from a collection of scholarly works, thus enabling assistance for future research in looking at the keywords being used. It will be of great relevance to researchers to enlighten them and uncover more issues regarding the study of sustainability and EM that is still underutilized. Finally, the use of Harzing Publish or Perish software facilitates the evaluation of the impact of research on sustainability, and EM could impart noteworthy information for future research. Hence, synthesizing the evolution of sustainability-EM research with the key authors, co-occurrence, and even the results of the most productive countries can contribute to assisting future scholars with a comprehensive roadmap for future empirical studies.

The remainder of the paper is structured as follows. The following section discusses relevant previous studies related to sustainability and earnings management (EM). Next, an explanation of the bibliometric analysis methodology follows. Then, later sections will present and discuss the results from the analysis and discussion, followed by the study's conclusion and limitations.

2. Literature Review

The significance of sustainability has escalated, as it serves as a pivotal factor in striking a balance between the progress of advancing nations and safeguarding the interests of diverse stakeholders, thereby establishing a middle ground. It encompasses a comprehensive outlook regarding the harmonization of diverse stakeholders' respective needs and wants, grounded in the interconnectivity of people, plants, and profit (Adams & Abhayawansa, 2022). The introduction of sustainability in the Brundtland Report has led to the birth of broad definitions of sustainability, such as CSR, ESG, corporate sustainability, sustainability practices, and sustainability development (Brundtland, 1987). As suggested by Martínez-Ferrero et al. (2016)Sustainability involves businesses engaging in transactions while considering environmental, social, and economic factors, with the primary goal being to protect a company's assets and the interests of society. Accordingly, Imoniana et al. (2018) Define sustainability as the practice of appropriately handling business transactions with due diligence to economic, environmental, and social aspects to meet the objective of safeguarding assets and promoting the interests of society as a whole.

According to Bae et al. (2020)Management must invest in sustainability to maintain a good corporate image. Nevertheless, at the same time, management is prone to pursue its self-interest. A company's sustainability plays a crucial role in gaining support from stakeholders, while adopting EM can harm a company's long-term sustainability as it focuses on short-term tactics (Ehsan et al., 2021). Extensive academic research indicates that EM negatively impacts shareholders and has serious consequences for other stakeholders, as demonstrated by the Enron, WorldCom and Lehman Brothers scandals. This unethical behavior led to significant losses, including employee terminations, losses in employee pension funds, and reduced tax revenue (Hickman et al., 2021; Muliati et al., 2021). Sustainability practice that focuses on delivering value to a wide range of stakeholders has been applauded for its above-average benefit. It delivers both financial and non-financial data that are valuable to the stakeholders.

On the contrary, EM practices that deliberately disseminate inaccurate information about a company's economic performance to users of financial reports have hampered the goal of the sustainability principle. These opposing viewpoints have resulted in investigations of whether ethical companies engage in EM. Supporters of socially responsible firms argue that companies that value financial transparency and reliability will refrain from altering their accounting figures (Ehsan et al., 2021). In contrast, the opposing perspective suggests that companies prioritizing sustainability are more likely to manipulate their income to gain a competitive advantage with external investors and stakeholders (Dimitropoulos, 2020).

While there has been extensive research on sustainability and EM separately, the relationship between these two areas has been largely overlooked, leaving the notion that sustainability and EM are interconnected, as both are included in the stakeholder communication strategy (Kumar et al., 2023).

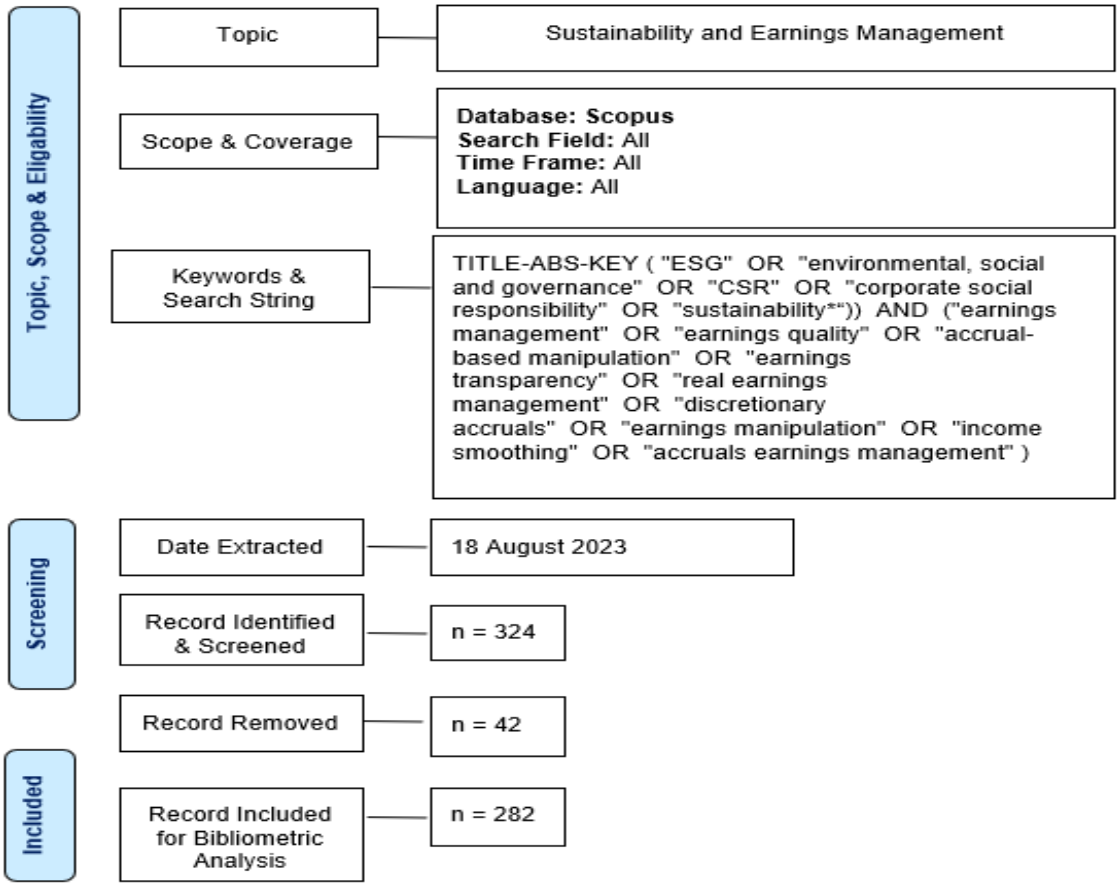
3. Method, Data and Analysis

Bibliometric analysis is a statistical examination of written publications, including books, articles, conference proceedings, and book reviews. This method employs computer-assisted techniques involving quantitative methods to analyze patterns of publication, citation, and usage. (Donthu et al., 2021; Lim & Kumar, 2023). Its purpose is to identify key research contributions and authors, trends, and analysis, as well as their interconnections, and provide valuable insights into the field of study. The bibliometric analysis has been getting attention recently due to its ability to uncover research trends in particular areas of interest and reveal detailed information (Ahmi & Mohd Nasir, 2019).

Accordingly, the present study employed bibliometric analysis using VOSViewer (vosviewer.com), Wordsift, and Harzing's Publish or Perish to answer the research questions. VOSViewer is a freely available software that can construct and visualize the relationship networks for the given search consisting of two standardized weights: the size and total strength of the links (Anuar et al., 2022). The links' significance and strength are determined by the nodes' size and the thickness of the lines intertwined between these two aspects (Donthu et al., 2021). The outcome from the analysis in VOSViewer presents interesting and meaningful information, for example, regarding the theme, the connectivity between institutions, authors, countries, and the evolution in the research field examined. Meanwhile, Harzing Publish or Perish software is a program that can analyze academic citations and assist in imparting useful information regarding research impact by a particular research field.

This study imports the necessary data from the Scopus database for bibliometric analysis. The Scopus database has been chosen for this study because of its extensive academic collections, with approximately 1,714 titles nowadays. (Anuar et al., 2022). A series of keywords for searching the relevant documents in conducting this bibliometric analysis was identified using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) as adopted from (2009) With the keyword search string (TITLE-ABS-KEY ("ESG" OR "environmental, social and governance" OR "CSR" OR "corporate social responsibility" OR "sustainability*" AND "earnings management" OR "earnings quality" OR "accrual-based manipulation" OR "earnings transparency" OR "real earnings management" OR "discretionary accruals" OR "earnings manipulation" OR "income smoothing" OR "accruals earnings management") after extant literature reviews has been conducted as per depicted in Figure 1.

Figure 1: PRISMA flow diagram for the search strategy



Source: Moher et al. (2009)

The data extracted from the Scopus database gathered 324 documents from the August 18, 2023, search. The filtration process consists of exclusion made to 2023, as 2023 has not yet ended during the analysis, and the study did not fulfill the concept of sustainability and EM. Finally, 282 documents were generated after removing 42 unrelated documents. Tools such as Microsoft Excel, Harzing Publish and Perish, and VOSViewer were employed to analyze the data extracted further.

4. Results and Discussion

The current landscape of publications

To answer the first research question one (RQ1: What is the current landscape of publications concerning sustainability and EM?), the study analyzed the evolution of published studies according to the year that represents the trends in sustainability and EM studies.

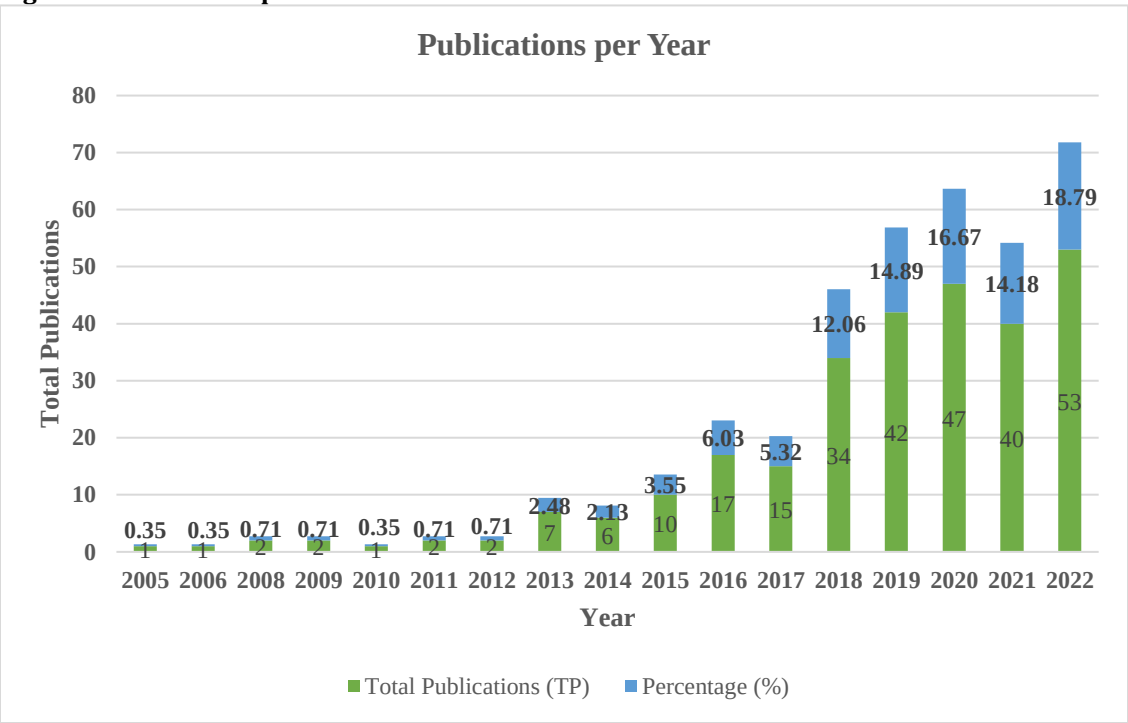
Publication per year

Figure 2 shows the total number of publications of 282 documents throughout the past two decades. Accordingly, during the initial years of observation from 2005 to 2010, there was a small relative number of publications, with one or two publications per year. A possible reason could be the infancy of research in this field, with limited resources available and less attention given by researchers. Nevertheless, there was a noteworthy increment in publications from 2011 to 2016, with a noteworthy increase in 2017 (7 publications) and 2016 (17 publications). However, the small number of publications has considerably increased over the past ten decades (2013-2022). Between 2017 and 2022, constant growth has been evident, categorized by a

remarkable upsurge in 2020 (47 publications) and 2022 (53 publications), representing 16.67% and 18.79% of total publications, respectively. The upward trends may explain growing concerns from researchers on this topic, supported by the availability of funding due to the increased attention given.

Besides that, there have also been large corporate scandals involving the engagement of fraud and earnings management that have shocked global businesses. Many initiatives have been adopted by (inter)national regulatory bodies to mitigate the adverse impact of EM, which has sparked concerns in the academic field. Moreover, the introduction of Sustainable Development Goals by the United Nations (2015) Has stamped a significant additional landscape to the research field in sustainability and EM at large. Thus, it has contributed to the significant momentum gained in this field of study, in which the emergence of new research groups and collaboration has contributed to the steady increase in publications.

Figure 2: Publication per Year



Document types and source types

This study later observed the document types by distinguishing the published research into its publication category encompassing articles, book chapters, reviews, conference papers, conference reviews, books, and other related documents. This study identified nine document types related to sustainability and EM, as summarized in Table 1. The total publications show that most research is published as articles, accounting for 88.3% of the total, with a total publication of 249 out of 282 documents. The document types are followed by single-digit percent published as book chapters of 4.26%, review and conference papers of 2.84% individually, and the remaining document types account for less than 3% of total publications.

Additionally, Table 2 illustrates that these documents are disseminated to four distinct source types: journal, book series, conference proceeding, and book. The study found that most documents published in journals comprised 91.84% of total publications, with the other three source types, namely, book series, conference proceedings, and book sharing, remaining at 8.16%. The results suggest that researchers mostly preferred journals because they serve as a platform for researchers to reach and share their findings with a wider audience, thus rendering the availability of an increase in impact factor for such research and authors due to an increase in citations. In addition, given the fact that publication in journals often involves critical peer review from experts in the fields, it helps to maintain the quality of the publication. Publications in high-impact factor journals render the quality of the research conducted and increase the recognition from the audience.

Table 1: Document Type

Document Type	Frequency	% (N=282)
Article	249	88.30
Book Chapters	12	4.26
Reviews	8	2.84
Conference Paper	7	2.48
Conference Review	2	0.71
Book	1	0.35
Data Paper	1	0.35
Editorial	1	0.35
Erratum	1	0.35
Total	**282**	**100.00**

Table 2: Source type

Source Type	Frequency	% (N=282)
Journal	259	91.84
Book Series	8	2.84
Conference Proceeding	8	2.84
Book	7	2.48
Total	**282**	**100.00**

Prominent languages of publications and prevalent subject area

The study further analyzes the language used by researchers in their research publication to answer part of research question two (RQ2: What are the languages mostly used and the prevalent categories of subjects in studies of sustainability and EM?).

Prominent languages of publications

Data in Table 3 shows that English dominates most languages used for publications relating to research in sustainability and EM at 98.23% of total languages used compared to other languages such as Korean, 1.06%, Arabic, and Spanish, each with 0.35%. The preliminary explanation could be that English serves as the universal language for academic communication on a global scale, thus making it easy to understand and disseminate within the field.

Table 3: Language of documents

Language	Frequency	% (N=282)
English	277	98.23
Korean	3	1.06
Arabic	1	0.35
Spanish	1	0.35
Total	**282**	**100.00**

Prevalent subject area

Moreover, to address RQ2, the subject area involved in sustainability and EM has been observed. Table 4 supports that the subject area of business, management, and accounting, with 190 publications (67.38%), has dominated the publications, followed by economics, econometrics, and finance, with 128 (45.39) publications. Besides that, other notable subject areas contributing to sustainability and EM research included social sciences (32.62%), environmental science (22.34%), and energy (16.67%) and computer science (7.09%); arts and humanities (4.96%); engineering (4.61%); decision science (3.90%) and earth and planetary sciences (1.06%).

A plausible reason for the stated result could be that sustainability is a worldwide focus in which most businesses move towards the agenda that involves accounting and business management, and association with EM can be seen as hampering the business and management's future sustainability (Kim et al., 2019). Therefore, sustainability and EM studies regularly involve business, management, and accounting.

Table 4: Prevalent subject area

Subject Area	Total Publication	% (N=282)
Business, Management and Accounting	190	67.38
Economics, Econometrics and Finance	128	45.39
Social Sciences	92	32.62
Environmental Science	63	22.34
Energy	47	16.67
Computer Science	20	7.09
Arts and Humanities	14	4.96
Engineering	13	4.61
Decision Sciences	11	3.90
Earth and Planetary Sciences	3	1.06
Medicine	3	1.06
Multidisciplinary	2	0.71
Psychology	2	0.71
Chemical Engineering	1	0.35
Mathematics	1	0.35
Total	**282**	**100.00**

Most active source title

This study is expected to identify the most active source title contributing to sustainability and EM studies to answer RQ3. According to the analysis result in Table 5, the most active source title, most of the published research within the sustainability and EM theme has been published under Sustainability, with 12.77% of total publications. However, it is remarkable that the second top journal, Corporate Social Responsibility and Environmental Management, is far behind at only 3.9%. The possible reason for this outcome could be attributed to the fact that Sustainability is an open-access journal with no subscription needed for users to access it, which renders easy accessibility to a wider audience, hence increasing its potential for citation. Other contributing source titles include Business Strategy and the Environment (2.13%), Journal of Business Ethics (2.13%), and Journal of Financial Reporting and Accounting (1.77%).

Table 5: Most active source title

Source Title	Publisher	TP	(%)
Sustainability	Multidisciplinary Digital Publishing Institute (MDPI)	36	12.77
Corporate Social Responsibility and Environmental Management	Wiley-Blackwell	11	3.90
Business Strategy and the Environment	Wiley-Blackwell	6	2.13
Journal of Business Ethics	Springer Nature	6	2.13
Journal of Financial Reporting and Accounting	Emerald	5	1.77
Finance Research Letters	Elsevier	4	1.42
Managerial Auditing Journal	Emerald	4	1.42

Accounting Forum	Elsevier	3	1.06
Cogent Business and Management	Taylor & Francis	3	1.06
Corporate Governance: An International Review	Wiley-Blackwell	3	1.06

Notes: TP=total number of productions; %=percentage from total number of productions of 282.

Frequently used keywords and the clustering theme

This study also sought to answer RQ4: What are the frequently used keywords and their evolution and clustering theme in sustainability and EM research? Thus, the study evaluates the frequently used keywords and clusters the keywords with the aid of Wordsift and VosViewer software.

Frequently used keywords

Table 6 details the frequently used keywords used by researchers in conducting the study on this topic. The result illustrates that the top ten keywords, such as CSR, earnings management, earnings quality, accruals earnings management, corporate governance, real earnings management, sustainability, CSR disclosure, financial performance, and stakeholder theory, are some of the dominant keywords used in the publications. For example, the CSR keyword has occurred 146 times from the keywords used by authors.

Besides that, the result from the analysis using Wordsift identified that the evolution of keywords has been documented for the past two separate periods, as per Figure 3. During the early years, not many keywords were used compared to the recent years. Figure 3 shows that over the past ten years, the evolution in keywords used in this topic signifies that the research has been widely spread by incorporating other fields, such as ESG, carbon and transparency. However, it is noticeable that keywords like CSR and earnings management are still largely used in this research. The limited number of keywords used in the early years of research on this topic is probably because this topic is still in its infancy, and most scholars are concentrating on examining the very base and foundation of sustainability and EM topics. However, as years went by with more issues revolving around businesses, the evolution of this research topic simultaneously led to the birth of vast research themes that translated to several keywords being used.

Table 6: Top 10 keywords

Rank	Keywords	Occurrence
1	CSR	146
2	Earnings Management	122
3	Earnings Quality	42
4	Accruals Earnings Management	41
5	Corporate Governance	39
6	Real Earnings Management	34
7	Sustainability	13
8	CSR Disclosure	13
9	Financial Performance	7
10	Stakeholder Theory	7

Figure 3: Evolution of Frequently Used Keywords from Year 2005 to 2022



Clustering theme

Further, looking at the network visualization map of co-occurrence authors' keywords, the clustering theme of research in sustainability and EM have been grouped into six different clusters, as indicated in Figure 4. The map portrays the theme of research that has been conducted from the publications, which is represented by the size of the nodes and colors. Meanwhile, the thickness of the lines signifies the strength of the relationship. The clusters derived from the network occurrence show that this field of study has yielded six research themes.

Green Cluster

The green cluster is dominated by keywords such as earnings management with other co-keywords such as financial sustainability, CSR disclosure, and tax avoidance. Understanding EM is always related to financial sustainability. Firms might opt for earnings management to mask and create false hope for the stakeholders of their true financial health and stability. Thus, the keywords are always interconnected with each other. The inclusion of CSR disclosure in sustainability and EM indicates that some studies on CSR disclosure focus on the relatedness of these keywords to other keywords within the cluster, such as tax avoidance. The strategy in EM could minimize the firm's tax liability and affect its sustainability in the long term. The study of EM as a strategy for tax avoidance is especially critical to identify the effects of such practice on the firm's sustainability. The studies with these keywords are multifaceted, with the interplay among the keywords either complementing or exposing contradicting effects to firms.

Purple Cluster

Keywords such as CSR, financial performance, information asymmetry, and voluntary disclosure are grouped in the purple cluster. This group research addresses the issue within the information asymmetry that could be mitigated by including CSR as voluntary disclosure. CSR, as one of the definitions of sustainability, promotes ethical and responsible business activities and operations often tainted by the information asymmetry inherent in EM. Therefore, the information asymmetry between managers and stakeholders could be learned through the lens of voluntary disclosure of sustainability in some countries. The navigation between these keywords and earnings management underscores the critical elements of disclosing more than legally required (voluntary disclosure and CSR), which relates to financial performance and the information possessed by management that could give rise to a one-sided advantage.

Red Cluster

The red cluster identified earnings quality as the central point with other keywords, for example, ESG, IFRS, and earnings persistence, reflecting that this cluster's research theme revolves around the financial reporting standards and non-financial reporting standards, with some focus given to Korean Chaebol firms. Earnings

quality is often related to earnings informativeness through the adherence to International Reporting Standards (IFS). Thus, the quality and persistence of earnings could also relate to the ESG initiatives of firms that arguably impart a positive impact. Thus, this cluster connects the dots of the theme from the accuracy, transparency, and informativeness of financial and non-financial reports.

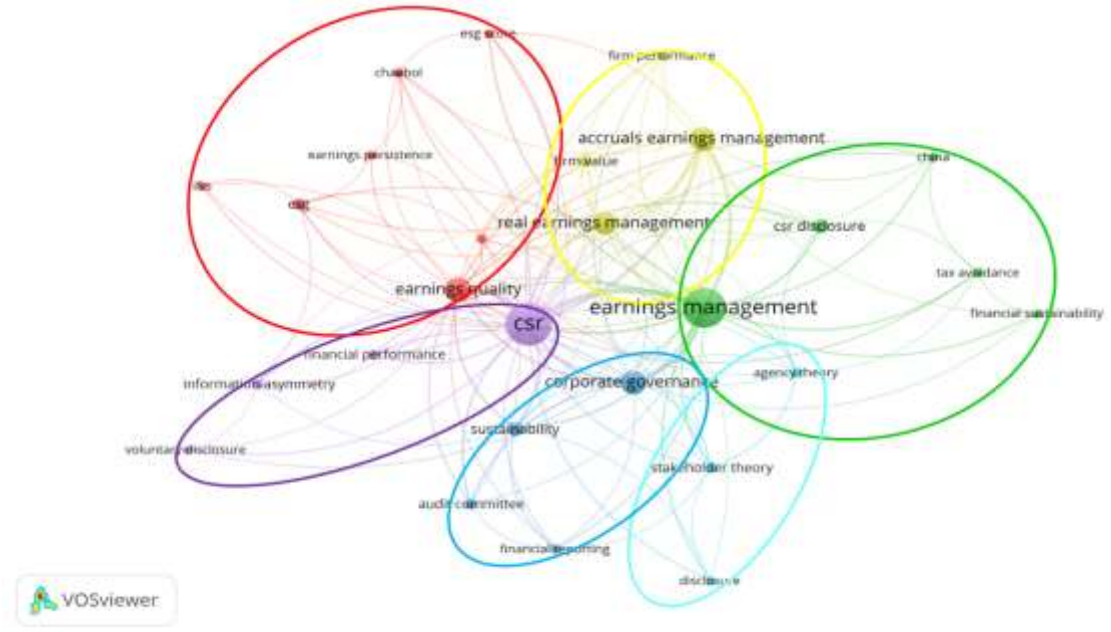
Yellow Cluster

The yellow cluster consists of accruals earnings management, real earnings management, and firm value and performance keywords, translating the research highlights in the different practices of EM and performance within sustainability and EM research. The cluster focuses on the different measurements employed by firms when exercising EM in their business practice. Different methods of EM result in different outcomes that serve the purpose of the management interest. While some firms exercise accrual earnings management, others may prefer real earnings management because auditors and regulators hardly detect this type of EM, owing to its nature of practice within the normal course of business operation. Thus, EM, in essence, will affect the firm's value and performance, whether on the positive or negative side.

Dark Blue and Turquoise Cluster

Dark blue and turquoise clusters focused on corporate governance, sustainability, audit committee, agency theory, and stakeholders' theory highlight the issue in governance and the social aspect of sustainability. Audit committees, as part and parcel of corporate governance, serve as a means of promoting sustainability by overseeing the management and governance of business activities and acting as the first responders to any EM practices. The stakeholders' theory mainly opposes the practice of EM with implicit agency cost since this theory upholds the principle of serving the broader interest of stakeholders. This cluster exhibits that studies in sustainability and EM usually involve agency and stakeholder theories because these theories have been widely used to explain the evolution and occurrence of sustainability and EM.

Figure 4: Network visualization map of co-occurrence authors keyword (Minimum Number of Occurrences = 5)



Countries and institutions with highest publication

To answer research question five, this study identified the most active countries in producing research in sustainability and EM, as well as the respective institutions that actively publish research on this topic.

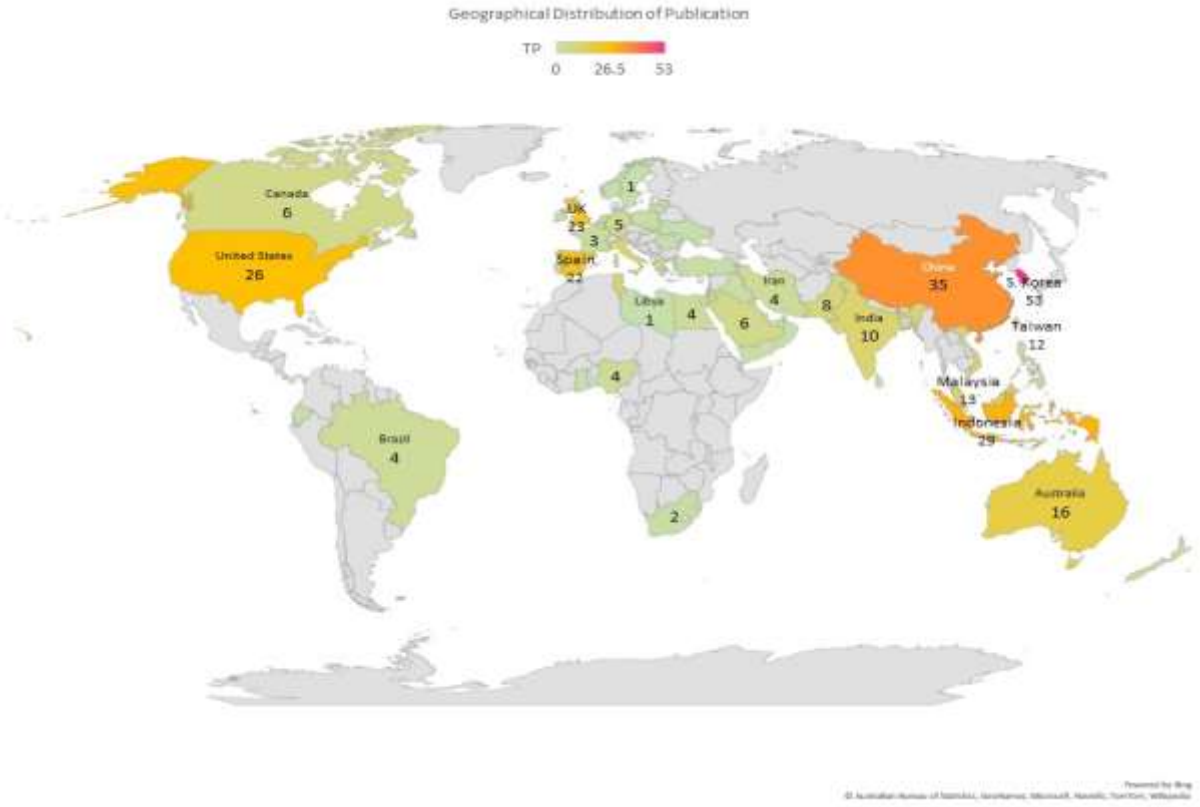
Most active countries with highest publication

As depicted in Table 7, it is identified that South Korea published 53 sustainability and EM research publications, followed by China with 35 documents. Among other top countries contributing to publication in this research topic are Indonesia (29), the United States (26), and the United Kingdom (23). It is supplemented with the world map to exhibit the total publications according to countries, as per Fig. 5. The pink color on the map represents the country with the most publications, such as South Korea. As the map shifts from a darker pink color to a lighter green, the number of publications in that country gets smaller compared to the more intense map color.

Table 7: Most active countries in publications

Country	Total Productions	Percentage (%)
South Korea	53	18.79%
China	35	12.41%
Indonesia	29	10.28%
United States	26	9.22%
United Kingdom	23	8.16%
Spain	22	7.80%
Australia	16	5.67%
Malaysia	13	4.61%
Taiwan	12	4.26%
India	10	3.55%

Figure 5: Most active publications by country



Institution with highest publication

Additionally, Table 8 shows that Chung-Ang University in South Korea leads research in sustainability and EM with 16 documents, followed by the University of Sfax, Tunisia, with 14 documents and 12 publications from Yonsei University in South Korea.

Table 8: Institution with the highest publication

Institution	Total Publication	Percentage (%)
Chung-Ang University	16	5.67%
University of Sfax	14	4.96%
Yonsei University	12	4.26%
Universidad de Salamanca	11	3.90%
Hanyang University	6	3.55%
Kangwon National University	4	1.42%
University of Memphis	4	1.42%
Universidad de Murcia	3	1.06%
Sungkyul Christian University	3	1.06%
Emory University	3	1.06%

Prolific authors and publications impact

From the author's profile perspective, this study examined the prolific authors according to papers published within the array of most cited papers, cites per year, citations per author for the publication and total publication per author to answer RQ6. It also analyzes the total impact of research published in sustainability and earnings management using Harzing Publish or Perish software to identify the citation metrics for the 282 documents extracted from the Scopus database as of August 18, 2023.

Prolific authors

Table 9 presents that the research publication by Kim et al. (2012) Entitled: "Is earnings quality associated with corporate social responsibility?" collectively garnered 962 total citations, with a citation per year of 87.45 citations and citations per author of 321. Next, Prior et al. (2008) Wrote an article titled "Are socially responsible managers ethical? Exploring the relationship between earnings management and corporate social responsibility," which has been referenced 489 times. This analysis provides an understanding of the influential publications on this topic. Besides, according to the data provided in Table 10, the most productive author is Martínez-Ferrero, J., who has produced eight publications in sustainability and EM research. García-Sánchez, I.M. also authored seven documents, followed by Chung, C.Y. for five publications based on the analysis.

Table 9: Most Influential Authors with Total Citations

Authors	Title of publication	Journal	Cites	Cites Per Year	Cites Per Author
Kim et al. (2012)	Is earnings quality associated with corporate social responsibility?	Accounting Review	962	87.45	321
Prior et al. (2008)	Are socially responsible managers ethical? Exploring the relationship between earnings management and corporate social responsibility	Corporate Governance: An International Review	498	33.2	166
Chih et al. (2008)	Corporate social responsibility, investor protection, and earnings management: Some international evidence	Journal of Business Ethics	325	21.67	108
Hong and Andersen (2011)	The Relationship Between Corporate Social Responsibility and Earnings Management: An Exploratory Study	Journal of Business Ethics	185	15.42	93

Choi et al. (2013)	Corporate social responsibility, corporate governance, and earnings quality: Evidence from Korea	Corporate Governance: An International Review	170	17	57
Scholtens and Kang (2013)	Corporate Social Responsibility and Earnings Management: Evidence from Asian Economies	Corporate Social Responsibility and Earnings Management	155	15.5	78
Martínez-Ferrero et al. (2016)	Corporate Social Responsibility as a Strategic Shield Against Costs of Earnings Management Practices	Journal of Business Ethics	128	18.29	43
Martinez-Ferrero et al. (2015)	Effect of financial reporting quality on sustainability information disclosure	International Journal of Accounting	126	15.75	42
Wang et al. (2018)	Mandatory Corporate Social Responsibility (CSR) Reporting and Financial Reporting Quality: Evidence from a Quasi-Natural Experiment	BRQ Business Research Quarterly	107	21.4	36
Bozzolan et al. (2015)	Corporate Social Responsibility and Earnings Quality: International Evidence	The International Journal of Accounting	104	13	26

Table 10: Most Active Authors

Author	Total Publications	Percentage (%)
Martínez-Ferrero, J.	8	2.84%
García-Sánchez, I.M.	7	2.48%
Chung, C.Y.	5	1.77%
Choi, D.	3	1.06%
Choi, H.	3	1.06%
Hwang, J.	3	1.06%
Oh, H.M.	3	1.06%
Rezaee, Z.	3	1.06%
Sial, M.S.	3	1.06%
Siregar, S.V.	3	1.06%
Velte, P.	3	1.06%
Abdullah, D.F.	2	0.71%
Al-Hawary, S.I.S.	2	0.71%
Arfiansyah, Z.	2	0.71%
Aryan, L.A.	2	0.71%

Publications impact

Next, regarding the total impact of r as per Table 10. The analysis described that in total, the documents had been cited 6586 times with a citation per year of 365.89, average citations per paper of 23.35, citation per author at 122.59, and h-index and g-index of 36 and 74, respectively, for all the publications.

Table 11: Impact of publications in sustainability and EM

Publication Years	2005-2022
Citations	6586
Papers	282
Citations/ year	365.89
Citations/ paper	23.35
Citations/ author	122.59
Papers/ author	122.59
h-index	36
g-index	74

5. Conclusion and Suggestions

The current study leveraged bibliometric analysis to unveil the resourcefulness of the evolutions, current states and trends as well as the future trajectory of research in sustainability and EM. Extracted from the Scopus database, the current study has drawn 282 documents to chart the key themes and keywords, eminent scholars, institutions, and countries about this field of study. The result in the earlier section illuminates that the increasing concerns in sustainability and EM have sparked constant study by scholars.

In addition, the analysis also prepares the user with useful information on the subject areas involved, the most active country in the publication being South Korea, with journal publication having become the venue for researcher to publish their study. It also reveals the most influential authors and the impact of the publications on sustainability and the EM field. In addition, the analysis also underlined the clustering of themes for the study involving sustainability and EM. In essence, the outcome indicates that the research on this topic has been expanded to include other interesting themes to portray the publication's objectives better.

The evolution of sustainability was initially driven by the awareness of socially responsible practices that have been translated into firm practices. Contemporary business has manifested that the idea of sustainability permeates around the business circle, ranging from shareholders to investors, consumers, or the community, holistically serves as a guide in ensuring the going concern of business is aligned with the environmental, social, and governance that uphold ethical principles. Gradually, firms are susceptible to adopting sustainable practices in their business operations to remain relevant and outperform their peers in this era, whereby brand reputation and image are important. Having a good sustainability practice has been proven by past scholars to engender several advantages flowing into firms.

Sustainability and EM, both of which fall within the purview of business management, present a prominent interplay to a business's future success and long-term financial health. Sustainability practices are inherently related to high implementation costs, but over time, they give rise to positive outcomes in firms' financial performance. However, with the increasing attention given to sustainability, firms can consistently portray their ethical practices while bearing the cost of sustainability implementation, which sometimes could be enormous. This situation has raised the issue of EM intertwined with firms' sustainability practices. Nevertheless, when firms with sustainability are wrongfully involved in EM, the potential risk of entanglement between these two contradictory practices is alarming. Even though some short-termism managers argue that the practice of EM is to balance off the sustainability cost, it is especially harmful to business since it defeats the purpose of sustainability practice to meet the financial obligations while simultaneously considering environmental impact, social welfare, and upholding good governance.

Moreover, the involvement of firms in EM at the expense of shareholders gives rise to ethical concerns and firms' viability. The practice of EM of window dressing the financial earnings undermines the transparency and accuracy of the financial earnings presented and prompts the issue of a breach of shareholders' trust that leads to legal issues. When the transparency and accuracy of the financial statement are tainted, it may mislead the user of the financial statement into believing that the firm is doing well, but the firm may be facing crucial financial problems. Thus, any decision made by referring to the misleading financial statement could jeopardize

the stakeholders. EM, even though sometimes started on a small scale, if not prevented, will cause adverse effects to the extent that it can cause the collapse of a firm.

The findings of this study have several policy implications for regulators and policymakers. Firstly, the understanding of the EM can assist the regulator and policymakers in assessing whether the existing governance in place is effective and efficient in mitigating the pervasive issue of EM or whether the practice of sustainability has been used as a disguise for unethical EM practices. Next, insight into this topic can help regulators determine and design suitable governance mechanisms that are tailored to the specific issue of sustainability and EM.

Subsequently, the current study proposes several avenues that future researchers can explore. Future research could complement the findings from this study by providing a more in-depth analysis, for example, the content or meta-analysis of this topic, and by incorporating the systematic literature review in the study. In addition, integrating integrated reporting with sustainability and earnings management could provide a more nuanced understanding of this field. Integrated reporting enhances the decision-making process for investors and firms as a whole, thus elevating the information usefulness to be more inclusive of a more holistic approach by combining financial and non-financial information.

Moreover, future research also suggested studying the integration of a more inclusive definition of sustainability with EM interaction that covers a larger geographical scope, such as advanced and emerging economies. A comparison study between these two largely different economies improves the identification of the cause and effect as well as the understanding of the diverse characteristics that shape the sustainability and EM practices in these economies. Besides that, given the role of small and medium enterprises (SMEs) in economic growth, the current study proposed examining the nexus of sustainability and EM in this niche context. The expected outcome could be used as preliminary work in constructing an index or measurement that is tailored to the requirements and needs of SMEs. Further, the study of sustainability and EM in financial institutions is

However, without overdoing it, this study is not free from limitations. Firstly, the study limits the utilisation of specific queries/ keywords that perhaps do not 100 per cent possess the ability to capture all pertinent documents. Thus, it is recommended that future research take into consideration other possible keywords that can better capture the data from the database. Moreover, the data gathered from the Scopus database could be expanded to other databases, thus advancing a more profound and comprehensive outcome. Finally, given that the data was extracted in 2023, not all the documents in the Scopus database have been analyzed until recently.

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Positioning of Mosque Tourism Through Digitalization: A Case Study of Masjid Sri Sendayan Negeri Sembilan Malaysia

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Abstract: Mosque tourism has grown in recent years, attracting millions of tourists to visit mosques worldwide. This phenomenon can be attributed to a combination of factors, including the increasing interest in cultural and religious tourism and the growing awareness and acceptance of Islamic culture. Therefore, Masjid Sri Sendayan is seen to have the potential to be one of the mosques that can gain significant attention from tourists due to its unique design and magnificent architecture. This study aims to explore the positioning of mosque tourism through digitalization in Masjid Sri Sendayan. The methodology of the study includes a qualitative approach, specifically a case study design that involves in-depth interviews with mosque administrators. The Atlas.Ti 22 software was used to analyze and interpret the data collected from interviews, surveys, and observation sources to identify key themes and patterns related to the positioning of digitalization in Masjid Sri Sendayan. The themes developed in this study are mosque structure, mosque management, mosque program (*imarah*), mosque attraction, type of tourist, tourist facilities, digital type, and digital management. This study contributes to the understanding of how digitalization can play a vital role in positioning Masjid Sri Sendayan as a mosque tourism destination and provides insights for other mosques that seek to enhance their position in the growing mosque tourism industry.

Keywords: *Case study, mosque tourism, positioning, digitalization, qualitative*

1. Introduction

Masjid Sri Sendayan is located in Bandar Baru Sendayan, Negeri Sembilan. The mosque was opened on 20 September 2019 (Mira, 2019). It is a waqf mosque built by Tan Sri Abdul Rashid Bin Hussain for RM100 million (Shafika, 2019). The beauty of the mosque can become a highlight for Islamic Tourism Malaysia to place it as one of the tourist mosques in Malaysia. With its unique design and architecture, it has become the focus of tourists from within and outside the country (Mokhtar, 2020). Although it is still newly built, it also receives high praise and recognition for its stunning beauty and impressive architecture (Rahim, 2019). Therefore, it is seen as one of the mosques that can be positioned and recognized as a tourist mosque that will have an impact on the economy and tourism industry in Malaysia.

According to Wikipedia (2022) the interior architecture of the mosque showcases several specially commissioned features that enhance its aesthetic appeal. Notably, intricate wood carvings adorn the walls in the prayer hall, while calligraphy is highlighted with exquisite gold plating. Additionally, tile blocks are strategically placed on walls near the pulpit to further accentuate their beauty and significance, as well as the main dome, which uses 24k gold paint delicately applied for the maximum effect. Meanwhile, the exterior design of the mosque has a main dome and three small domes in the front passage. In addition, there are also two minarets in front of the mosque. According to Rodzi (2019), the art and architectural elements of this mosque were predominantly sourced from foreign countries, including Egypt, Turkey, Dubai, Morocco, and China. The distinctiveness of its architecture has resulted in numerous public accolades, such as being compared to iconic structures such as the Taj Mahal or associated with historical empires such as the Nabawi Mosque and Ottoman Empire Mosque.

Therefore, digitalization is seen as one of the important factors that can increase the promotion and recognition of Masjid Sri Sendayan as a tourist mosque. A comprehensive digital marketing strategy and an online presence can play a crucial role in increasing the visibility of Masjid Sri Sendayan as a tourist mosque (Hasan et al., 2022). Utilizing social media platforms, search engine optimization techniques, and creating a website for Masjid Sri Sendayan that includes virtual tours, photos and videos can attract potential visitors from around the world and provide them with a glimpse of the mosque's beauty before they visit in person (Vieira et al., 2019). Moreover, creating a mobile application for Masjid Sri Sendayan that allows visitors to plan their visit and obtain necessary information such as prayer times, facilities available accommodations, and historical information about the mosque can enhance visitors' experience and increase their satisfaction (Afnarius et al., 2020).

In conclusion, the development and implementation of a strong digital marketing strategy that includes an online presence, social media platforms, website creation and mobile application for Masjid Sri Sendayan can significantly increase the visibility and recognition of this mosque as a tourist destination, thereby positively impacting the economy and tourism industry in Malaysia. Therefore, this paper aims to highlight the importance of digitalization in positioning Masjid Sri Sendayan as a tourist mosque. The Atlas.Ti 22 software was used to analyze and organize the data collected for this paper. The findings from the data analysis suggest that there is a significant potential for Masjid Sri Sendayan to attract more visitors as a tourist mosque through digital promotion and marketing.

2. Literature Review

Development of Mosque Tourism in Malaysia

Tourism has been identified as one of the most important sectors in Malaysia's economy. In recent years, there has been a growing interest in developing mosque tourism in Malaysia to diversify the country's tourism offerings and attract more Muslim tourists from around the world. Mosque tourism refers to the practice of visiting and exploring mosques as a tourist activity (Moghavvemi et al., 2021). It allows visitors to learn more about Islamic culture, history and architecture while also experiencing the spiritual aspect of prayer and worship. This form of tourism has the potential to enhance the reputation of Malaysia as a leading Islamic nation and offers a unique travel experience to visitors seeking to expand their understanding of Islam and Muslim culture. To develop mosque tourism in Malaysia, the government has made efforts to promote and improve the infrastructure of mosques throughout the country (Islamic Tourism Center, 2021). This includes the restoration and redevelopment of historical mosques as well as the construction of new state-of-the-art ones that can accommodate larger numbers of visitors.

“The first nine months of 2023 witnessed Malaysia welcoming 3.25 million Muslim tourists, generating RM9.52 billion in Muslim tourist receipts — against 5.33 million Muslim tourists’ arrivals during the pre-pandemic in 2019, generating RM16.72 billion receipts” (Mardiah, 2024).

The statistics provided by Mardiah (2024) indicate that the number of Muslim tourists increased after the pandemic. Consequently, it can indirectly support the development of mosques for tourism in Malaysia in recent years. This is because the increase in the number of Muslim tourists will indirectly raise the number of people who visit mosques, as well as the emergence of tour packages specifically designed for mosque tourism (Razak, 2019). In addition to external tourism promotion efforts, the Malaysian government has been actively promoting mosque tourism through initiatives such as the development of a dedicated website and brochure on promoting mosque tourism routes in Malaysia (Mohd & Saad, 2022). The initiatives have been successful in increasing awareness and interest among tourists, as well as local visitors who seek to experience more of the country's cultural heritage. Furthermore, the study by Moghavvemi et al. (2021) identified several factors contributing to the growth of mosque tourism in Malaysia such as the country's rich Islamic heritage and history, unique mosque architecture, well-maintained facilities at mosques, the promotion of respect for diverse cultures and religions, and the overall peacefulness of Malaysian society. In conclusion, the growth of mosque tourism in Malaysia is a promising trend that reflects the country's cultural heritage and unique architecture. Therefore, to capitalize on the opportunity, several efforts should be made to reach out to potential tourists, offer more tour packages, and improve mosque infrastructure for larger visitor numbers.

Positioning of Mosque Tourism

The positioning of mosque tourism in Malaysia has been explored in various academic articles and research papers (Ebrahimi & Yusoff, 2018; Abdul Gani et al., 2019; Jaffar et al., 2020; Utaberta, 2021). Malaysia has a significant potential for mosque tourism due to its multicultural society and the presence of numerous mosques with unique architectural designs and cultural significance (Ebrahimi & Yusoff, 2018). Moreover, the studies have shown that mosque tourism can promote interfaith harmony and understanding among tourists from different cultures and religions. According to a literature review conducted by Jaffar et al. (2020), the positioning of mosque tourism in Malaysia is multifaceted and involves various factors, such as marketing strategies, infrastructure development, and community involvement. In the study of Abdul Gani et al. (2019), it was found that the positioning of mosque tourism in Malaysia also involves creating a unique and memorable visitor experience through the architectural design and the services offered at the mosques.

Therefore, Masjid Sri Sendayan has been identified as having the potential to become a significant mosque tourism destination due to its unique and magnificent architecture (Azizi, 2019). It is a modern mosque with a striking design, featuring elements of Islamic architecture from various countries that may attract and give more experience to tourists who are interested in the cultural and architectural heritage of mosques (The Smart Local Malaysia, 2021). The positioning of Masjid Sri Sendayan as a mosque tourism destination in Malaysia is further supported by the research findings of Utaberta et al. (2021), who found that mosque tourism can contribute to Malaysia's economy by attracting Muslim and non-Muslim tourists. In addition, the study of Rahman et al. (2020) indicated that tourists who visited mosques in Malaysia were highly satisfied with their experiences and perceived their visit as an interesting cultural attraction.

Positioning Masjid Sri Sendayan as a mosque tourism destination in Malaysia not only attracts tourists interested in Islamic architecture and culture but also contributes to the country's economy. In summary, the positioning of Masjid Sri Sendayan as a mosque tourism destination in Malaysia presents significant potential to allure tourists who desire to experience and learn about the cultural and architectural heritage of mosques while contributing to Malaysia's economy through tourism. Therefore, this study found several approaches that can be adopted to establish the mosque as a prominent tourist attraction, including an emphasis on its architecture or structure, effective management practices, diverse programs and events offerings, and top-notch facilities and amenities.

Potential of Digitalization in Mosque Tourism

Digitalization offers a great potential for improving the management and marketing of mosque tourism (Sutrisno et al., 2024), as it allows technicians to solve problems around visitor engagement and improve operational efficiency. Digital innovations help the mosque management have a smooth visitor management experience through the use of mobile apps, online booking systems, virtual tours, and many more. For instance, digital ticketing systems can minimize the dependency on printed entry passes and queues while also streamlining and easily saving visitor time (Elsetouhi et al., 2024). Moreover, mobile applications also offer real-time information regarding prayer times, events, and mosque facilities, allowing visitors to plan their visits more effectively (Shah, 2024). Such digitalization platforms not only serve operational processes better but also create a more organized and pleasant experience for visitors, which is another important aspect of positioning mosque tourism.

Furthermore, digitalization is instrumental in the positioning of mosque tourism within the global tourism market (Thoha, 2023). Mosques can broaden their audience base and emphasize their religious and cultural significance by utilizing digital marketing tools, such as search engine optimization (SEO), websites, and social media platforms. Mosque committees can share educational content, live-stream events, and engage with a broader audience in real-time through social media platforms (Aslan & Yildiz, 2024). This interaction contributes to the establishment of a community surrounding a tourism mosque and promotes cultural comprehension, thereby drawing in visitors from a variety of cultural backgrounds. Digitalization not only increases awareness of mosque tourism but also functions as an instrument to cultivate interest in Islamic culture, history, and architecture, thereby contributing to its development as a recognized cultural tourism segment.

Furthermore, digital tools can help mosque committees collect and analyze visitor data, which can indirectly improve mosque tourism management (Navajas-Romero et al., 2020). With the help of data analysis, mosque administrators can gain valuable insights into visitor preferences, peak visit times and the effectiveness of various programs and events. Digital platforms also help in managing donations, selling goods, and facilitating volunteer registration, contributing to the sustainability of mosque tourism (Sutrisno et al., 2022). In this way, digitization can support efficient management to position mosque tourism while ensuring that resources are optimized and visitor needs are met more effectively.

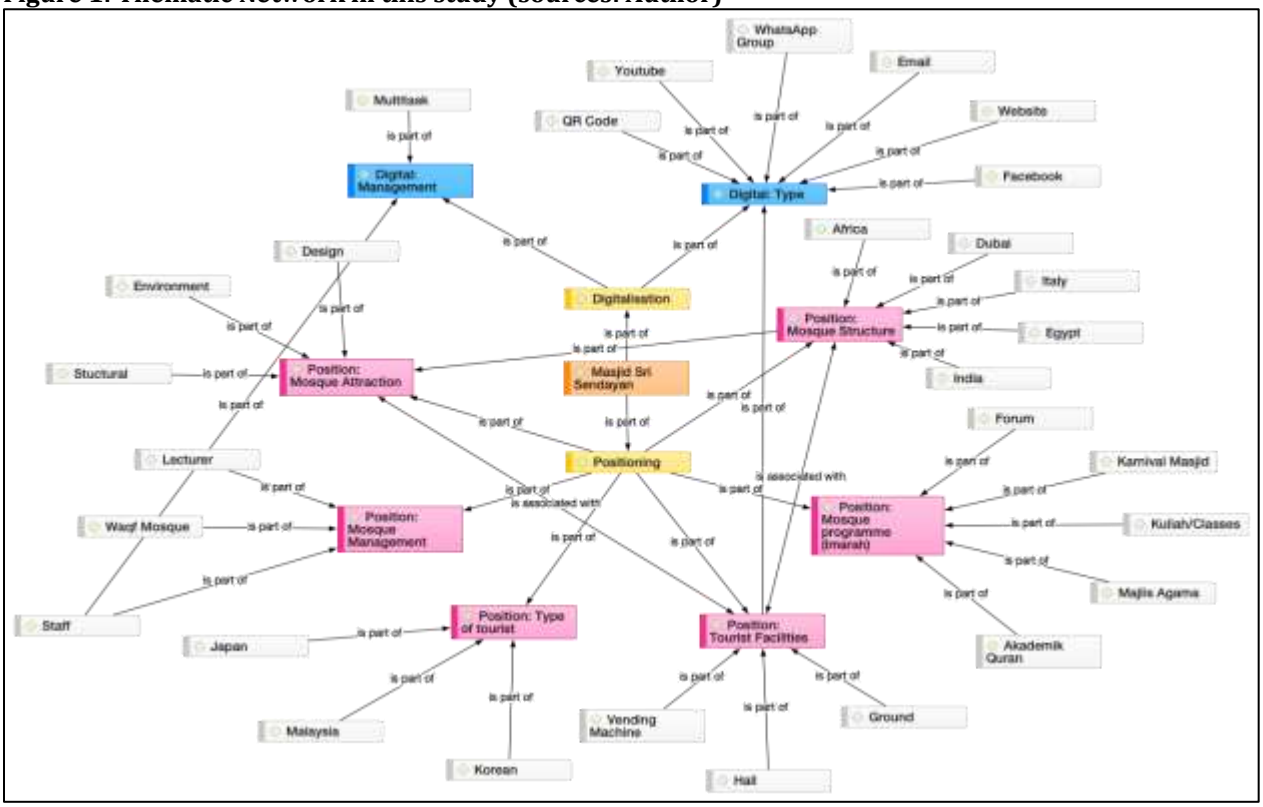
3. Methodology

This study employed a qualitative method to examine the positioning of mosque tourism through digitalization in Masjid Sri Sendayan Negeri Sembilan Malaysia. A case study approach was utilized to obtain a comprehensive understanding of the subject matter. The research involved conducting in-depth interviews with five key stakeholders (informants) who have had experience and knowledge about Masjid Sri Sendayan which consists of the *Imam* and mosque committees, as well as analyzing online content and site observation to gain insights into the mosque's positioning, digital presence and strategies. Data collected from the sources were then analyzed using AtlasTi 22 software to identify key themes and patterns related to the positioning and digitalization of mosque tourism. The findings of this study contribute to a deeper understanding of how they position their mosque and how digitalization can be harnessed to promote mosque tourism and offer valuable insights for other religious institutions and destinations seeking to leverage digital tools and platforms for enhancing their tourism potential (Refer to Figure 1). Furthermore, this research provides a valuable case study that can be used as a benchmark for future studies on the digitalization of religious tourism and how to position mosque tourism.

4. Results and Discussion

This study looked into the positioning of mosque tourism through digitalization in Masjid Sri Sendayan. Figure 1 is the thematic network that was generated from the theme grounded in the interview transcripts. There are two themes with 8 subthemes that are developed on the positioning of mosque tourism through digitalization. Theme 1 is positioning and consists of six subthemes: Mosque Structure, Mosque Management, Mosque Program (*Imarah*), Mosque Attraction, Type of Tourist and Tourist Facilities, while theme 2 is digitalization which consists of two subthemes: Type and Management.

Figure 1: Thematic Network in this study (sources: Author)



Theme 1: Positioning

In this study, positioning refers to how a mosque positions itself as a tourist attraction while maintaining its primary function as a place of worship and community center. Finding a balance between being a tourist destination and maintaining religious sanctity is crucial for mosques looking to attract visitors while staying true to their original purpose. In the subtheme of the positioning theme, strategies for mosques to become tourist attractions without compromising their primary function will be discussed.

Mosque Structure

Mosques are not only places of worship but also symbols of Islamic culture and civilization. Their architectural designs and structures are unique and awe-inspiring, making them attractive to tourists who appreciate historical and cultural landmarks. For instance, the Great Mosque of Mecca (Masjid al-Haram) is a massive structure and is considered one of the holiest places in Islam. Similarly, the Sheikh Zayed Grand Mosque in Abu Dhabi is renowned for its stunning architecture and intricate details that highlight Islamic art and culture, such as calligraphy and geometric patterns. The unique features make the architecture and structure of a mosque an essential factor in positioning it as a tourist attraction.

Over the years, many scholars have conducted research on the relationship between architecture and tourism. Some scholars have highlighted the role of architecture in attracting tourists, while others have emphasized its impact on shaping the tourist experience. For instance, Seyfi et al. (2020) claim that architecture is a key factor in attracting tourists as it provides them with an authentic experience of the local culture and history. Similarly, Loureiro et al. (2020) explored the importance of architecture in shaping the perceived value of the tourist experience. They emphasize that the aesthetic appeal and uniqueness of architectural landmarks can enhance the visitor's experience and create a lasting impression. Moreover, they suggest that architecture can act as a form of communication between the visitor and the host community, conveying important messages about local values and customs and thus, facilitating cross-cultural understanding.

In another study, Kostopoulou (2022) examined the relationship between architectural heritage and tourism development in urban neighborhoods. They found that investments in architectural heritage preservation and restoration can have a positive economic impact on the tourism industry, as tourists are willing to pay more for visiting historically and architecturally significant sites. Overall, the literature highlights the crucial role of architecture in tourism and its impact on attracting tourists, shaping their experience and enhancing economic benefits. Therefore, the architecture of Masjid Sri Sendayan is seen as one of the key factors that can potentially attract tourists to the area and contribute to the economic development of the region.

The structure of a mosque is one of the main attractions, showcasing the magnificent architectural designs that can influence tourists and local visitors alike, also reflecting the rich history and cultural heritage of the Islamic community. According to an informant who works as a technician at Masjid Sri Sendayan, the manufacturing that is handled there is imported from different nations, for instance, Africa, Egypt, Italy, Dubai, Indians and Malaysia:

"[…] The majority of the items in this mosque are from outside; the stones are from Africa, the floors are from Egypt, the doors are from Italy, the Carvings are from Dubai, the Indians who do the carvings, and the wood is from Malaysia [...] A variety of design and structures can make a mosque being more magnificent[…]"

This is because, in his opinion, having a diverse structure is an advantage of a mosque and a special structure of the mosque is required to position it as a tourist attraction. Consequently, incorporating unique architectural features and promoting their historical significance is essential for attracting visitors. Additionally, such distinctive designs can foster a sense of cultural identity and appreciation among both local communities and international tourists. Moreover, these iconic structures can serve as a bridge between different cultures, fostering mutual understanding and respect.

Mosque Management

Management plays a critical role in positioning a mosque as a tourist attraction. Effective management practices can significantly impact the visitor experience and enhance the mosque's potential as a tourist attraction. For example, well-trained and knowledgeable staff who can provide informative tours of the mosque's history and architecture, as well as its cultural significance, can create a positive impression on visitors and improve their overall satisfaction with the experience. In addition, effective management strategies can ensure the proper allocation of resources, efficient use of time, and maximization of customer satisfaction. On the other hand, poor management practices can lead to negative consequences such as overcrowding, environmental degradation, and social tensions. Therefore, tourism destinations must have well-trained managers who are capable of implementing effective management practices.

A study conducted by Streimikiene et al. (2021) examined sustainable tourism development management in the success of tourism destinations. The study found that management plays a significant role in enhancing the competitiveness of tourism destinations. Furthermore, the study revealed that effective management practices are positively correlated with customer satisfaction and loyalty. Another study conducted by Shafiee et al. (2019) found that effective management strategies are also crucial for the sustainability of tourism destinations. The study emphasized the importance of sustainable management practices, which can help to minimize negative impacts on the environment and local communities. In addition, a study by Zerva et al. (2019) revealed that effective destination management can also lead to the development of a strong tourism economy. In conclusion, effective destination management is essential for the success and sustainability of tourism destinations.

Mosque management is crucial for ensuring the smooth and efficient functioning of religious and tourism activities. Effective administration, proper maintenance of facilities, and excellent communication with the community are all vital components in achieving this goal. Masjid Sri Sendayan is a waqf mosque managed by the owner himself. This unique management approach has led to efficient operations and sustainable community engagement. According to the informant, waqf mosques have a different organizational structure from mosques that are under the government, especially in the selection of mosque staff. The waqf mosque allows anyone with the necessary qualifications and abilities to apply for a position in the staff selection process

and the selection is continuous from the management of the mosque itself. For instance, the election of *imam*s, *bilal*, speakers, etc.

Mosque Program (Imarah)

Mosque programs or *imarah* activities play a vital role in the spiritual development and social bonding of Muslim communities. These programs not only offer religious guidance but also foster a sense of unity and solidarity among community members. Additionally, mosque programs help to promote interfaith dialogue and understanding, contributing to a more harmonious society. According to the informant, among the activities carried out in this mosque are organizing forums, religious meetings, Quran academics, lectures, classes and also mosque carnivals. He added that some of the mosque's events were attended by people from outside of Negeri Sembilan in addition to members of the local community:

"We also organize some events such as forums, religious meetings, Quran academics, lectures, classes and also mosque carnivals to attract more visitor to our mosque […] The event that is held can also attract people from outside the Negeri Sembilan."

Mosque Attraction

Programs and events are another way to position a mosque as a tourist attraction. A mosque can offer a variety of programs and events to attract tourists, such as lectures on Islamic history and culture, religious festivals, cultural exhibitions, traditional music and dance performances, art exhibits featuring Islamic calligraphy and painting, and food festivals showcasing local cuisine. The programs and events can provide visitors with an opportunity to learn more about Islamic culture, customs, and traditions while also enjoying a unique cultural experience. Furthermore, offering the programs and events can also serve to promote interfaith dialogue and foster understanding between different cultures.

Programs and events in mosques can be a powerful tool for community engagement and development. Previous studies have shown that mosques can play a significant role in promoting social cohesion, community development, and interfaith dialogue through their programs and events. For example, a study conducted by Al-Sharmani (2019) found that the Helsinki mosque serves as a space for community development and the promotion of social capital. Similarly, a study by Zhang (2022) showed that mosques can be used as platforms to promote interfaith dialogue and understanding between different religious groups. Moreover, a study conducted by Alaca (2022) found that mosque events can be utilized as an effective tool for promoting mental health and well-being among Muslim communities. The studies suggest that programs and events in mosques can be utilized for various purposes, including but not limited to community development, social cohesion, interfaith dialogue, and mental health promotion.

However, it is important to note that there are also challenges and limitations associated with programs and events in mosques (Al-Sharmani, 2019). For instance, some challenges that may arise include limited resources, lack of funding or support, resistance from conservative members within the community and navigating complex political and social dynamics. Therefore, it is important to carefully plan and implement programs and events in mosques, taking into account the specific needs and interests of the community.

To position Masjid Sri Sendayan as one of the tourist mosques in Malaysia, the mosque management has also tried to provide and maintain some of the mosque's attractions. Among the attractions are its stunning architectural design, lush green surroundings, and various facilities that cater to both tourists and worshippers alike. Moreover, the mosque's unique combination of traditional and modern elements can make it an iconic landmark in the region.

"One strategy to draw tourists to this mosque is to keep the mosque looking beautiful."

The informant mentioned that maintaining the mosque's beauty is one method to increase the number of tourists who are present. This is because a well-preserved and aesthetically pleasing mosque can attract visitors who appreciate the architectural, cultural, and historical aspects of such religious sites. Additionally, the mosque's beauty and well-maintained condition can also contribute to an overall positive experience for tourists, which may encourage them to spread positive word-of-mouth and share their experiences on various

social media platforms, ultimately increasing the visibility and appeal of the mosque to potential visitors worldwide.

Type of Tourist

This finding highlights the popularity of Masjid Sri Sendayan among tourists from diverse Asian countries, including Japan, Korea, China and Malaysia. This is also supported by the informant that they receive foreign tourists because of the position of this mosque, which is close to a heavy industrial site that has many foreign workers. Introducing the mosque through word of mouth (WOM) to their family members is one of the reasons why this mosque also accepts tourists from abroad. He added that Masjid Sri Sendayan also does not provide mosque tourism guides, volunteers or da'wah bureaus to help the mosque tell a few pieces of information or knowledge about the mosque. Therefore, the person who brings them usually will share stories about the structure, design, activities that are carried out and anything about the mosque with their friends or family members who are present:

"We as the management of Masjid Sri Sendayan have not had time to promote this mosque to the public, considering that mosque is still new and many people do not know about the existence of this mosque. However, fortunately our mosque is close to heavy industry. Therefore, we often receive tourists from abroad as well [...] Although this mosque does not have a Mosque Tourism Guide, volunteers or da'wah bureau, tourists who attend will be given information through the person who brings them to this mosque. Since we (mosque management staff) are also facing communication barriers such challenges to interact with them by using the different language (Japan, Korean and China)."

Tourist Facilities

Facilities and amenities are also crucial in positioning a mosque as a tourist attraction. Mosques should have facilities and amenities that cater to the needs of tourists. For example, having clean restrooms, adequate prayer spaces, and facilities for ablution (*wudu*) can improve the overall visitor experience. Furthermore, amenities such as gift shops that sell souvenirs and books on Islamic history can enhance the tourist experience. In a study conducted by Rahmiati et al. (2020), it was found that amenities such as gift shops, cafes, and information centers contribute significantly to the overall satisfaction of tourists visiting a religious site and increase the likelihood of repeat visits. Similarly, a study by Moshin et al. (2020) suggests that the availability of facilities such as restrooms and adequate space for prayer can positively influence the perception of tourists toward a mosque and increase their likelihood of visiting again. Moreover, offering guided tours and educational programs about the mosque's history, architecture, and cultural significance can also make a significant contribution to its appeal as a tourist attraction. Overall, it can be concluded that the availability of facilities and amenities plays a crucial role in positioning mosques as tourist attractions.

However, the findings in this study also found that tourist facilities are one of the ways to position their mosque as one of the tourist attractions. This not only benefits the mosque by increasing visibility and attracting visitors but also contributes to the mosque's funding which can help in its maintenance and renovation. Therefore, mosques need to invest in developing tourist-friendly facilities and services that can enhance visitors' experiences while visiting the mosque. For instance, in Masjid Sri Sendayan, a hall is provided for rent which can be used for a wedding ceremony, meeting, class or seminar. Likewise, with the provision of a beautiful area that is open to the public, especially to founders who want to use the mosque as a background for their advertisements. In addition, Masjid Sri Sendayan also provides a vending machine, foyers and seating areas for visitors to enjoy the atmosphere of the mosque.

In conclusion, positioning a mosque as a tourist attraction requires effective management practices, innovative programs and events, and adequate facilities and amenities. By taking these steps, mosques not only attract more tourists but also showcase the beauty and significance of Islamic architecture and culture to the world. Overall, mosques need to recognize the potential of tourism and invest in strategies that can help them attract visitors while also preserving their religious significance and cultural heritage. In addition, mosque structure, mosque management, mosque programs (*imarah*), mosque attraction and tourist facilities significantly influence the success of positioning and promoting mosque tourism. Therefore, relevant stakeholders need to prioritize the factors in developing and promoting mosque tourism as a sustainable form of cultural tourism. By doing so, not only will they attract more tourists and create a positive image of the destination, but they will

also preserve and showcase the rich cultural heritage, which will ultimately contribute to the overall socioeconomic development of the local community and foster cross-cultural understanding among diverse populations.

Theme 2: Digitalization

In this study, digitalization refers to how a mosque utilizes digital technology to enhance its operations, communication, and services as one of the mosque tourism attractions in Malaysia. The findings reveal that embracing digital technology has led to increased efficiency and a stronger connection with the community and tourists, ultimately contributing to an enriched religious experience. Additionally, the adoption of digital technology has allowed mosques to reach a wider audience and provide a more accessible platform for sharing information, resources, and support. Under the digitalization theme, a few subthemes will be discussed on how mosques can utilize the technologies to attract tourist and how digitalization was managed by their management.

Type

According to the informant, Masjid Sri Sendayan uses a few digital platforms that are important in positioning the mosque as a tourist attraction. The digital platforms include their official website, email, WhatsApp group, YouTube, QR code and social media sites such as Facebook. Each digital platform has its uses; for instance, websites, YouTube, and social media are used for sharing information. Email is a primary communication tool in professional and personal settings while QR codes are used for donations and making a complaint. The integration of the digital platforms has effectively improved communication and engagement with the congregation and visitors, as well as streamlined administrative tasks for the mosque management. Furthermore, the utilization of digital technology has proven to be instrumental in attracting a diverse range of visitors and fostering an inclusive environment within the mosque community.

Management

The specific management of the multimedia unit at Masjid Sri Sendayan is still in the planning phase, considering that the staff of the mosque itself consists of young people who are skillful in using the available digital platforms. Therefore, they are more about managing the digital platform in the mosque as a shared responsibility where they are ready to multitask to help update the existing digital platform. As stated by the informant:

"Our team is highly enthusiastic and adaptable, working together to ensure that the digital platform stays up-to-date and serves our community effectively."

In this context, collaboration and continuous skill development among the mosque staff play a pivotal role in ensuring that the operations of the multimedia unit run smoothly and efficiently. By fostering a culture of teamwork and knowledge-sharing, the mosque can effectively leverage its digital platforms to better engage with the congregation and provide essential services such as live streaming of sermons, online donations, and virtual events. Furthermore, this approach enables the mosque to harness the full potential of technology and bridge any gaps that may arise due to physical constraints or limitations. In essence, the success of managing the multimedia unit at Masjid Sri Sendayan lies in the collective efforts and adaptability of its staff, who embrace the challenges and opportunities presented by digital technology to better serve their community.

5. Conclusion

The findings suggest a comprehensive method for positioning mosque tourism through digitalization, which includes aspects such as the structure and management of mosques, their programs and attractions, as well as the provision of tourist facilities and the integration of digital technologies. The method can be used as a guide for mosque administrators and tourism agencies in developing strategies to enhance the experience of visitors who are interested in learning more about the rich cultural and religious heritage of mosques.

In conclusion, the positioning of mosque tourism through digitalization has the potential to greatly enhance visitor experiences and promote cultural understanding while also supporting sustainable tourism development. By adopting a holistic approach that incorporates the various elements of mosque tourism,

including infrastructure, management, programs, attractions and digital technologies, stakeholders can create a unique and engaging experience that caters to the diverse interests of visitors, foster a greater appreciation for cultural and religious diversity, and ultimately contributes to the growth of the tourism industry responsibly and sustainably.

Future Direction

The future of digitalization in mosque tourism, particularly in terms of management and marketing, is poised to embrace more sophisticated technologies that will revolutionize visitor engagement and operational strategies. With advancements in artificial intelligence (AI) such as big data, mosque tourism administrators can use data analytics to better understand visitor behaviors, predict peak times, and personalize experiences, tailoring content and services to individual preferences. The adoption of digitalization such as virtual reality experiences, and interactive mobile apps will further expand mosque tourism to reach a global audience. The platforms can provide real-time updates, live-streamed events, and virtual tours, allowing mosques to connect with visitors remotely while promoting Islamic culture and heritage. Ultimately, the future of digitalization in mosque tourism will not only improve the management of resources but also create more engaging, inclusive, and sustainable marketing strategies, strengthening the global presence and impact of mosque tourism.

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Appendix

Questions in Interview Protocol	
Positioning	What is the current position management at Masjid Sri Sendayan as a tourism icon according to the industry standard? Can you give a little evidence of what efforts have been made by the management at Masjid Sri Sendayan to put mosque not left behind to be as one of the tourist attractions? As we know, it is not easy to implement these efforts. what are the main challenges faced by Masjid Sri Sendayan in making the mosque the main attraction for visitors? Apart from the mosque as a center of worship for Muslims, are there any differences in Masjid Sri Sendayan that can attract visitors to come and visit? Has the management of Masjid Sri Sendayan put in place an effective management system in attracting tourists out there?
Digitalization	How is digitalization implemented in the entire Masjid Sri Sendayan management? Does digitalization give convenience to the management of Masjid Sri Sendayan and its users? Is it Masjid Sri Sendayan implemented and upgraded digitalization for users? How do users react to the use of digitalization? Are users fully aware of the existence of the Masjid Sri Sendayan website to get the news or latest updates? May it help the mosque management organization to obtain the data it needs? Does the use of digitalization pose a challenge to mosque management organizations and users at Masjid Sri Sendayan? What's the impact of the use of digitalization on mosque management and users?

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Brand Awareness as a Determinant of Students' Choice of a Higher Institution: Evidence from Students in a Ghanaian University

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Abstract: The competitive landscape of university education in Ghana is characterised by poor infrastructure, quality and environmental conditions, making it challenging for students and parents to select an institution for study. To attract students, universities must effectively leverage their marketing mix, particularly products and brands. This study examines the influence of brand awareness on students' selection of a higher institution. Employing a positivistic paradigm and quantitative approach, a self-administered questionnaire was completed by 345 students at a Technical University in Ghana. Data analysis using SPSS and Smart PLS software revealed a significant positive impact of institutional brand awareness on students' decisions. The study concludes that university branding plays a vital role in enrolment and highlights the importance of developing and promoting brand personality to differentiate universities in a competitive market. By understanding the factors contributing to brand awareness, higher institutions can tailor marketing strategies, enhance their reputation and achieve their objectives.

Keywords: *Brand awareness, Technical University, Brand image, Brand identity, Brand culture, Brand personality, Higher institution, Ghana.*

1. Introduction and background

The Ghanaian education landscape has undergone significant transformations. The country's educational system is categorized into three levels: tertiary, secondary, and primary education (Takyi et al., 2021). This structure has enhanced the quality of education at each level, culminating in higher standards at the tertiary level. Through the Ghana Tertiary Education Commission, the government converted all polytechnics into Technical Universities (Amoako & Asamoah-Gyimah, 2020), expanding access to education nationwide. With the surge in higher education institutions in the country, competition for attracting new students has intensified (Chen, 2019). Additionally, the proliferation of institutions and varying quality standards have created challenges for parents, students, and stakeholders in selecting the best institution for study and knowledge acquisition (Esia-Donkoh & Antwi, 2015). Consequently, institutions struggle to effectively brand themselves and raise awareness, attracting students' attention and motivating them to act. Institutions seldom engaged in brand promotion or marketing strategies in the past, but this has changed (Mao et al., 2020). Higher institutions must compete to attract students and promote their brand (Zhang, 2015). According to Mabkhot, Shaari, and Salleh (2017), brand awareness plays a vital role in influencing students' decision-making and creating an institutional image (Kwarteng-Amaniampong et al., 2024). Proper brand management, reputation, and quality facilities are essential for attracting students to institutions (Leland, 2016). Meanwhile, these have not been properly articulated by Technical Universities in Ghana. The rise of social media and other digital marketing platforms, and the increase in options for higher education in Africa, particularly in Ghana, have enabled students to make informed choices when applying to institutions (Chatterjee & Chakraborty, 2020).

The success of higher institutions depends on developing strategies to increase brand awareness, leading to a return on investment and increased matriculation (Abbas, 2019). It is worth noting that there is a mutual relationship between universities and students, with each depending on the other's existence (Moreira, 2023). Students seek good institutions for knowledge, and institutions need brilliant students for success. Among the numerous universities in Ghana, the one that effectively positions itself will attract more students (Yiadom & Madele, 2022). Creating effective awareness about what higher institutions offer to their customers and positioning themselves well in students' minds are crucial (Abbas, 2019). To the best of my knowledge, this is the first time a study has been conducted concerning brand awareness and its impact on Technical University students in Ghana. This study aims to investigate institutional brand awareness among students at a Technical

University in Ghana. Previous studies have established the importance of brand awareness in consumer decision-making (Abbas, 2019); however, there is limited literature on its specific impact on the enrolment decision-making process of Technical University students, especially in Ghana. This study fills this gap by exploring the effects of brand awareness on students' enrolment decisions, providing valuable insights into the role of brand awareness (i.e., brand image, brand identity, brand culture, and brand personality) at each stage of the decision-making process. The next sections of this study present the literature review, methodology of the study, discussions, managerial implications, limitations, and future research directions.

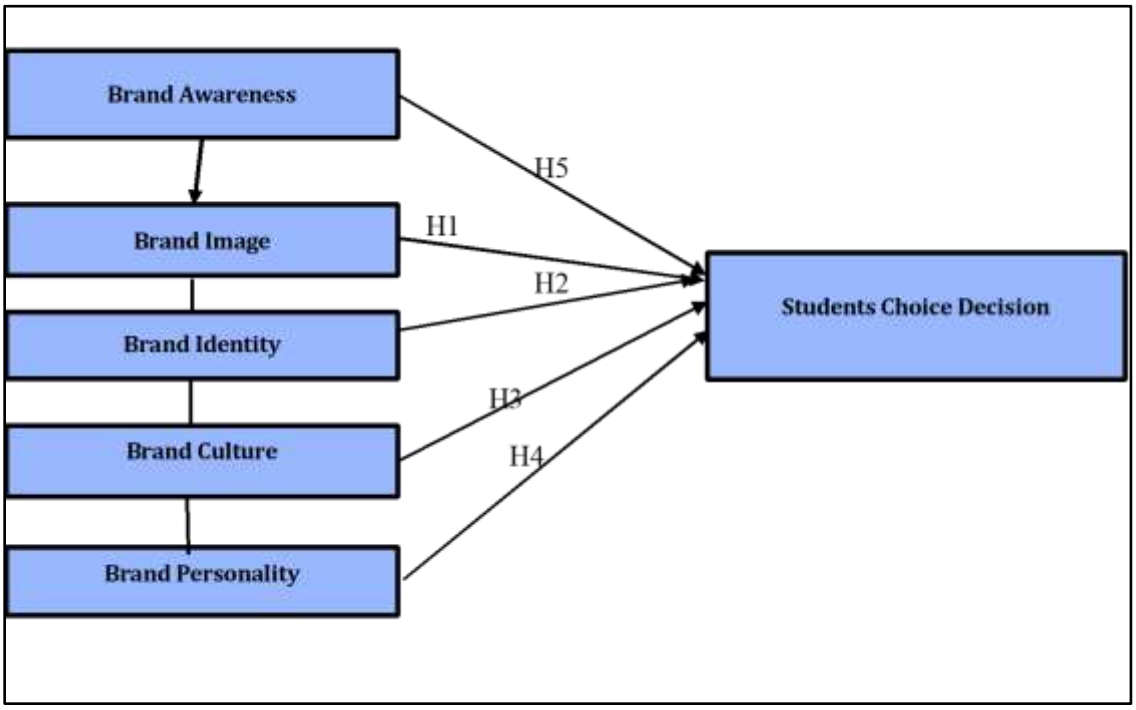
2. Literature Study and Hypotheses

Theoretical foundation

This study adapts the AIDA theory, which was originally propounded by Lewis (1896) and later expanded by Strong (1925). The acronym refers to Awareness, Interest, Desire, and Action (AIDA) (Muñoz et al, 2019), and it is popularly known as the hierarchy of effects models (Lewis, 1896; Strong, 1925). Although the framework has been found to have several challenges, it is still considered one of the most dominant theories in marketing and advertising (O'Shaughnessy, 1992; Baber, 2022). This theory explains that consumers pass through several arranged processes before making a purchase or choice decision (Montazeribarforoushi et al., 2017). These decisions are classified into three levels during the process, including cognition (Awareness and Learning), Affect (feeling, interest, or desire), and behaviour (Action). Thus, the theory posits that, to make a purchase decision, people will first need to be aware of what they intend to buy and show interest and desire in the product before taking action (AIDA), whether to buy or not buy the product or service (Baber, 2022). This choice enables people to choose between alternatives successfully (Savioni et al., 2022). As in this study, a student who plans to study at a Technical University would initially have to utilise their cognitive thinking ability to learn, perceive, process, and respond to the various information concerning the university and its environment.

Specifically, a student pays attention to the institution's image, identity, culture, and personality to interpret or organize their thoughts before objectively deciding to choose enrollment. Afterwards, students generate some motivation, passion, or interest in whether they found the institution's image, identity, culture, and personality enjoyable and engaging (Interest). These interests are measured personally, financially, and based on the extent of investment they wish to put into their studies. Also, concerning desire (D), the student at this level develops a strong feeling or emotion, either positive or negative, about the university based on the perception of their brand image, brand identity, brand culture, and brand personality. At this level, students clarify what is important to them, create paths, and align their actions with their values. The desire stage sets the pace for the next and final letter A (Action) in the framework. This is the stage at which the students make a final decision to achieve goals regarding choosing or not to select the university as a place of study and enrolment. Students' decisions will be based on their goals set initially, applying energy, time, and resources, as well as continuing to make that decision despite challenges or obstacles to be successful. Rooted in the explanation from these theories and to offer answers to the research aim and objective, a conceptual framework was developed (see Figure 1), whilst each part of the model is discussed in the sections below.

Figure 1: A conceptual model of the relationship between brand awareness and the Students' Choice Decision



Source: Author's construction

Branding and Brand Awareness

Branding: Institutions need to differentiate and build trust with students (Hassana, Ibrahim & Sani, 2021). It is a marketing and communication strategy that distinguishes an organisation or product from competitors, aiming to create a lasting impression on customers (Kotler & Keller, 2020; Siitonen, 2017). However, technical universities have failed to utilise the concept more effectively. Positively, branding is crucial for attracting people (Mao et al., 2020). An organisational brand comprises various elements, including logos, visual design, mission, tone of voice, product quality, customer service, and pricing (Wheeler, 2014). Branding enables institutions to express their values, personality, or distinctive features, which they want others to associate with them (Ries & Trout, 2018). Branding creates a unique identity, image, reputation, and experience, differentiating top organisations (Kwarteng-Amaniampong et al., 2024). According to Kotler and Keller (2020), a strong brand offers various benefits to customers, including identifying the product's source, reducing risk and cost, signifying quality and promising consistency, creating unique associations, providing a competitive advantage, and generating income and returns. In a higher educational setting, branding is not just about standing out but also creating a consistent experience across all touchpoints (Rhian, 2021). On a negative note, a strong brand can also make it more vulnerable to criticism and negative publicity Rodas, 2019). There is also brand dilution associated with the expansion of an organization's brand, making the brand less focused and less effective (Florack & Palcu, 2017). In addition, creating high expectations through branding can also lead to disappointment if the product or service fails to deliver (Moreira, 2023). It is believed that relying too heavily on branding and marketing can create a dependence on these efforts, rather than focusing on developing a high-quality product or service (Yu, 2020). Notwithstanding the positive and negative influence of branding, the extent of influence of brand awareness on students when deciding to choose a university as a place of study.

As a result, universities' branding strategies should be integrated across all student interactions. Branding requires a data-driven and customer-focused approach to marketing to fulfill customer needs (Hassana, Garba & Abdullahi, 2021). Technical universities, as tertiary institutions in Ghana, have limited information and understanding concerning how to develop strong linkages with stakeholders and the community through branding. They can utilise branding to facilitate effective increases in student enrolment, thereby achieving returns on investment.

Brand awareness: This concerns the extent of customers' familiarity with a brand's qualities and image, serving as a critical foundation for brand equity, customer preference, and loyalty (Kotler & Keller, 2020). According to Aaker (2020), brand awareness is the ability of potential customers to recognise or recall a brand's existence, driving customer acquisition and retention. A strong brand awareness influences student decisions, creating a competitive advantage (Bohara & Panwar, 2022). An institution that creates effective awareness about its brand builds loyalty through repetitive publicity and advertising, leading to long-term customer retention (Bilgin, 2018). According to Keller (2009), a brand with high awareness has a greater chance of being considered, influencing consumer choice and brand association. Brand awareness is a fundamental component of brand equity, influencing consumer decision-making (Stocchi et al., 2020). Furthermore, brand awareness comprises brand image, brand identity, brand culture, and brand personality (Bilgin, 2018; Bastos & Levy, 2012).

Brand Image

Brand image refers to the perception of a brand by its customers and stakeholders, reflecting the brand's identity, personality, and values (Chun, Lee & Park, 2020). According to Sallam (2014), brand image is a crucial factor in predicting consumer behaviour. Technical universities in Ghana can leverage brand image to assess their brands' or products' strength, uniqueness, and favorability among students, providing valuable insights into their reputation, distinctiveness, and appeal (Grönroos, 2015). By measuring brand image, universities can evaluate the perception of their brand by their target audience, identify areas of strength and weakness, and inform strategies to enhance their reputation and competitiveness (Grönroos, 2015). Additionally, Bilgin (2018) explains that brand image significantly influences brand equity through the associations formed by signals sent to consumers. For instance, the conscious signals sent to students can shape their perception of a technical university. According to Siitonen (2017), brand image refers to how customers or brand purchasers perceive a brand and the attributes they associate with it. However, the extent of the influence of brand image on technical university students' awareness and choice decisions to study or not study at the institution. Therefore, the following hypothesis is proposed:

H1: *A positive brand image positively predicts a student's awareness and decision to choose a higher institution as a place of learning.*

Brand Identity

Brand identity encompasses unique associations and perceptions that customers have regarding a brand, based on its distinctive attributes, personality, and market positioning (Mao et al., 2020). Additionally, brand identity is a collection of all brand elements that an organisation creates to portray the right image of itself to consumers (Kotler & Keller, 2020). Brand identity serves as a set of strategic instruments that an organisation can leverage to increase recognition, differentiate itself from rivals, and build strong customer loyalty and value for its brand (Wheeler, 2014). Brand identity can help establish a strong bond and relationship with students (Aaker & Keller, 1996). However, the extent of influence of the technical university's brand identity on students' awareness and choice decisions regarding enrolment. Consequently, it is proposed that:

H2: *A positive brand identity predicts a student's awareness and decision to select an institution as their preferred place of study.*

Brand Culture

Brand culture is the living, breathing embodiment of the brand, encompassing everything from employee communication to design elements (Kavaratzis & Hatch, 2021). It concerns the way an organization's values and beliefs are reflected in its products, services, and interactions with customers (Hassana, Garba, & Abdullahi, 2021). Most explanations regarding culture detail that it involves a specific group of values held closely by customers in society, which determine what is acceptable or unacceptable behaviour (Moorhead & Griffin, 2001). An organisation's brand showcases its culture, where the foundations of such culture are built on its roots and reflect on consumers. Brand culture plays an important role as a unique identifier that differentiates an organization from its competitors (Sharma, Patro & Chaudhry, 2022). It is worth noting that the behavior of brand marketers is influenced by trends in society, including shifts in values, cultural ideology, and ethics (Moreira, 2023). According to Sharma, Patro, and Chaudhry (2022), a Technical University's culture lays a strong foundation of values and acts as a basis for students to resonate with the brand's image. However, the impact of brand culture on technical university students' cultural awareness and choice decisions remains unclear. Consequently, it is proposed that:

H3: *A positive brand culture predicts a student's awareness and decision to select an institution as their preferred place of study.*

Brand Personality

Brand personality refers to the unique set of human-like characteristics that a brand exhibits, creating a sense of familiarity and affinity with its target audience (Loureiro et al., 2020). According to Aaker and Keller (1996), brand personality comprises five dimensions of the human five-factor model of personality. These dimensions include sincerity (down-to-earth, real, sincere, and honest), excitement (daring, exciting, imaginative, and contemporary), competence (intelligent, reliable, secure, and confident), sophistication (glamorous, upper-class, good-looking, and charming), and ruggedness (tough, outdoorsy, masculine, and western) (Gronroos, 2015). These variables have been replicated in Asian cultures, with consistency in cross-cultural variables discovered in Japan for sincerity, excitement, competence, and sophistication. However, a culture-specific variable of peacefulness was found in Japan (Mao et al., 2020). Literature on brand personality has found that Aaker's explanation and definition are the most recognized and representative, as they depict that brand personality and human personality characteristics are similar (Su & Tong, 2015). Therefore, brand personality emulates the features of human beings and directly personifies the brand, attributing human qualities to it (Siitonen, 2017). Technical universities, as artificial entities exhibiting these personality variables, have not been able to attract a high number of students for enrolment. Consequently, it is proposed that:

H4: *A positive brand personality predicts a student's awareness and decision to select an institution as their preferred place of study.*

Students' Choice Decision

The theory of decision-making has been studied and contextualized in various fields, from economics (Stolyarov et al., 2019) to psychology (Beach & Connolly, 2005) to statistics (Stine et al., 2011) and marketing (Cialdini, 2009). It has a considerable influence on medical, political, economic, organizational, and business fields (Stine et al., 2011). Decision-making involves choosing from several alternatives to derive an outcome (Eisenfuhr, 2011). Thus, the decision-making process of students involves an aspect of choice from several options, available resources, and opportunities. It also considers several factors and sub-processes, as well as a purpose or objective accomplished (Savioni et al., 2022). According to Chao et al. (2021) and Ben-Akiva et al. (2012), people do not make choice decisions in isolation but through the broader society and family they belong to. This mostly occurs, for instance, in the context of life paths, where they are impacted by the area in which they occur. Issues like making a decision concerning love and family affect people's future associations and life satisfaction (Savioni et al., 2022). Consequently, life paths selected by people interconnect and impact one another; for example, following a particular career in life can have a major influence on one's lifestyle and vice versa. According to the study conducted by Ngambeki, Dalrymple, and Evangelou (2008), choosing the type of job or degree program is connected to one's talent and capability, job security, highest income earned, and status in society. This implies that students' choices regarding a university are influenced to a great extent by the utilization of the deliberative system theory, which revolves around motivation and the decision to choose. Students are motivated by the culture of the university, the images, identity, and the university's personality.

According to psychological literature and authors, people's decision-making is influenced by two "forces or systems," including rationality and deliberation, also known as System 1, as well as System 2, which concerns students' emotions and intuition (Pacheco-Barrios & Fregni, 2020). These forces do not work in isolation but rather contribute to impacting people's decisions. For instance, students can make choice decisions regarding enrolment based on several associated memories concerning a Technical University using the institution's logo, image, colors, and ambiance. Such decisions are the fastest to be made and work automatically (Loewenstein et al., 2015; Stamos et al., 2018). Unlike System 1, System 2 is based on slow decision-making by people; it works intentionally. With this system, people go through a daunting process to reach a decision, which is long-term goal attainment, very slow, and controllable (Stamos et al., 2018). While people's intuition can dictate choice decisions, sometimes relations play a role in choice decisions (Levine, 2019; Khatri et al., 2018). The extent of the relationship between technical universities' brand awareness and students' decisions to enroll is not known. Consequently, it is proposed that.

H5: *A positive brand awareness significantly predicts students' awareness and likelihood of choosing and enrolling in a higher education institution.*

3. Method

Procedure

The study's population consisted of students enrolled full-time and part-time at a Technical University in Ghana. Respondents were selected using a convenient sampling technique. A hard-copy self-administered questionnaire was utilized to collect data for the study between March and April 2023, which took an average of 25 minutes to complete. The three authors participated in the data collection process, which took place at the university's departments, faculties, and classrooms with permission from Deans, Heads of Department, and other staff members. Participants were informed about voluntary participation and were guaranteed anonymity and privacy before receiving the questionnaires.

Participants

A total of 345 paper and pencil questionnaires were administered to participants. As shown in Table 1, 166 (48.1%) of the sample were males, whilst females formed the majority with 179 (51.9%). The majority (213, i.e., 61.7%) of the students were between 19 and 30 years, followed by 127 students with an age range between 31 and 40 years (i.e., 36.8%). Among the students, 121 were at the level 200 (i.e. second year) of their studies, followed by 109 at the third year of their studies, and the least of the students (13, i.e. 3.8%) were at the level 500, also known as the Diploma in Business Studies. Nearly 128 (37.1%) were from the Faculty of Applied Social Sciences, whilst 65 (18.8%) were in the Faculty of Built and Natural Environment. To achieve the objectives of this study, only students from five faculties of the university were concentrated. It must be noted that the sample distribution by age and marital status is consistent with other studies regarding university students' profiles (Mensah et al., 2021). This also supports the idea that the age categories of Ghanaian university students are predominantly young adults compared to adult learners.

Table 1: Profile of Respondents

Characteristics		Frequency	Percentage
Gender	Male	261	60.4
	Female	171	39.6
Age	Below 19	36	8.3
	19 to 30 years	386	89.4
	31 to 40 years	10	2.3
	41 and beyond	0	0.0
Level of study	Level 50	25	5.8
	Level 100	243	56.3
	Level 200	119	27.5
	Level 300	30	6.9
	Level 400 and beyond	15	3.5
Faculty	Art and Design	39	9.0
	Applied Science and Technology	159	36.8
	HTU Business School	70	16.2
	Built and Natural Environment	42	9.2
	Engineering	122	28.2

Measures

The hard copy survey questionnaire was divided into two sections. The first section involved the main concepts of the study, including brand image, brand identity, brand culture, and brand personality (independent variables) and students' choice decision (dependent variable). In total, 25 items were developed based on a review of the literature. The second section concerned respondents' profile characteristics, including gender, age, year of study, and faculty of study. A research instrument was designed relevant to the background of the study, research objectives, and problem, as well as hypotheses of the study. A measuring instrument is a tool or method that helps researchers collect data from participants or respondents with the purpose of the study in mind (Saunders, Lewis, & Thornhill, 2016). A 5-point Likert-type scale with end-points ranging from 'strongly disagree' (1) to 'strongly agree' (5) was employed for questions dealing with the independent and dependent variables in the model. It must be noted that with a 5-point Likert scale, a high overall score can be

viewed as a positive response, whereas a low overall score depicts a negative response (Mensah et al., 2021). Multiple-choice and dichotomous questions were utilised to gather respondents' profile data. The instrument met all the requirements, as indicated in the literature, and was pilot-tested for reliability (Saunders, Lewis, & Thornhill, 2016). A pilot test was conducted using 50 respondents, and no changes were required. The scales used in the study were originally constructed in English and were similar to those developed and widely used by experts and authors in the brand and brand management field (e.g., Bilgin, 2018; Pedeliento & Kavaratzis, 2019). In the research instrument, sample items concerning brand image included (1) "The name of my institution was of high prestige," (2) "There were positive word-of-mouth concerning high-quality teachers in my institution," (3) "My institution's brand image was consistent with my career aspirations," and (4) "My institution's brand image influenced my perception of its reputation among employers." All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items about brand identity included (1) "The colours of my institution were attractive," (2) "There were unique infrastructure designs in my institution," (3) "My institution's identity was consistent across different faculties," and (4) "My institution's brand identity reflected its commitment to sustainability." All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Sample items concerning brand culture included (1) "The institution's culture encourages creativity and innovation," (2) "My institution's staff had exceptional attitudes towards students," (3) "My institution's culture emphasized social responsibility," and (4) "My institution's brand culture supported work-life balance." All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Also, sample items for the element brand personality included the following: (1) "The institution's brand aligned with my values and personality," (2) "The institution's brand was consistent across different communication channels," (3) "My institution's brand was more relatable," and (4) "My institution's brand conveyed a sense of high standard." All items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Lastly, students were asked about their extent of awareness of the institution and its influence on choice decision on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The sample items were (1) "The institution's attractive typography and imagery were crucial factors in my decision to enrol," (2) "Awareness of my institution's positive shared values, beliefs, and practices played a significant role in my decision to apply," (3) "I chose my institution because it is a well-known brand," and (4) "The institution's set of human-like traits and characteristics influenced my decision-making to study there." Based on the results of the constructs, the measurement model was considered appropriate for the structural analysis (Hair et al., 2022; Hair et al., 2019).

Analytical approach

Data were processed using IBM SPSS statistical software version 26.0. Respondents' profiles were analyzed with descriptive statistics. The research model and associated hypotheses were assessed using partial least squares-based structural equation modelling (PLS-SEM). Measurement models were evaluated separately, followed by the evaluation of the structural model (Hair et al., 2022; Hair et al., 2018). The PLSc algorithm, followed by bootstrapping sampling (5,000 re-samples), was applied to determine model fit, factor loadings, path coefficients, and their respective significance levels (Hair et al., 2022). Common method bias was assessed using Kock's (2015) approach. The results show that all factor-level Variance Inflation Factors (VIFs) resulting from a full collinearity test are less than 3.3. Hence, the model can be considered free of common method bias.

4. Results

Model Characteristics and Estimations

The study's results showed that the composite reliability (CR) coefficients ranged from 0.842 to 0.858, exceeding the recommended limit of 0.70 (Sarstedt et al., 2022). Additionally, the Cronbach alpha (CA) coefficients were greater than 0.7, ranging from 0.725 to 0.780 (Nunnally, 1979). Fornell and Larcker (1981) and Heterotrait Monotrait (HTMT) guidelines were utilized to assess the model's discriminant validity (Henseler et al., 2015). The square root of the AVEs and HTMT met the suggested requirements, as shown in Tables 2 and 3 below (Hair et al., 2021). Table 2 shows that the square root of the AVE of brand image (0.760), brand personality (0.738), and brand identity (0.757) were greater than their corresponding rows (0.412), (0.479), (0.353) and columns 0.479 (i.e. brand image), 0.412 (i.e. brand identity) and 0.353 (i.e. brand culture) correlations. Similarly, the correlations between pairs of constructs produced results that were less than the

HTMT 0.90 threshold values. As a result, the four latent constructs used in the research model varied, indicating the quality of the measured constructs (see Table 3). Also, the variance inflation factor (VIF) was used to check for collinearity among each set of predictor variables (Hair et al., 2019). As a rule of thumb, VIF values less than 3 show an absence of collinearity. The results in Table 4 indicate that all VIF values of the pair of brand image, brand identity, brand culture, and brand personality were below 3, demonstrating the absence of collinearity among students' awareness and choice of institutions (a Technical University) as a place of study. Also, R2 values were measured to assess the model's exploratory power (Sarstedt, et al., 2022). It must be noted that R2 values of 0.75, 0.50 and 0.25 indicate substantial, moderate and weak values (Henseler et al., 2016). The R2 values obtained for this study were awareness and choice of students (0.907), brand culture (0.419), brand identity (0.124), and brand image (0.170) (see Table 5). All these results are satisfactory as the study predicts the extent of awareness and choice of students on an institution (Raithel et al., 2012). Also, to explain further, the effect sizes of the main exogenous construct were examined using Cohen's (1988) f2, which helped to determine the effects of the path (i.e. partial or full effect) and how the model fits (Nitzl, Roldán & Cepeda, 2016). The findings showed that the values between brand image and brand identity (0.204), brand culture and brand identity (0.142), brand culture and students' choice decision (1.597), brand identity and students' choice decision (0.016), brand image and students' choice decision (0.016), brand personality and students' choice decision (1.806), and brand personality and brand culture (0.720). As a rule of thumb, values higher than 0.02, 0.15, and 0.35 depict small, medium, and large f2 effect sizes (Cohen, 1988).

These indicate that brand culture and brand identity results showed small effects, brand image and brand identity indicated a medium effect. Also, brand culture and students' choice decision, and brand personality and students' choice decision, as well as brand personality and brand culture, indicate large effects, therefore, showing the model's full effect. In addition, to assess the PLS path model's predictive accuracy, Q2 values were measured (Sarstedt et al., 2022). As a guideline, Q2 values higher than 0, 0.25 and 0.50 show small, medium and large predictive relevance of the PLS-path model (Hair et al., 2021). The Q2 results are students' choice decision (0.754), brand culture (0.413), brand identity (0.095), and brand image (0.079), all indicating small, medium, and large predictive relevance of the PLS-path model (Hair et al., 2019). Also, the direct effect of H1, H2, H3, and H4 of the brand awareness elements on students' choice decision of an institution, and hypotheses of the model were evaluated. As indicated in Table 5, the results of the path coefficients, t-value, and p-values showed that all four path relations were significant. Consequently, H1 was supported as brand image predicts a positive influence on students, and H2, brand identity predicts a positive relation and influence on students' choice decisions on institutions. Also, H3, brand culture predicts a direct and positive relation to students' choice of an institution as a place of study, and H4, with moderate support, as brand personality predicts students' choice of an institution positively and significantly. These also support the view that, in totality, brand awareness of an institution positively influences students' decision-making regarding the choice of a university as a place to study, thereby supporting the H5 proposition.

Table 2: Convergent validity and reliability

Constructs	Items	Factor Loadings	CA	CR	AVE
Brand Image	Q1a	0.737			
	Q1b	0.690	0.757	0.845	0.578
	Q1c	0.856			
	Q1d	0.749			
Brand identity	Q2a	0.745			
	Q2b	0.856	0.753	0.842	0.573
	Q2c	0.742			
	Q2d	0.673			
Brand Culture	Q3a	0.614			
	Q3b	0.832	0.762	0.849	0.588
	Q3c	0.816			
	Q3d	0.785			
	Q4a	0.781			
	Q4b	0.864	0.725	0.770	0.544

Brand Personality	Q4c	0.628			
	Q4d	0.652			
	Q5a	0.748			
	Q5b	0.761	0.780	0.858	0.603
Students' Choice	Q5c	0.770			
Decision	Q5d	0.825			

Note (s): α=Cronbach alpha, CR=Composite reliability, AVE=Average variance extracted

Table 2: Fornell-Larcker criterion

Constructs	Students' choice decision	Brand Culture	Brand Identity	Brand Image	Brand Personality
Students' choice decision	***0.776***				
Brand Culture	0.854	***0.767***			
Brand Identity	0.313	0.353	***0.757***		
Brand Image	0.400	0.368	0.412	***0.760***	
Brand Personality	0.870	0.647	0.338	0.479	***0.738***

Note(s): Figures in italics are the square roots of the AVEs

Table 3: Heterotrait-Monotrait ratio (HTMT)

Constructs	Students' choice decision	Brand Culture	Brand Identity	Brand Image	Brand Personality
Students' choice decision					
Brand Culture	1.093				
Brand Identity	0.388	0.458			
Brand Image	0.508	0.481	0.551		
Brand Personality	1.089	0.849	0.471	0.658	

Table 4: Collinearity assessment (inner VIF values)

Constructs	Students' choice decision	Brand Culture	Brand Identity	Brand Image	Brand Personality
Students' choice decision					
Brand Culture	1.785		1.000		
Brand Identity	1.279			1.000	
Brand Image	1.430				
Brand Personality	1.950	1.000			

Table 5: R^2

Constructs	R-square	R-square adjusted
Students' choice decision	0.907	0.906
Brand Culture	0.419	0.417
Brand Identity	0.124	0.122
Brand Image	0.170	0.167

Table 5: Path coefficient and hypothesis assessment of direct paths

Hypothesis	Path	Path Coefficient	T statistics	P values
H1	Brand Image -> Students' Choice decision	-0.047	2.310	0.000
H2	Brand Identity -> Students' Choice decision	-0.063	3.490	0.000
H3	Brand Culture -> Students' Choice decision	0.496	17.651	0.000
H4	Brand Personality -> Students' Choice decision	0.893	60.384	0.000

Discussion

The study aimed to investigate the influence of brand awareness (i.e., brand image, brand identity, brand culture, and brand personality) on students at a technical university in Ghana. Further, it sought to determine whether the institution's brand is attractive enough to influence these students' decisions to choose the institution as a place of study. PLS-SEM analyses were utilised to confirm the proposed structural model and test the related hypothesised path relationships. The results of this study were found to be consistent with previous studies (Mao et al., 2020; Bilgin, 2018; Siitonen, 2017; Zhang, 2015), indicating that brand image, brand identity, brand culture, and brand personality support hypotheses H1, H2, H3, H4, and H5. Thus, a highly positive brand image perceived by students about an institution influences their decision to choose and select it as a place of study (Siitonen, 2017). The findings also suggest that, concerning brand personality, students will choose a university as a place of study if the institution exhibits a unique set of human characteristics and personifies itself in the minds of those students. This can be achieved, for instance, through positive customer service, effective communication strategies, and a clear visual identity (Mahmudah & Iskamto, 2024). In addition, students will select an institution as a place of study and enrolment if they perceive the institution's culture positively. The brand culture of the institution can be showcased if employees of the technical university communicate effectively and politely with stakeholders (Mahmudah & Iskamto, 2024). Students also consider the physical space of classrooms, the atmosphere and surroundings, and the digital interfaces of institutions when selecting and choosing them as places to enroll and study (Yiadom & Madele, 2022a). An institution's values and beliefs must be reflected in its products and services (Kwarteng-Amaniampong et al., 2024).

5. Managerial Implications for Theory and Practice

Theoretical implications

This study contributes to theory and practice in the field of branding and brand awareness in the higher education environment. The study provides support and predicts a strong relationship between (1) brand image, (2) brand identity, (3) brand culture, and (4) brand personality (which are elements of brand awareness discussed in the study) on students' choice of a higher institution as a place of study. These relationships have not been fully established and explored in the context of Ghanaian higher education literature. Thus, the hypothesis that the predictive validity of brand awareness (i.e., brand image, brand identity, brand culture, and brand personality) on students is strongly positive. This study supports Yiadom and Madele's (2022b) opinion that a positive experience of an institution's atmosphere and surroundings influences their decision-making to facilitate value creation. This study's findings that brand awareness has a positive impact on student choice support the view of Kotler and Keller (2016), that students are more likely to choose an institution with high brand awareness. It also supports the opinion of the marketing mix concerning a positive impact on brand awareness, as effective marketing strategies can increase brand recognition and recall (McCarthy, 1960). In addition, the findings support Hossler and Gallagher's (1987) and Kotler, Armstrong, and Tait's (2016) views that student choice has a positive impact on enrolment, as students who choose an institution are more likely to enrol.

Practical implications

Alongside providing theoretical contributions, this study also offers a practical solution to higher education institutions in Ghana and internationally on the best way to attract more students to derive value. The study revealed that a positive brand image perceived by students, parents, and other stakeholders motivated them to select an institution as a choice and a place of study. Consequently, specific programmes about the

institutions, for instance, relating to the surroundings, environment, and websites, must be well-designed with attractive content and clear pictures to inspire and attract students and parents. Concerning brand identity, higher education managers must continuously name some of the institutional halls with local and well-achieved or recognized figures in the university's community, provide instructions, and be social; these will communicate better messages about the institution to society and further offer word-of-mouth advertisement to entice students to choose them as a place of study (Ebrahim, 2020). Also, on brand culture, the cultural heritage of the community in which the institutions exist and the country as a whole must be respected to inspire and attract students. Higher institutions must also endeavor to use the language spoken, symbols, colors, and artifacts belonging to the community in their communications; these will make the community realize that the universities are part of them, generating emotional attachment with students and parents to patronize their services. Further, universities must be responsible to the members of the community by adhering to their values and beliefs. With regards to brand personality, the university policies must be updated to sensitize all staff to exhibit the best human characteristics towards all stakeholders who visit the institution.

Employees should be trained enough to understand the best human behaviors and traits for effective customer satisfaction (Su & Tong, 2015). Also, the employees of the institutions should be sincere, honest, down-to-earth, and charming to stakeholders. Excitement must be the hallmark of all employees at the university, as well as the necessary competence and qualifications to occupy positions at the university. The dress code of employees, especially secretaries, must look good and be of high class for positive experiences (Yiadom Madele, 2021). These will help position the institutions in the minds of anyone who visits their premises and serve as the best identity to the world (Yiadom & Madele, 2022a). Technical universities should invest in developing a unique and compelling brand identity that differentiates them from competitors. This can be achieved through consistent branding, effective communication, and engaging storytelling. The universities should increase their brand visibility through various marketing channels, such as social media, online advertising, and campus events. This can help raise awareness and attract potential students. Also, institutions should strongly emphasize their unique selling points (USPs), such as academic programmes, research opportunities, campus facilities, and alumni networks. This can help differentiate them from competitors and attract students who value these aspects. They should also invest in digital marketing strategies, such as search engine optimization (SEO), pay-per-click (PPC) advertising, and social media marketing. This can help increase brand visibility and attract potential students. Lastly, the academic staff must be given effective training to be positioned and encouraged to help students cultivate specific, positive, and realistic hopeful thinking behaviour as brand ambassadors to attract people to the universities.

Limitations and other future research directions

In this study, careful measures and efforts have been undertaken to reduce limitations; however, some limitations need to be acknowledged. Firstly, the study was limited to students and a technical university (a higher education institution) in Ghana. This did not allow the study's findings to be generalised and to test its validity to cover all other higher education institutions in the country. Therefore, caution is advised when using the study's findings. Secondly, this is the first study to determine the awareness of students and potential students about a technical university in Ghana. Therefore, a recommendation is made that future studies focus on other higher education environments. Lastly, future authors should put more effort into theoretically and empirically testing the antecedent roles of other constructs related to branding and brand awareness and their influence on students' choices of an institution, as well as their further antecedent variables. Future research could explore the impact of brand awareness on Ghanaian students' retention and graduation rates. Also, future investigations could evaluate the role of social media in shaping brand awareness and influencing students' choice of institution. A future research study could examine the effectiveness of different branding strategies, such as storytelling, emotional branding, and experiential branding, in the Ghanaian higher education sector.

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The Interrelationship among Perception of Event Quality, Perceived Value, Event Image, Satisfaction and Revisit Intentions of Road Runners in Taiwan

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Abstract: This study examined the interrelationships between perceived event quality, perceived value, event image, satisfaction, and revisit intentions among road race participants in Taiwan. The data collection involved 641 valid questionnaires from participants across nine road race events held during 2017-2018. Structural equation modeling analysis yielded three key findings. First, the theoretical model demonstrated satisfactory overall explanatory power. Second, event satisfaction and perceived value significantly and positively influenced revisit intentions. The analysis revealed the direct effects of event quality, event image, and perceived value on event satisfaction. In contrast, event quality and event image directly influenced perceived value, and event quality directly affected event image. Third, the model explained 63% of the variance in event image, 72% in perceived value, 70% in satisfaction, and 59% in revisit intention. The findings highlight the critical roles of perceived event quality, event image, perceived value, and satisfaction in predicting road race participants' revisit intentions in Taiwan. These results offer valuable insights for event marketing managers and organizers to enhance event outcomes.

Keywords: *Event quality, event image, perceived value, satisfaction, revisit intention.*

1. Introduction and Background

The landscape of community tourism has been transformed by the emergence of small-scale athletic competitions (Kaplanidou & Gibson, 2010; Koo, Byon & Baker III, 2014). Through careful venue selection and strategic positioning, events like marathons, Senior Games, and Masters' Games have successfully cultivated their status as tourism attractions, effectively drawing participants and spectators from abroad (Oshimi & Harada, 2016; Wicker, Hallmann & Zhang, 2012). From data provided by the Runners' Plaza (2016), Taiwan experienced remarkable growth in road race events, expanding from 91 events in 2006 to 1,393 events in 2018, representing a fifteen-fold increase over twelve years. This significant expansion of road race events has generated substantial social, environmental, and economic impacts on host communities (Liu, Hsu, Chen & Chuang, 2015; Liu, Tseng, Lee & Tung, 2016).

The growth and sustainable development of road race events in Taiwan have become a critical focus for event organizers. Revisit intention has emerged as a fundamental indicator of event sustainability and growth potential, which can be evaluated through analyzing tourist behaviors related to satisfaction, intention to return, and other key consumer variables (Liu et al., 2016). Empirical research has identified several crucial factors that influence revisit intention: event quality (Jin, Lee & Lee, 2013; Ko & Pastore, 2004; Theodorakis, Kaplanidou & Karabaxoglou, 2015), perceived value (Jin et al., 2013; Nuviala, Grao, Pérez & Nuviala, 2012), event image (Jin et al., 2013; Kaplanidou & Vogt, 2007; Oshimi & Harada, 2016; Som, Marzuki, Yousefi & Abukhalifeh, 2012) and satisfaction (Goh, 2015; Koo et al., 2014; Theodorakis et al., 2015).

Zeithaml's (1988) Quality-Value-Behavior (QVB) Intention model establishes the close relationship between service quality, perceived value, and consumer purchasing decisions, positing that quality serves as an antecedent to enhanced perceived value (Cronin, Brady & Hult, 2000). Research by Jin, Lee & Lee (2015) demonstrated that experience quality significantly influences customer perceived value, image, and satisfaction, while both perceived value and image affect satisfaction and behavioral intentions. These established relationships form the theoretical foundation for the current study's investigation using the QVB formation process.

Purpose of research

This study examined the determinants of participants' revisit intentions in road race events and explored the interrelationships between perceived event quality, perceived value, event image, satisfaction, and revisit intentions in Taiwan. The findings offer valuable insights for tourism policy development and provide event operators and organizers with strategic guidance for product planning, service delivery, and marketing initiatives while enhancing service quality. The study established two primary research objectives:

- To evaluate the applicability of the theoretical construct and overall model of revisit intention to road race event participants in Taiwan.
- To examine how event quality, perceived value, event image, and satisfaction influence revisit intentions among road race event participants in Taiwan.

2. Literature Review

Event quality

Service quality reflects customers' comprehensive assessment regarding a service's excellence (Parasuraman, Zeithaml & Berry, 1985). The evaluation emerges from the interplay between customers' pre-service expectations and their post-experience assessments of service delivery (Zeithaml, Berry & Parasuraman, 1993). In recent years, an increasing amount of research has focused on service quality and consumer behavior. Moon, Kim, Ko, Connaughton & Lee (2011) expanded traditional service quality frameworks by examining both tangible and intangible aspects of spectator experiences at an international cycling competition. Their investigation demonstrated how visitors' assessments of event quality shaped their perceptions of the host destination. Within sports spectatorship, event quality comprises several key elements: overall event experience (Ko & Pastore, 2004), social interactions (Brady & Cronin, 2001), performance outcomes (Deighton, 1992), and venue characteristics (Bitner, 1992; Westerbeek, 2000).

Event image

Drawing from brand image theoretical foundations, event image encapsulates how participants psychologically construct their understanding of an event (Kaplanidou & Vogt, 2007). Within the context of sports tourism, where events serve as destination attractors (Kaplanidou & Vogt, 2010), event imagery and destination perception form an interconnected relationship (Hallmann, Kaplanidou & Breuer, 2010; Oshimi & Harada, 2016). Gwinner's (1997) seminal work describes event image as the collective interpretations and associations formed by consumers. His framework identifies three key influencing factors: event classification (such as sporting competitions, concerts, or art festivals), event attributes (comprising elements like scale, professional standing, heritage, and venue), and individual variables (including personal significance and past experiences) (Gwinner, 1997).

Perceived value

Value assessment in consumer behavior represents a complex evaluation process where customers weigh benefits received against resources invested (Zeithaml, 1988). This multifaceted construct encompasses not only monetary considerations but also social and psychological benefits derived from consumers' subjective evaluations. Research has established that perceived value significantly influences consumer behavior patterns, including recommendations and return visits (Jin et al., 2015). Scholars have positioned perceived value as a crucial intermediary factor between service quality, pricing, and customer satisfaction, ultimately shaping future behavioral intentions (Moon, Kim, Ko, Connaughton & Lee, 2013; Nuviala et al., 2012). This dynamic relationship extends to its role in fostering service loyalty and influencing long-term consumer behavior (Koo et al., 2014).

Satisfaction

Event satisfaction represents a critical area of investigation in tourism and sporting event research (Goh, 2015; Jin et al., 2015), encompassing consumers' subjective and objective assessments of products and activities (Goh, 2015), including both the destination and its various components (Koo et al., 2014; Shonk, 2012). Empirical investigations have revealed multiple factors contributing to event satisfaction. The literature identifies three primary dimensions: the caliber of event delivery (Jin et al., 2013; Ko & Pastore, 2004; Theodorakis et al., 2015), attendees' perceived value assessments (Chen, & Chen, 2010; Jin et al., 2013; Nuviala et al., 2012), and overall event image perception (Jin et al., 2013; Kaplanidou & Vogt, 2007; Oshimi & Harada, 2016; Som et al., 2012).

Revisit intentions

Research has identified three fundamental aspects of tourist behavior: destination choice, experiential evaluation, and future behavioral intent (Chen & Tsai, 2007). While experiential evaluation encompasses travel experiences, value perceptions, and overall satisfaction, behavioral intentions reflect both the likelihood of return visits and willingness to provide recommendations (Som et al., 2012). The significance of revisit intention as a predictor of future travel behavior (Lee, 2009) is well-established, with Baker and Crompton (2000) defining it as tourists' probability of activity repetition. Current methodological approaches emphasize measuring both consumer loyalty (Koo et al., 2014) and behavioral intentions (Chen & Chen, 2010; Jin et al., 2013), incorporating contextual factors and multidimensional assessment scales (Lee, 2009; Williams & Soutar, 2009).

Relationships among event quality, perceived value, event image, satisfaction and revisit intentions

The literature reveals complex relationships between event elements and consumer responses. Studies indicate that event quality influences personal event image formation (Lee, Lee & Lee, 2005), with consumer experiences shaping both overall image perceptions (Chen & Tsai, 2007) and broader outcomes including perceived value, satisfaction, and behavioral intentions (Jin et al., 2015). Within sporting events, quality measures positively correlate with value perception, event imagery, and participation intentions (Jin et al., 2013). Notably, perceived value emerges as a particularly robust predictor of repurchase intentions (Cronin et al., 2000). Research further demonstrates that experience quality serves as a key determinant of perceived value, which directly affects both tourist satisfaction and behavioral intentions (Chen & Chen, 2010; Jin et al., 2015).

Research by Kaplanidou & Vogt (2007) demonstrated that both event and destination image are closely related, and are positive indicators of tourists' perceived value. Empirical evidence shows that travelers with positive pre-visit destination impressions typically report higher perceived value after their visit (Chen & Chen, 2010; Lee, 2009). Additionally, Jin et al. (2013) found that sporting image influences visitors' value perceptions, which in turn directly impacts their future participation intentions. Scholarly literature positions event image as a key determinant of destination image development (Oshimi & Harada, 2016), driving positive word-of-mouth behaviors. The combined impact of event and destination imagery extends beyond immediate satisfaction (Koo et al., 2014), affecting both general behavioral patterns (Kaplanidou & Vogt, 2007) and specific return visit intentions (Jin et al., 2015; Oshimi & Harada, 2016; Wicker et al., 2012).

The relationship between satisfaction and behavioral intentions has been well-documented in research (Kaplanidou & Vogt, 2007). Consumer satisfaction shapes multiple outcomes, including brand loyalty, reputational effects, and repurchase behavior (Koo et al., 2014). Further investigations reveal satisfaction's crucial role in predicting revisit intentions, establishing clear connections between event image, satisfaction levels, and return visit probability (Shonk, 2012). This evidence positions satisfaction as a mediating factor in the relationship between event image and revisit intentions.

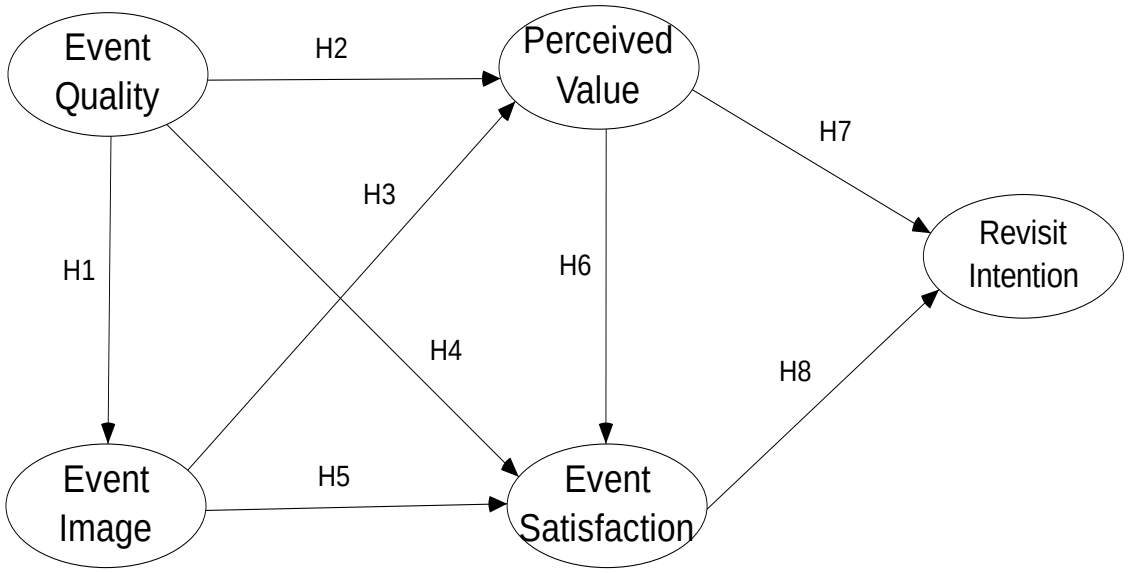
3. Research Methodology

Research framework and hypotheses

Based on the synthesis of theoretical perspectives and prior research presented above, this study establishes an integrated conceptual model (Figure 1) and advances eight hypotheses to investigate these relationships.

H1: Event quality demonstrates a positive relationship with event image development.
H2: Event quality demonstrates a positive relationship with participants' value perceptions.
H3: Event image positively influences attendees' perceived value.
H4: Event quality exhibits a positive relationship with participant satisfaction.
H5: Event image positively affects participants' satisfaction levels.
H6: Perceived value shows a positive relationship with event satisfaction.
H7: Perceived value positively influences participants' intention to revisit.
H8: Event satisfaction demonstrates a positive relationship with revisit intentions.

Figure 1: Framework of the study



Participants

This research adopted a purposive convenience sampling method to investigate the adult participants (aged 18 and above) who took part in major road race events in Taiwan. Purposive sampling was employed to specifically target individuals with relevant experience in marathon participation, ensuring the study's focus on active road race participants. Convenience sampling was also integrated, allowing researchers to approach participants who were readily accessible at the event locations. The data collection was conducted over nearly four months, from October 22, 2018, to February 12, 2019, during which 800 questionnaires were distributed at nine prominent marathon events across Taiwan. These events were chosen for their scale, popularity, and geographic diversity, representing a comprehensive cross-section of Taiwan's road racing community. The surveyed marathons included the 2018 Taipei Marathon, 2018 Shin-Chu City Marathon, 2018 Gukeng Coffee Marathon, 2018 Cijin Crazy Run, 2018 Wandan Marathon, 2018 Taroko Gorge Marathon, 2019 Brown Boulevard Marathon, 2019 Snow Mountain Marathon, and 2019 Kinmen Marathon. From the 800 questionnaires distributed, 641 valid responses were collected, resulting in a valid response rate of 80.13%. This substantial response rate reflects the participants' high level of engagement and interest in the research topic, providing a robust data set for subsequent analysis.

Instrumentation

The questionnaire design drew from established literature in sports events and tourism research, incorporating various dimensions identified in previous studies. These included event quality measurements (Grönroos, 2006; Moon et al., 2011), event image assessments (Gwinner, 1997; Hallmann et al, 2010; Kaplanidou & Vogt, 2007), perceived value metrics (Chen & Chen, 2010; Zeithaml, 1988), event satisfaction indicators (Goh, 2015; Shonk, 2012), and revisit intention factors (Kaplanidou & Vogt, 2007; Som et al., 2012; Wicker et al., 2012) (see Table 2). The instrument employed a seven-point Likert scale (ranging from 1 = strongly disagree to 7 = strongly agree) across five sections, including demographic questions. Statistical analyses validated the instrument's robustness through multiple indicators: the critical ratio values and total correlation coefficients achieved significance, demonstrating scale discrimination; both exploratory and confirmatory factor analyses confirmed the instrument's validity and model fit; and reliability testing yielded Cronbach's alpha coefficients exceeding .90 across all scales, indicating strong internal consistency (Chiou, 2010).

Data analysis

The data analysis process employed SPSS 23.0 for Windows to generate descriptive statistics of participants' demographic characteristics and behavioral patterns. To evaluate the theoretical framework, structural equation modeling (SEM) was conducted using AMOS 23.0 for Windows, which assessed both the hypothesized relationships and the overall model fit with the empirical data. The maximum-likelihood estimation (MLE)

method was utilized for parameter estimation, and hypothesis testing was performed to examine the directionality and significance of the proposed relationships (Chang, 2011; Chiou, 2010).

4. Results

Participants' demographics and participation behaviors analysis

The participant demographics revealed a sample of 384 males (59.9%) and 257 females (40.1%), with participants averaging 34.58 years of age (SD=11.97), predominantly falling within the 21-40 age range. Educational and economic data showed that university graduates constituted 44.8% of the participants, while the largest income bracket (36% of participants) earned between NTD 20,000-39,999 monthly. Regarding event participation patterns, participants reported an average of 5.79 (SD=7.11) sporting events, with most attending 2-10 events annually. The half marathon emerged as the most popular event category among participants in the previous year. These demographic characteristics demonstrate a diverse participant base, supporting the characterization of road race activities as "sport for all" in Taiwan (Liu, 2015; Liu et al., 2016).

Table 1: Participants' Demographics and Participate Behaviors Analysis (N=641)

VARIABLE	FREQUENCY	PERCENTAGE
GENDER		
Male	384	59.9%
Female	257	40.1%
AGE		
20 years old & below	76	11.9%
21-30 years old	188	29.3%
31-40 years old	182	28.4%
41-50 years old	120	18.7%
51 years old & over	75	11.7%
EDUCATION		
Senior high school	38	5.9%
high school	154	24.0%
College degree	86	13.4%
University degree	287	44.8%
Master's & doctoral degree	76	11.9%
MONTHLY INCOME		
NTD 19,999 below	135	21.1%
NTD 20,000–39,999	236	36.8%
NTD 40,000–59,999	182	28.4%
NTD 60,000–79,999	59	9.2%
NTD 80,000 & More	29	4.5%
PARTICPATE CATEGORY IN THE PAST YEAR		
Ultra-Marathon	56	8.7%
Marathon	206	32.1%
Half Marathon	355	55.4%
11-20K	138	21.5%
10K & below	351	54.8%
PARTICPATING TIMES IN THE PAST YEAR		
1 time	138	21.5%
2-4 times	236	36.8%
5-10 times	186	29.0%
11-20 times	66	10.3%
21 times & over	138	21.5%

Measurement Model

Confirmatory factor analysis (CFA) was employed to validate the factor structure of the five key constructs in the study: event quality (comprising game quality, interaction quality, outcome quality, and physical quality), event image (creative features and reputation), perceived value (behavioral price and emotional response),

event satisfaction (service demand, quality commitment, and overall satisfaction), and revisiting intention (actively prepared, revisiting intention, and recommendation intention). The analysis also assessed the model's overall fit. The CFA, performed using maximum-likelihood estimation (MLE), demonstrated strong model fit indices ($\chi2$ = 190.75, d.f. = 67, $\chi2$ / d.f. = 2.85, GFI = .96, AGFI = .94, NFI = .97, CFI = 0.98, RMSEA = .054). Following Hair et al. (2010) guidelines, convergent validity was evaluated through item reliability, construct reliability, and average variance extracted (AVE). All standardized factor loadings showed significant t-values ($p < 0.01$), while construct reliability values ranged from 0.80 to 0.91, exceeding the recommended threshold of 0.7 (Hair et al., 2010). Discriminant validity was assessed by comparing each construct's AVE with shared variances between constructs (Chang, 2011). The AVE values ranged from 0.66 to 0.81, predominantly surpassing the recommended 0.5 threshold (Jöreskog & Sörbom, 1986). Table 3 presents the inter-construct correlations, with AVE values displayed on the diagonal. The comparison between correlations and AVE values confirmed adequate discriminant validity. These comprehensive results validate the measurement model's convergent validity, establishing its reliability for examining structural relationships among constructs.

Table 2: Convergent Validity

Constructs and items	Mean	Standardized factor loading	R2	CR	AVE
Event quality				.90	.68
Game quality (GAQ)	6.00	.80	.64		
Interaction quality (IAQ)	6.03	.87	.75		
Outcome quality (OCQ)	6.11	.85	.73		
Physical quality (PHQ)	5.94	.78	.61		
Event image				.80	.66
Creative features (CRF)	5.95	.82	.67		
Reputation (REP)	5.94	.81	.65		
Perceived value				.89	.81
Behavioral price (BEP)	6.11	.90	.81		
Emotional response (EMR)	6.15	.90	.81		
Event satisfaction				.91	.76
Service demand (SED)	5.98	.83	.69		
Quality commitment (QUC)	6.05	.90	.81		
Overall satisfaction (OVS)	6.07	.89	.79		
Revisit intention				.90	.74
Actively Prepared (ACP)	6.05	.85	.72		
Revisiting intention (RVI)	6.12	.90	.81		
Recommendation intention (RCI)	6.07	.83	.69		

Table 3: Analysis of AVE discriminant validity

	Event Quality	Event Image	Perceived Value	Event Satisfaction	Revisit Intention
Event Quality	.68				
Event Image	.64	.66			
Perceived Value	.67	.64	.81		
Event Satisfaction	.66	.55	.59	.76	
Revisit Intention	.40	.35	.50	.55	.74

Note: The AVE of each dimension is higher than the square of the correlation coefficient of each pair of variables, this suggests discriminant validity.

Structural model

The structural model was evaluated using the complete sample to test the proposed hypotheses, focusing on path loadings and R2 values. Model fit was assessed using sample size-dependent goodness-of-fit measures, with a $\chi2$ / d.f. A ratio below 5 served as the acceptance criterion. The analysis yielded a $\chi2$ value of 2.82 ($\chi2$ / d.f. = 194.81/69), with additional fit indices (GFI = 0.96, AGFI = 0.94, NFI = 0.97, CFI = 0.96, RMSEA = 0.053) demonstrating acceptable model fit. The parameter estimates are illustrated in Figure 2, with detailed hypothesis test results presented in Table 4. All eight hypotheses received empirical support. The findings

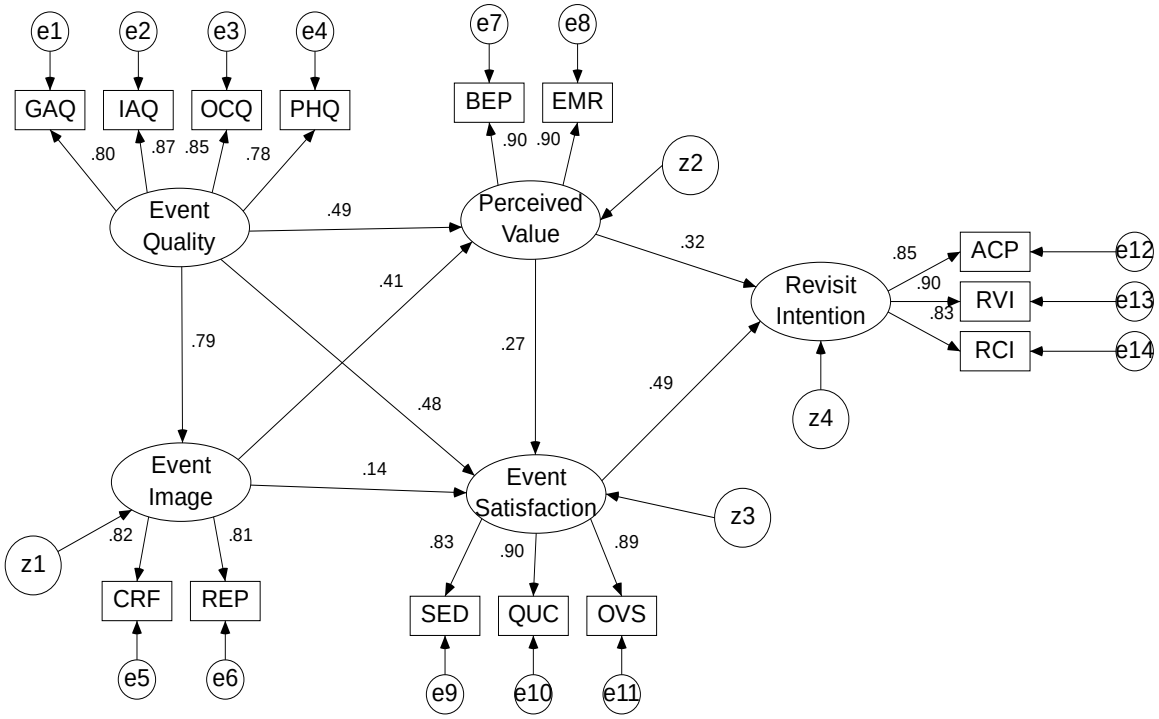
revealed significant relationships at the 0.05 level: event quality significantly influenced event image (t-value = 17.22***), perceived value (t-value = 7.88***), and event satisfaction (t-value = 7.36***), confirming H1, H2, and H4; event image demonstrated significant positive effects on both perceived value (t-value = 6.37***) and event satisfaction (t-value = 2.03*), supporting H3 and H5; perceived value significantly impacted event satisfaction (t-value = 4.16***) and revisit intention (t-value = 5.68***), validating H6 and H7; and event satisfaction showed a significant influence on revisit intention (t-value = 8.59***), confirming H8.

Table 4: The Results of the Hypothesis Tests

Path	Structural coefficients	S.E.	t-Value	Test result
H1: Event quality → Event image	.79	.06	17.22***	Support
H2: Event quality → Perceived value	.49	.08	7.88 ***	Support
H3: Event image → Perceived value	.41	.06	6.37 ***	Support
H4: Event quality → Event satisfaction	.48	.08	7.36 ***	Support
H5: Event image → Event satisfaction	.14	.06	2.03*	Support
H6: Perceived value → Event satisfaction	.27	.06	4.16 ***	Support
H7: Perceived value → Revisit intention	.32	.06	5.68 ***	Support
H8: Event satisfaction → Revisit intention	.49	.06	8.59 ***	Support

(*p< 0.05; ***p < 0.001)

Figure 2: Estimated Results of the Model



The analysis of direct and indirect effects, detailed in Table 5, revealed several key relationships among the variables. Event quality demonstrated its strongest direct effect on event image (0.79), with comparatively lower direct effects on perceived value (0.49) and event satisfaction (0.48). Additionally, event quality exhibited indirect effects on both perceived value (0.32) and event satisfaction (0.33). Event image showed a stronger direct effect on perceived value (0.41) compared to its impact on event satisfaction (0.14), while also maintaining an indirect effect on event satisfaction (0.11). Perceived value's direct effect was more pronounced on revisit intention (0.32) than on event satisfaction (0.27), with an additional indirect effect on revisit intention (0.13). Event satisfaction demonstrated a substantial direct effect on revisit intention (0.49), completing the chain of relationships in the model.

Table 5: Direct, Indirect, and Total Effects of Relationships

Path	Direct effect	Indirect effect	Total effect
Event quality → Event image	.79	N. A	.79
Event quality → Perceived value	.49	.32	.81
Event image → Perceived value	.41	N. A	.41
Event quality → Event satisfaction	.48	.33	.81
Event image → Event satisfaction	.14	.11	.25
Perceived value → Event satisfaction	.27	N. A	.27
Perceived value → Revisit intention	.32	.13	.45
Event satisfaction → Revisit intention	.49	N. A	.49

Note: N.A.: It was not possible to determine the direct or indirect effects.

Discussion

The study findings provided strong support for multiple hypotheses concerning the relationships between key event variables. Event quality emerged as a significant predictor, demonstrating substantial influence on event image (H1, coefficient = .79), perceived value (H2, coefficient = .81), and event satisfaction (H4, coefficient = .81). These results align with previous research that identified event quality as the primary determinant of event image (Chen and Tsai, 2007; Lee et al., 2005), perceived value (Cronin et al., 2000; Jin et al., 2015; Zeithaml, 1988), and event satisfaction (Chen & Chen, 2010; Cronin et al., 2000) in road race events. The study also confirmed that event image significantly impacts participants' perceived value (H3, coefficient = .41) and event satisfaction (H5, coefficient = .25). These findings support existing literature highlighting event image's crucial role in shaping perceived value (Chen & Chen, 2010; Chen & Tsai, 2007; Lee, 2009; Kaplanidou & Vogt, 2007; Oshimi & Harada, 2016) and event satisfaction (Chen & Chen, 2010; Koo et al., 2014; Lee, 2009) in the road race context. However, contrary to some previous research (Jin et al., 2013; Shonk, 2012), this study did not find evidence for a direct positive relationship between event image and revisit intention.

The findings also supported the hypotheses regarding the influence of perceived value on both event satisfaction (H6, coefficient = .27) and revisit intention (H7, coefficient = .45). These results corroborate previous research identifying perceived value as a key determinant of event satisfaction (Chen & Chen, 2010; Lee, 2009) and revisit intention (Brady, Knight, Cronin, Hult & Keillor, 2005; Jin et al., 2013; Koo et al., 2014) in road race events. Additionally, the study confirmed that event satisfaction significantly influences participants' revisit intention (H8, coefficient = .49), consistent with existing literature that establishes event satisfaction as a crucial predictor of revisit intention in road race events (Kaplanidou & Vogt, 2007; Koo et al., 2014; Shonk, 2012).

5. Managerial Implications and Recommendations

The study's empirical findings highlight event quality as the dominant factor, demonstrating the strongest relationships with event image (coefficient = .79), perceived value (coefficient = .81), and event satisfaction (coefficient = .81), surpassing all other variables in influence strength. In the road race event context, the results identify two primary drivers: event quality and event image, with event image showing significant effects on perceived value (coefficient = .41) and event satisfaction (coefficient = .25). The analysis also revealed perceived value's notable indirect impacts on both event satisfaction (coefficient = .27) and revisit intention (coefficient = .45). Within the road race event framework, these findings establish event quality and event image as the most crucial determinants of participants' perceived value, satisfaction, and revisit intention. Specifically, multiple event components - including characteristics, atmosphere, game quality, interaction quality, outcome quality, and physical quality - emerge as significant factors influencing participants' perceived value, satisfaction, and intention to revisit. These findings provide valuable theoretical contributions to the understanding of sport and tourist event development.

The practical implications of this study emphasize that optimizing service strategy for event quality and image is the most effective approach to road race event organization. Event organizers and host cities should therefore focus on understanding and enhancing participants' emotional connections to these events. This includes strengthening destination-specific features to meet participant expectations and implementing targeted incentives and motivational elements to encourage event participation. For example, when hosting a road race event, organizers in the host city should prioritize managing participants' destination image

expectations through comprehensive service provision. This includes ensuring adequate and accessible local accommodation options, establishing efficient transportation networks, identifying suitable dining establishments, and highlighting nearby attractions. Additionally, the event's success depends on deploying well-trained staff and volunteers who can effectively meet participants' needs and expectations. These service elements collectively contribute to creating a positive overall event experience aligned with participants' anticipated destination image. Not only are high service quality standards maintained, but also is positive event image developed, perceived value enhanced, satisfaction increased, and ultimately runners' intentions to revisit road race events strengthened (Goh, 2015; Jin et al., 2013; Som et al., 2012).

Conclusion

This study employed a theoretical framework based on the Quality-Value-Behavior formation process model to examine the relationships between participants' experiences and behavioral intentions in road race events. The analysis revealed a complex network of causal relationships among key variables. Event quality emerged as the foundational element, demonstrating significant influence on three critical factors: event image, perceived value, and event satisfaction. The findings also established a clear chain of influence where event image affects both perceived value and event satisfaction, while perceived value impacts both event satisfaction and revisit intention. Event satisfaction, in turn, directly influences revisit intention. Within this framework, perceived value was identified as a crucial intermediate factor that shapes both event satisfaction and revisit intention. Most notably, event quality stood out as the predominant factor in determining participant behavior, as it initiates a cascade effect through perceived value and event satisfaction, ultimately influencing participants' intentions to revisit. This comprehensive understanding of the relationship dynamics provides valuable insights into how road race events can effectively manage and enhance participant experience and loyalty.

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Marketing Mix Strategies: A Key Factor in Influencing Consumers' Purchase Intention of Harumanis Mango in Perlis

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Abstract: This study examines the effect of the marketing mix (product, price, place, and promotion) on purchase intention and consumer purchasing decisions on Harumanis mango in Malaysia. The data in the study are quantitative using a primary data source. Data was collected using a convenience sampling method from April to June 2023. A set of questionnaires was distributed to the consumers who have experience in purchasing and eating Harumanis mango. A total of 310 respondents responded to the questionnaires, which were distributed online. The data was then filtered and proceeded to the data analysis. The results showed that the two elements, namely product and place, had a positive and significant effect on the purchase intention and purchasing decision of Harumanis, while the other two elements (price and promotion) were insignificant in influencing consumers' intention to purchase Harumanis. Hence, the study recommends the government revise the ceiling price of Harumanis mango as the current market price of this mango is considered high, and an intensive promotional activity should be properly strategized to attract consumers to purchase Harumanis.

Keywords: *Marketing mix, Consumer's Purchase Intention, Harumanis*

1. Introduction

Harumanis mango was introduced by the Malaysian Agricultural Research and Development Institute (MARDI) in 1980. It is one of the best-tasting mango types in Malaysia and has grown in popularity in Perlis (Uda, Gopinath, Hashim, Hakimi, Afnan Uda, Anuar, Bakar, Sulaiman & Parmin, 2020). It was cultivated commercially in Perlis and a small portion in Kedah since it is particularly susceptible to climate change and needs a prolonged dry period to bloom (Farook, Aziz, Harun, Husin, Shakaff, Jaafar, Ndzi, Zakaria & Kamarudin, 2012). This mango also requires a hot and dry climate with a high temperature and less rain. The distinctiveness of the Perlis region has made the Harumanis mango famous and allowed *Magnifera indica Cv*, the premium Perlis variety, to be exported to other countries such as Japan (Musa, Hassan, Mohd Yusof & Mohd Daud, 2010). Harumanis is the most sought-after cultivar in Perlis since it is only available for a short period each year, from the middle of April to the middle of June (Farook et al., 2012). This situation has led to a substantial rise in demand for this fruit during its harvesting season. Nevertheless, Harumanis growers have certain limitations in securing an adequate supply of these fruits, resulting in their elevated market value.

Table 1 shows the statistics of Harumanis mango in Perlis from 2019 until 2022 (Department of Statistics Malaysia Perlis, 2024). The table reveals significant trends in the cultivation and yield of this premium mango variety. It can be seen that the number of Harumanis growers has shown a notable increase from 1,292 in 2019 to 3,247 in 2022. This growth indicates a rising interest and investment in Harumanis cultivation, likely driven by the Harumanis premium market value and consumer demand. Despite the increase in the number of Harumanis growers, the data reveals fluctuations in trends in both the planted area and harvested area over the years. The total planted areas have decreased from 2222.0 Ha in 2019 to 1716.6 Ha in 2022, with a significant drop observed between 2019 and 2021. This decline may reflect challenges in land availability, climatic conditions, and the availability of agricultural inputs. Similarly, the harvested areas have also experienced a decline from 1850.6 Ha in 2019 to 1698.9 Ha in 2022. Over time, the reduction of the harvested areas suggests that not all planted areas produce fruits or that certain Harumanis farms may have been taken out of production due to various factors such as disease or unfavourable growing conditions. The total production of Harumanis mangoes has seen a marked decrease from 2019 to 2022, a reduction of approximately 60 per cent. The significant drop in production can be attributed to several potential factors such as extreme weather conditions, which affected the flowering process of Harumanis.

Table 1: Statistics of Harumanis mango in Perlis for 2019 until 2022

Year	2019	2020	2021	2022
No. of Harumanis growers	1292	1918	2026	3247
Planted Area (Ha)	2222.0	1465.5	1045.7	1716.6
Harvested Area (Ha)	1850.6	1060.0	1016.8	1698.9
Total Production (Metric Tonne)	4255.0	2121.0	1894.6	1698.9

Source: Department of Statistics Malaysia, Perlis, (2020)

Up to now, Harumanis growers have tried to increase production to meet high domestic and international demand. Coupled with the rise in population growth trends, the demand and supply seem to fluctuate every year during the production season. The production of Harumanis mostly depends on the weather conditions, hence the production is uncertain. Due to the unpredictable weather conditions and the spike in production cost, the price of Harumanis has increased, resulting in an abundance of Harumanis in the market. As consumers refuse to pay a high price, the demand for Harumanis has decreased. However, consumer demands keep changing. A high demand sometimes results in an insufficient supply of the Harumanis. The inconsistency in the demand and supply of the Harumanis has a huge effect on the producers, especially as it can reduce their profit margin. The problems arise when the supply exceeds the demand, which is a dumping issue. Previous studies stated that dumping of Harumanis mango can affect the growers' income and losses (Mustafa & Razli, 2022).

Popular as the most expensive mangoes in Malaysia, the premium price of RM30-45 per kilogram may discourage consumers (Muhamad, Ruslan, Ibrahim, Saili and Ismail, 2021) especially given the current economic situation characterised by high living costs and inflation, which leads consumers to be more discerning about their expenditures. Additionally, a shift in consumer purchase behaviour, driven by these economic challenges, impacts their willingness to purchase luxury items like Harumanis, even during the peak season. Despite the annual availability of Harumanis and its strong demand during the season, the premium price does not necessarily guarantee increased sales, as consumers remain cautious about their expenditures. Nevertheless, for Harumanis lovers and some groups of consumers, a high price is not the main barrier in getting this mango because of their availability once a year. The evolution of consumer purchasing behaviour has compelled growers to adapt their marketing strategies to better promote Harumanis. The advancement in technology is no longer a reason for consumers outside the state of Perlis to face difficulty in getting Harumanis. It has also been marketed in both physical stores and online platforms to increase the place's utility. This expansion in distribution channels has made the mango more widely available.

Although there are extensive promotional efforts aimed at encouraging consumers to purchase Harumanis, the limited seasonal availability of Harumanis means that excessive marketing may not be necessary to stimulate interest. Producers and government agencies have implemented various initiatives to enhance consumers' interest, such as improving their field maintenance and postharvest management practices to ensure high-quality mango. Additionally, establishing a fixed floor price aims to make Harumanis more affordable for a broader audience. Despite these efforts, there remains no definitive reason compelling consumers to choose Harumanis over other options (Sani, Abbas, Jaafar & Ghaffar, 2018). Growers are forced to compete with one another by offering better products and services to attract consumers to purchase them. This is because customers are becoming extremely selective nowadays. Consumers nowadays are planning to reduce their overall spending and be more selective in the products they buy. It is expected that consumers tend to spend more money on essentials. Growers or retailers should recognize their target customer's understanding, preferences, and perceptions. Knowing this will help growers to select the most appropriate strategies to attract the consumer's intention to purchase Harumanis. Growers should pay attention to the concept of marketing mix strategies to match the expectations of consumers as well as influence consumers' intention to purchase Harumanis.

Previously, many Harumanis growers used a conventional method to market their Harumanis. They focus on marketing their mango through expos, carnivals, and growers' markets and deliver directly to customers. This only attracts a limited number of consumers to purchase and the market expansion becomes restricted. The findings on marketing mix strategies have demonstrated that these four elements (product, price, place and

promotion) have a positive relationship towards consumers' purchase intentions, and price was found to be the most significant factor influencing consumer purchase decisions (Kotler & Keller, 2016). The interplay between product, price, place and promotion strategies highlights the complexities faced by Harumanis growers in promoting this mango effectively. Addressing these challenges will be essential in sustaining the market for Harumanis in an increasingly competitive landscape. Hence this paper aims to investigate the effect of the marketing mix (product, price, place, and promotion) on consumers' intention to purchase Harumanis mango in Perlis.

2. Literature Review

Consumer Purchase Intention: According to Kotler and Keller (2016), customers' purchasing behaviour refers to their actions while deciding to purchase a product that fits their needs. It comprises the mental, social, and physical acts of a potential buyer. Consumer purchasing behaviour is dynamic because each consumer reacts differently and is unique, and it is tied to the individual's goals, preferences, and aspirations. In general, consumers are said to go through five stages of the purchase process, including need recognition, information search, alternative comparison, purchase implementation, and lastly, post-purchase.

Effects of Marketing Mix on Consumer Purchase Intention

The marketing mix may be utilized as a tactical approach to fulfil market demands. Both internal and external influences are included in the marketing mix. Government, competition, the environment, and technology are examples of external influences, while price, product, promotion, and place of distribution channels are examples of internal elements. The price, product, promotion, and place or distribution channel are internal elements that producers or marketers may manage. To raise customer interest in making a purchase, these elements are integrated into a marketing strategy. The marketing mix has an impact on consumers' choices. Istiqomatin, Setiadi and Ekowati (2021) stated that this is because if the customers choose to make a purchase, the marketing mix strategy's goals of boosting sales volume and profitability will be fulfilled.

Product Strategy: Product is the most important element of the marketing mix. Without products, other elements of the marketing mix have no relevance. Product quality, standard, grade, brand, packaging and labels are part of the product dimension (Deeksha & Sunita, 2018). Various methods have been attempted by growers to maintain the quality and increase the quantity of Harumanis. Premium and a good grade Harumanis are usually sold at higher market prices, reflecting a premium fruit itself. Harumanis is an oblong-shaped mango with a prominent beak, and green and glossy skin colour. This fruit will turn yellowish-green when it ripens. The fruit weights ranged between 300 and 650 grams. Harumanis has a nice colour, sweetness, high-quality fruit, and a pleasant scent, making it a great choice for the domestic and international market (Musa et al., 2010). This fruit also has micronutrients, vitamins, and other phytochemicals, plus a significant nutritional value as an excellent source of minerals, vitamins A, B, and C, making Harumanis ranked sixth globally in terms of output and the second-most-traded tropical fruit. Consumers always want to be completely satisfied with the products or services that they purchase. Customer satisfaction ratings after the use of the items will determine whether or not a company delivers quality services, since higher levels of quality result in higher levels of customer contentment. Based on the research by Yaseen, Mehdi, Somogyi and Ahmad (2016), they stated that from the standpoint of customers, the most important strategic objective to purchase is a concern for the quality of fresh products. Quality will influence consumers to pay a premium price for fresh fruit, hence its significance.

A previous study done by Badar Ariyawardana and Collins (2016), stated that the consumers of Harumanis preferred their quality, freshness, sweet taste, undamaged, and unblemished skin as the most important attributes when buying mangoes. In a different study by Yaseen, Mehdi, Somogyi and Ahmad (2016), a quality attribute and consumer willingness to pay a premium price for mango as shown in Table 2. The freshness and fruit size ranked first and second for the quantity attributes concerned by the consumer to purchase mangoes with mean scores of 81.59 and 79.44, respectively. It is then followed by fruit color, sometimes used as an indicator of a good quantity of fruit. Meanwhile, firmness ranked last and became the least important criterion for quality attributes to affect consumers to purchase.

Table 2: A quality attribute and consumer willingness to pay for a premium price for mango

Quality attribute	Mean Score	S.D.	% age of Respondent Willing to Pay a Premium
Freshness	81.59	10.95	76
Fruit size	79.44	16.47	72
Fruit color	76.37	14.69	62
Sweetness	73.94	13.32	89
Chemical-free	72.60	2.84	45
Firmness	69.56	11.30	81

Source: Yaseen et al. 2016

Consumers praised the Harumanis as the king of mangoes and their favourite of all. Mangoes are popular among consumers mostly because of their taste, which they regard as delicious, unique, and unparalleled. Other justifications for enjoying mangoes were their nutritional value and seasonal availability. Mango consumption was popular among consumers because they thought it provided high levels of nourishment and energy. They believed that a good-grade mango should be healthy and that it should not be either overripe or underripe. Customers praised the Harumanis fruit for being the greatest and tastiest owing to its flavour, scent, and accessibility. According to a customer, the Harumanis fruit has a unique scent that can be smelt throughout the whole vehicle if it is placed inside (Sani, Abbas, Jaafar & Ghaffar, 2018).

Price Strategy: The other marketing mix variable, namely price, affects consumers' intention to purchase Harumanis mango, necessitating a price-focused marketing strategy (Astuti et al. 2015). The pricing strategy for Harumanis marketing should take into account three factors: cost, competition, and demand. In determining the price of Harumanis, producers should consider the cost involved, or otherwise, profits might not be made. If the producers believe that customers are more likely to purchase Harumanis at their competitors' prices, they should base the price of Harumanis on those prices as well. Since the price of Harumanis can have an impact on demand, the producer should take demand into account when setting the price of Harumanis. The strategies are to follow competitor pricing to avoid unfair competition, odd pricing to impress price-sensitive consumers, discount pricing, which is done when the producer has a high level of Harumanis inventory, and promotion (Sabri & Najwan Ali, 2021). Another study by Yaseen, Mehdi, Somogyi and Ahmad (2016) reveals that customers are more willing to pay a premium price when they experience sweetness, chemicals free, and aroma in mangoes. The premium price of mango is not a factor that discourages consumers from paying for it when they have a good experience and credence attributes. The consumer also stated a readiness to spend more money because they want to consume high-quality mangoes. The study confirmed that the high price of premium mangoes such as Harumanis would not be a hindrance factor for them to pay. While Aswini, Ashok, Hemalatha and Balasubramaniyam (2021) highlighted that consumers often perceive the price as an indicator of quality and value, especially when there is a significant price variation, leading to a price-perceived quality association. Consumers are more willing to make purchases when the quality of offered fruits aligns with the prices set by marketers.

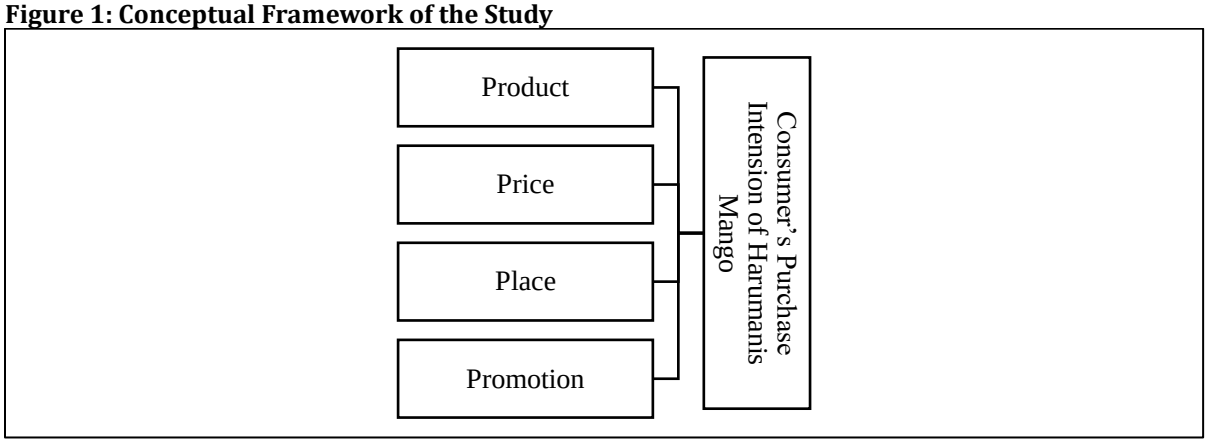
Place Strategy: Place is the main part associated with the distribution of goods from producers to consumers (Effendi, Najib & Brandoko, 2019). The place is considered as the location where the fruit and products can be purchased is an important factor in maximizing sales, a location or a distribution route is the connection between the fruit and the consumer. A market is a physical or online location where people are interested in purchasing fruit and products, as well as product and fruit-related information. The best place to sell products impacts how quickly, easily, and affordably customers may obtain the goods they want. The strategy here is to choose sales locations that emphasize the aspects of fruit and product distribution channels that serve or deliver products to target consumers. A successful marketing plan depends on providing the appropriate fruits and products at the appropriate time, place, and location. Due to some roadside markets' highly convenient facilities, including the ability for customers to purchase high-quality fruit of the Harumanis variety, producers generally offer the Harumanis in a convenient place such as a fruit stall located near the main road. To attract people travelling by road to buy Harumanis fruit, roadside stalls are typically placed close to a public road. Positive rates or offers are regularly advertised on roadside signage. Roadside markets often operate for longer seasons and provide a greater selection of fruits, including mangoes, for the benefit of customers. Marques Torres, Behe Langenhoven and Boas (2021) in their studies, found that driven by the price and convenience of

the marketplace, the distance of the marketplace place is preferred by the consumers to purchase fruits. They suggest that those who purchase at independent grocery stores such as the fruit stall are willing to pay premium prices as long as they have access to speciality fresh fruits. Meanwhile, Muhamad, Ruslan, Ibrahim, Saili and Ismail (2021) conducted a study in Melaka revealing that consumers preferred traditional retail formats rather than modern traditional retail formats when purchasing local fruits. The strategic location of the traditional retail sometimes makes it easy for consumers to go and buy the fruits.

Promotion Strategy: One of the most important aspects of marketing success is promotion. Even if a product is excellent, a consumer will never purchase it if he has not heard of it and is not persuaded that it would be beneficial. Promotion is a crucial part of marketing because it can increase brand recognition and sales. Chaharsoughi and Yasory (2012) stated that sales promotions are frequently used to advertise products to consumers. Effects from advertising or other campaigns do influence the consumer to purchase fresh fruit. Different forms of promotion include public relations, advertising, sales promotion, television commercials, radio commercials, print ads, and internet ads. Furthermore, Kotler and Keller (2016) stated that word-of-mouth advertising is a form of product marketing. Word of mouth is an informal method of product promotion used by regular people. Word of mouth can also circulate on the internet. If harnessed effectively, it has the potential to be one of the most important resources for increasing online earnings. Social networks are a very helpful tool in connecting with potential customers and building loyalty. In the promotion, producers can also create digital spaces for fruit and products. For example, an online fruit catalogue not only enables producers to sell at any time from any location but also serves as a means of attracting consumers to purchase. Additionally, producers may quickly share it through conversations and networks, so that purchasing is only a click away. Local radio stations and newspapers may be cheap sources of marketing and advertising that can provide profitable benefits. For producers who sell their goods at growers' markets or on-the-side-of-the-road stands, product packaging and presentation are also important (Malau, 2020). In addition, the publicity and sales promotions were found to be the significant factors to stimulate consumers' demand for the goods. A good skills and performance by the sales persons plays an important role to persuade a potential consumer to buy the product (Segun Ogunmuyiwa, 2022).

Based on the above-reviewed literature, this study aims to gain an insight and better understanding of the effect of marketing mix strategies; product, price, place, and promotion toward the consumer's purchase intention of Harumanis mango. The proposed conceptual framework is depicted in Figure 1.

Figure 1: Conceptual Framework of the Study



3. Methodology

The study employed a survey research design of the descriptive type and data were gathered using a primary data method. A non-probability sampling method was used to acquire a decent response rate. Convenience sampling was employed to gather feedback from the consumers who have experience purchasing and eating Harumanis mango from Peninsular Malaysia and East Malaysia. The sample size of the study was determined by using a Krejcie and Morgan (1970) table and a recommended 384 respondents were required. A set of questionnaires was distributed using convenience sampling methods and completed questionnaires were only

returned by 310 respondents. The data was collected via two methods, namely online data collection via Google Forms and manual data collection via a face-to-face approach. The development of the questionnaire has been based on the previous studies in the study area and it consists of four sections. The demographic information on the respondents was asked in Section A, while Section B consists of questions about the purchase behaviour of Harumanis. Questions related to consumers' purchase intention of Harumanis were covered in Section C and the effect of marketing mix towards consumers' intention to purchase Harumanis mango was asked in Section D. The scale used in the instrument of study is the Likert scale. The Likert scale is a scale used to measure the attitudes, opinions and perceptions of a person or group of people about social phenomena. The data was processed using a Likert scale with answers to questions, namely a scale of 1-5 values. The value in question is the score on the respondent's answer. In this study, the data was analyzed by using descriptive analysis and multiple linear regression. The descriptive analysis was conducted to give a clear overview of the respondent's profile while the multiple linear regression was to determine the relationship of the market mix elements toward consumers' intention to purchase Harumanis.

4. Results and Discussion

Demographic Profile of Respondents: The distribution of the respondents' profile has been summarized in Table 3. The finding of this study reveals that 198 respondents are male (63.87%) and 112 respondents are female. It can be seen that the majority of the respondents' ages are young and aged between 18-27 years, accounting for 63.5%. More than half (61.6%) of the respondents are single and 116 out of 310 are married and the rest are divorced. The occupations of the respondents varied from working in the government sector, the private sector and others. Students are the highest group of respondents in the study with 147 respondents or 47.4%. Meanwhile, those working as a government servant and in the private sector recorded 69 and 65 respondents, respectively. Most of the respondents who participated in the study were Malay, occupied 285 or 91.9%. The findings of the study also show that the level of respondents' education is encouraging. It shows that almost 80% of the respondents have reached the tertiary educational level with at least a certificate and diploma qualification. The distribution of income by the respondents is varied and close to half with 44% of them having earned less than RM1000 a month. About 27.4% of them have a monthly income of RM1001-3000, while 89 of them earn more than RM3000 per month.

Table 3: Summary of the demographic profile of respondents

Demographic Profiles	Response categories	Frequency (N=310)	Percentage (%)
Gender	Male	112	36.1
	Female	198	63.9
Age	18-27	197	63.5
	28-37	57	18.4
	38-47	33	10.6
	48-57	20	6.5
	58-67	3	1.0
Marital status	Marriage	116	37.4
	Single	191	61.6
	Divorced	3	1.0
Occupation	Government	69	22.3
	Private sector	65	21.0
	Retired	9	2.9
	Students	147	47.4
	Business	10	3.2
	Other	10	3.2
Race	Malay	285	91.9
	Chinese	18	5.8

	Indian	4	1.3
	Others	3	1.0
Educational level	Primary education	34	11.0
	Secondary education	28	9.0
	Tertiary education	247	79.7
	Informal education	1	0.3
Monthly income	Less than RM1000	136	43.9
	RM1001 – RM3000	85	27.4
	RM3001 – RM5000	44	14.2
	RM5001 and above	45	14.5

Consumer Purchase Behavior of Harumanis Mango: The consumer purchase behaviour of Harumanis mango has been analyzed and comprises four parts, namely the quantity purchased of Harumanis mango, frequency of buying Harumanis mangoes (during the season), total amount of money spent and the location of respondents purchasing Harumanis mango. The quantity of Harumanis mango (kg) purchased by the consumers is shown in Table 4. It can be seen that a large number of respondents did purchase Harumanis with a quantity below 10 kg for each season, with 86.1%. While 35 respondents purchased 10-20kg, and the lowest number of respondents purchased a Harumanis for a quantity of more than 21 kg, accounted for 2.6%. Generally, consumers purchase at low quantities due to the price of Harumanis, which is considered expensive. Hence, it reduces a consumer's purchasing power to buy a large quantity of Harumanis.

Table 4: The quantity of Harumanis mango (kg) purchased

		Frequency	Percent
Valid	< 10	267	86.1
	10-20 KG	35	11.3
	21-30 KG	8	2.6
	Total	310	100.0

The study also identified the frequency of purchase of Harumanis during the season. Table 5 shows the frequency of purchase, which is categorized into four frequencies: once a week, once in every two weeks, once in a season and once uncertain. As we can see, the number of respondents who purchased Harumanis with uncertainty frequency accounted for 162 respondents (52.3%), while a total of 123 respondents (39.7%) did purchase Harumanis once in a season. This is because some consumers just want to have at least one experience eating Harumanis, resulting in them purchasing it one time only. Only one respondent purchased Harumanis once in two weeks. Furthermore, 24 respondents (7.7%) reported that they had purchased Harumanis once a week during the season. However, since the quantity of purchases is generally in a small amount, respondents have to repeat making purchases.

Table 5: The number of respondents who purchase Harumanis mango

		Frequency	Percent
Valid	Once a week	24	7.7
	Once every two weeks	1	.3
	Once in season	123	39.7
	Uncertainty	162	52.3
	Total	310	100.0

The total amount of money that respondents spent each time they buy Harumanis mango in Malaysia is shown in Table 6. Majority of the respondents paid less than RM 200 when purchasing Harumanis mango, with 263 respondents (84.8%). It is then followed by 12.3% or 38 respondents who spent between RM201 and RM300 on Harumanis mango. Only seven respondents spent money between RM301 and RM400 each time they purchased the mango. The lowest number of respondents spent money on RM401–RM500 and RM500 and above, which is 3% with 1 respondent respectively. The majority of respondents spent less than RM 200 might

be due to the price of Harumanis, which is quite expensive. Hence, consumers spent less to purchase it. Plus, some of the consumers just want to experience consuming Harumanis during the season. The respondents who spent more than RM500 to purchase Harumanis stated the lowest percentages because some of the consumers purchase in bulk and resell it at other places.

Table 6: Total amount of spend money to purchase Harumanis mango

The total amount of money	No. of respondents	Percentage (%)
Below RM 200	263	84.8
RM201 – RM300	38	12.3
RM301 - RM400	7	2.3
RM401- RM 500	1	0.3
RM501 and above	1	0.3

Place is an element that must be emphasized in measuring customer satisfaction because it is a dominant factor and the most important thing about place in marketing. Therefore, the marketing place for Harumanis was found in a strategic location that is accessible by buyers. Currently, growers have used various places to sell their Harumanis, including selling in physical stores and online store platforms. To expand their market and widen their target consumer, growers market the Harumanis in various places to make it accessible to consumers. Table 7 shows the location of respondents in purchasing Harumanis mango. The highest number of respondents (108 respondents) stated that they had to purchase Harumanis at Harumanis farms and the fruit stall (32.9%). According to the consumers, they preferred to purchase directly from the farm because they could get a high quality and the fruit was freshly harvested on the farm. Respondents also got an experience to harvest Harumanis mango and can choose fresh fruit by themselves. Respondents also preferred to purchase at the fruit stalls because they can purchase a large quantity of Harumanis mango and many other fruits available. Plus, the fruit stall is located near the main road, thus making it easier for consumers to purchase Harumanis mango. The growers' market is also one of the popular places for the consumer to purchase Harumanis, accounting for 27.7%. Besides that, the consumers also choose to buy Harumanis at the Federal Agricultural Marketing Authority (FAMA) or Department of Agriculture (DOA) as they believe these agencies sell good quality Harumanis. A total of 41 respondents claimed that they purchased the fruits at the collection centre. In addition, only 11 out of 310 respondents (3.5%) had purchased Harumanis in other places such as in the online platform and by ordering from their friends or relatives who stayed in Perlis.

Table 7: Location of the respondents to purchase Harumanis mango

Location	Frequency	Percent
Harumanis farm	108	34.8
Collection centre	41	13.2
Supermarket/grocery store	59	19.0
Growers market	86	27.7
Fruits stall	102	32.9
FAMA/Department of Agriculture	45	14.5
Others (Friend, Online)	11	3.5

Discussion of consumer's purchase intention of Harumanis mango: The effectiveness of the marketing mix elements and consumers' intention to purchase Harumanis mango in Malaysia has been analyzed using a multiple regression analysis. Regression analysis was used to estimate the effect of product, price, promotion, and place on consumers' intention to purchase Harumanis mango. Regression analysis is a method that allows us to study relationships based on linear equations not only between one variable and another variable but also between one variable and several variables (Hair et al. 2010). Regression analysis is used to determine the significant relationship between dependent variables and independent variables. It also can be applied to test the hypothesis, and the result explains whether the hypothesis was rejected or accepted. Table 8 shows the result of the regression analysis between the dependent variable, consumers' intention to purchase Harumanis mango in Malaysia and the independent variables which are product, price, place and promotion.

Table 8: The effect of the marketing mix in influencing consumer intention to purchase Harumanis mango

Independent variable	β	t	ρ-value
(Constant)		3.013	.003
Product	.628	11.741	.000*
Price	.066	1.278	.202
Place	.128	2.289	.023*
Promotion	.021	.387	.699
R^2	0.608		
Adjusted R^2	0.603		
F-value	118.154		

Dependent variable: Consumer preference purchases Harumanis mango

Table 8 shows that only two variables, namely product and place, are positive and have a significantly influential effect on consumers' intention to purchase Harumanis, while the other two variables: price and promotion reveal insignificant results in influencing consumers' intention to purchase Harumanis. The regression result also indicates the R^2 value is 0.608, meaning that 60.8% of the independent variables explained the consumer's intention to purchase Harumanis mango. The table shows that two of the variables analyzed are very significant predictors of consumers' intention to purchase Harumanis mango. Product and places affect consumers' intention to purchase Harumanis mango, and two other variables are insignificant, which are price and promotion. The regression result shows that β value for the product was (β= 0.628, p = 0.00), indicating that the product is positive and has significant influences on the consumer's intention to purchase Harumanis. When the product of Harumanis increases, the consumer's intention to purchase Harumanis mango will increase by 0.628. The main criterion of the product that influenced consumers' intention to purchase Harumanis mangos was quality. Well-known as a premium fruit, Harumanis has always been in high demand during its season because this fruit is only available once a year and high quality is preferred. Although Harumanis have been sold at a premium price, an average of RM30-35 per kilogram, consumers are still willing and can afford to pay for this amount. The unique texture of the flesh with an orange-yellowish colour, in addition to the sweet aroma of the fruits, makes consumers excited to get it once the fruit is available in the market. The finding is similar to Safitri et al., (2023) where the product has a substantial impact on purchase decisions and intention to purchase. The found product is positive and has significantly influenced consumers' intention to purchase when the product offered improves in terms of quality and attractiveness. Plus, the consumers are concerned about the product quality, quantity and perceived value based on the purchased brand. They suggest that it is important for producers and sellers to increase the product quality, leading to a higher likelihood of consumers purchasing.

Next, the variable place indicated (β= 0.128, p = 0.023). It shows that place has a positive significance at 5 per cent in influencing consumers' intention to purchase Harumanis. An increase in place element will increase the consumer's intention to purchase Harumanis by 0.128 units. There are many places used to market Harumanis. Nowadays, growers not only sell Harumanis in physical stores such as in fruit stalls and farmer's markets, but with the advanced use of technology, they have made Harumanis marketed on online platforms. Among the popular platforms used to market the Harumanis are Facebook, Shoppe, and Tiktok applications. By using these platforms and applications, the market of Harumanis becomes wider and consumers from all over the world can purchase it. Unfortunately, due to quality considerations, these fruits can only be shipped out within Malaysia. Easy access to the location, for example, located near the main road, has increased the consumer attraction to purchase it. This finding is in line with Marques et al., (2021) where consumers prefer to shop at the nearby convenience store, which is accessible for them to go and buy. On the contrary, Sari et al. (2024) reveal that place has a negative contribution to purchase intention. They found that consumers may not pay attention to the channels or technique of acquisition of goods, resulting in the place being insignificant in influencing purchase intention.

The other two independent variables that show insignificance in influencing consumers' intention to purchase Harumanis mango are price (β= 0.66, p = 0.202) and promotion. (β= 0.21, p = 0.699). Harumanis sold in the market were charged a different price based on the grade of the fruit. The premium and AA grades will be sold at a price of RM30 and above, while grades B and C usually can be purchased at prices below RM25 per kilogram.

The high price of Harumanis makes this fruit less demanded by consumers and less preferred to purchase. The current economic condition, coupled with a high cost of living, as well as high inflation, has reduced the consumers' purchasing power. Due to that, they preferred to spend their money on the important one only. While the promotion is insignificant in influencing consumers' intention to purchase Harumanis, it might be due to less effective promotional strategies used by the sellers. The advanced use of technology enables sellers to advertise their fruits in social media applications such as Facebook, Shopee and Tiktok. These applications have been used by the majority of young generations compared to senior citizens. The use of offline methods to promote their Harumanis has been used less by the sellers, such as using a banner, pamphlets and flyers. This advertising can be applied to attract consumers to purchase the Harumanis, especially among local consumers. Communication through promotion should be planned by the insider to ensure that consistent information about their products is successfully delivered and promoted in the media that tend to be used by consumers in the target market.

5. Conclusion and Recommendations

In conclusion, the product and place elements of the marketing mix were found to be positive and are significant in influencing consumers' purchase intention for Harumanis mango in Perlis, whereas the other two elements (price and promotion) were insignificant. Based on the results of the study, efforts to develop marketing strategies for Harumanis mango are as follows:

- Product – product has a positive and significantly influences consumers' intention to purchase. Hence, Harumanis growers should improve the production of Harumanis as well as trying out various methods to produce Harumanis during the off-season. With the latest technology, coupled with research and development in the field, it is possible to produce during the off-season.
- Price – price elements found to be insignificant in influencing consumers' purchase intention for Harumanis. This might be because the mango has been well-known as a premium mango, hence it does not have an impact on consumers' purchase intention. The government should control the selling price of the Harumais to ensure it sells at an affordable price and the growers still can earn a profit.
- Place – place has positive and is significant in influencing consumers' intention to purchase. The use of digital marketing instead of focusing on conventional methods shows a positive result in affecting consumers' intention to purchase Harumanis. Online platforms such as Shopee, Facebook, TikTok can be good platforms to reach a huge number of consumers.
- Promotion – Promotion is insignificant in influencing consumers' intention to purchase Harumanis. Harumanis growers should use a variety of promotional strategies such as discounts, free samples or testers, provide a money-back guarantee to consumers, as well as limited-time offers that could encourage consumers to grab the opportunities and make them do unplanned shopping.

The implications of this study suggest that the government should revise the ceiling price of Harumanis mango as the current market price of this mango is considered high and intensive promotional activity should be properly strategized to attract more consumers to purchase Harumanis.

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Whistleblowers in ASEAN Countries: A Whither

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Abstract: Fraud, unlawful acts, and corruption are increasingly prevalent today. Many countries have established rules, norms, and legislation to guide the reporting of workplace misconduct. Whistleblowing has emerged as an effective strategy for exposing inappropriate organizational activities, whether to internal or external parties. Whistleblowing policies play a vital role in mitigating or eradicating fraud and wrongdoing, making it essential for every country to implement such measures. This paper examines the availability and enforcement of whistleblower protection legislation across ASEAN countries. A descriptive statistical analysis was employed in this study, with information on whistleblowing legislation gathered from reputable sources, including Malaysian law. The findings show that the absence of specific whistleblower laws and organizations in many ASEAN countries is challenging. However, whistleblowing helps strengthen governance by increasing transparency and accountability. Greater regional collaboration can lead to unified legal protections and stronger ethical governance.

Keywords: *Whistleblowing, protection, legislation, responsible institution*

1. Introduction

Fraud is defined as deceit, impersonation with the intent to deceive, and unlawful deception carried out to obtain an advantage (Özkul & Pamukçu, 2012).

Based on feedback gathered in 2021, BDO Malaysia has released its first Mid-Market Corporate Fraud Landscape. In the first half of 2023, BDO Malaysia conducted a study with feedback from a diverse variety of respondents around the ASEAN area, updating the Corporate Fraud Landscape as the region and the world adjust to a new normal following COVID-19. BDO Malaysia has reported in ASEAN Corporate Fraud Landscape 2023 that the nature of the fraud is as follows:

- Cybersecurity fraud: 25% in 2021-2022 reduced to 19% in 2023
- Corruption: 2.5% in 2021-2022 increased to 9.5% in 2023
- Asset misappropriation: 5% in 2021-2022 increased significantly to 25% in 2023
- Financial statement fraud: 27.5% in 2021-2022 reduced to 22% in 2023
- Procurement fraud schemes: 40% in 2021-2022 reduced significantly to 25% in 2023

Raman et al (2024) noted that in 2022, there were over 400,000 documented cases of consumer scams in Southeast Asia (SEA). This number has increased at a startling rate of more than 50% since 2020, when there were less than 150,000 occurrences. According to our study, SEA's overall losses may have exceeded US$5.0 billion1, with the great majority of these losses being borne by customers.

Reddick (2024) reported that recent research has found that online fraud activities in SEA are still expanding, with organized scamming syndicates making an estimated $64 billion annually worldwide. In Cambodia, Laos, and Myanmar, criminal organizations are using fraud to steal around $43.8 billion annually, according to a report issued by the US Institute of Peace (Reddick, 2024; Priezkalns, 2024).

According to the ASEAN Corporate Fraud Landscape 2023, inadequate internal controls continue to be the leading cause of fraud. The remedial actions taken because of investigations are changes in processes and

controls, dismissal of employees, enhancement of the compliance function, enhancement of internal audit, sanction of employees/management and restatement of the financial statements.

The following categories contain the elements that Mrowiec (2022) determined to be significant for the incidence of internal whistleblowing in an organization: ethics, leadership, policies and procedures, retaliations and safeguards, social climate, organizational justice, education and training, reporting channels, communication, additional motivation, organization's size and structure, audit committee.

ASEAN Corporate Fraud Landscape 2023 summarised that employees at organizations with whistleblowing channels are more inclined to speak up, which helps them identify and respond to fraud faster than their counterparts without such channels. As a result, ultimately, these companies experience smaller losses.

National Whistleblower Center. (n.d.) defined a whistleblower as a person who alerts those in positions of authority to correct wrongdoing about waste, fraud, abuse, corruption, or threats to public health and safety. Whistleblowers strive to draw attention to instances of abuse or neglect that endanger the public interest by raising the alarm within the very organization they work for (Bok, 1980).

2. Theoretical Background

Whistleblowing, according to Near and Miceli (1985), is the act of former or present organization members informing individuals or groups that may be able to take action against unlawful, immoral, or illegitimate acts that are under the control of their employers.

Whistleblower Protection Act (WPA) 2010 defines "whistleblower" as:

"Any person who discloses improper conduct to the enforcement agency under Section 6".

The WPA 2010 further defines "improper conduct" as any conduct which, if proved, constitutes a disciplinary offence or a criminal offence. Collins Dictionaries (2024) defines whistle-blowing as the act of telling the authorities or the public that the organization you are working for is doing something immoral or illegal. When an employee reports unethical or unlawful action by someone within their organization to an internal or external authority, this is known as whistleblowing. A whistleblower could be an employee of a business that has an impact on the environment and is unhappy with their employer's practices, or they might disclose ongoing harassment by management to their HR department. Whistleblowers may be legally protected from employment retaliation, yet it still happens sometimes (Indeed, 2024).

The term "whistleblowing mindset" refers to a mentality that predisposes people to certain interpretations and responses when they encounter misconduct. The most efficient technique to expose wrongdoings is through whistleblowing. Whistleblowers frequently safeguard their companies by disclosing important information (Arroyo et al, 2024). Hadli et al (2023) conclude that when they plan to report misconduct, government workers weigh the personal cost and the gravity of the offense. According to the study, a government servant's intention to blow the whistle is unaffected by their professional dedication. The study also reveals that the severity of misconduct cannot be moderated by legal protection; rather, it can only mitigate the impact of professional commitment and personal expense on the desire to report wrongdoing.

Asia Pacific Whistleblowing Landscape: Benchmarking & Best Practices by Baker McKenzie in 2022 reported that in Asia Pacific, handling whistleblower concerns has swiftly moved to the forefront for businesses. According to research, it is becoming clearer that whistleblowing programs must change and adapt to the legal and regulatory environment. Management must also conduct frequent reviews of these programs.

According to Asia Pacific Whistleblowing Landscape: Benchmarking & Best Practices (2022), 41% of company executives in the region said they have seen a rise in whistleblower reports in the last year; in certain nations and sectors, the percentages are significantly higher. This trend is supported by several variables, including

new laws, heightened media coverage, and incentives for whistleblowers in some nations, but the general direction of travel is evident. The percentage of whistleblower reports according to types of complaints is as follows: 72% of respondents have reported instances of harassment, discrimination, and/or bullying. 62% of respondents have complained about internal policy violations. Concerns regarding workplace health and safety have been reported by 55% of respondents. According to 59% of Australian respondents, it was difficult for them to determine whether the whistleblower rules applied to a specific report. A concern raised by 22% of respondents was that there was insufficient information in the complaint for the business to determine whether it was a protected

Asia Pacific Whistleblowing Landscape: Benchmarking & Best Practices by Baker McKenzie in 2022 reported that in Mainland China, the past few years have seen a notable advancement in whistleblower initiatives. An effective whistleblowing program is essential to a strong compliance program because it enables businesses to examine and resolve misbehavior that they might not have otherwise seen. When compared to the prior year, a sizable majority of businesses reported an increase in whistleblower complaints. Merely 9% of organizations reported a decrease in complaints, while the remaining enterprises stated that the number of complaints remained unchanged. Corporations have differing opinions about whether the expansion of whistleblower programs is a good thing. Nearly three-quarters (72%) of people in mainland China who receive whistleblower complaints believe that the reports their organization has received are motivated by self-preservation.

In Japan, amendments have been proposed to the Whistleblower Protection Act which include a mandatory obligation for companies of a certain size to establish a whistleblowing system to ensure the protection of whistleblowers. According to Asia Pacific Whistleblowing Landscape: Benchmarking & Best Practices (2022), with the increasing focus on sustainability and Environmental, Social, and Governance (ESG) issues, 40% of Japanese respondents said that whistleblower reports had involved an ESG violation. Compared to a 60% average for all respondents, 82% of Japanese respondents said their whistleblowing reporting program covers violations of their ESG or sustainability policy. The percentage of Japanese respondents who state that their company produces an ESG program report is 60%, while the average response rate for all respondents is 50%.

Enforcement of Whistleblower Institutions

Challenges of Enforcement of Whistleblower Institutions

The establishment of whistleblower institutions is critical to ensuring that all whistleblower-related issues are properly addressed. However, there are challenges to enforcing whistleblower institutions, as indicated in Figure 1.

Figure 1: Challenges of Enforcement of Whistleblower Protections in ASEAN Countries



Institutional and legal framework limitations

Deficits in the legal and institutional structure, such as the lack of a separate, specialized body to handle cases involving whistleblowers, frequently lead to uneven enforcement of the law and a decline in public trust. For instance, the Witness and Victim Protection Agency (LPSK) in Indonesia, which oversees shielding informants from harm, frequently deals with issues including a lack of resources and conflicts of interest with other organizations, which results in inefficiencies and delays. In addition, the absence of a thorough statute protecting whistleblowers that is applied consistently across industries causes uneven case processing and uncertainty for prospective whistleblowers. Current protections for whistleblowers are insufficient in the absence of a specific, comprehensive statute, making them susceptible to reprisals and confidentiality violations. Likewise, organizations in Thailand that deal with whistleblower cases, like the National Anti-Corruption Commission (NACC), battle political obstruction, resource constraints, and bureaucratic delays.

Cultural and societal factors

Whistleblowing is hindered by cultural and societal issues, such as the fear of negative consequences and the reluctance to disclose misconduct. Reporting misconduct deters people from coming forward because it's frequently perceived as treacherous or disloyal. Cultural beliefs have been noted as a major barrier "preventing many citizens and public officials from reporting on corruption" in several nations. Improving the efficacy of whistleblower protections requires a shift in these cultural perceptions. Whistleblowing is frequently viewed as a last resort rather than a civic obligation, which discourages future whistleblowers and narrows the scope of current safeguards.

Strong cultural beliefs in Brunei that place a premium on social harmony and loyalty can discourage people from coming forward, particularly when misconduct involves superiors or coworkers. People find it challenging to see whistleblowing as a constructive step toward accountability because of the stigma attached to it. The stigma associated with reporting misbehaviour is compounded by social norms that place a high value on avoiding disagreement and fears of reprisals. Even with legal safeguards, people tend to underreport corruption and wrongdoing because they believe the risks—like losing their job, facing harassment, or even suffering physical harm—to be greater than the advantages. Loyalty to peers and family can further impede reporting in close-knit societies, especially when misbehaviour involves a member of these groups. Confidentiality worries and possible consequences, such as social or professional isolation, are significant factors that discourage people from coming forward. High-profile incidents when informants have suffered dire repercussions only serve to exacerbate the public's mistrust of the safeguards.

Whistleblowing is discouraged in Laos due to a similar cultural emphasis on preserving social harmony and averting conflict. Fears of reprisals in social, professional, or legal domains discourage people who might not have faith in the system to safeguard their identity and well-being. Whistleblowing activities are further hampered by the deeply ingrained cultural values of deep respect for authority and conflict avoidance, which make people afraid of the social and professional repercussions of coming out with misconduct. In certain nations, maintaining positive connections and protecting the reputation of superiors come before solving issues, which adds further obstacles to reporting matters.

Lack of public and organizational awareness

The lack of public knowledge of the Act's provisions and protections, which keeps many potential whistleblowers unaware of their rights and the appropriate reporting channels, is a serious problem. Many are deterred from coming forward by this ignorance. Their hesitancy is also influenced by concerns about secrecy, fear of reprisal, and doubts about the enforcement of these rights. Whistleblowers have been subjected to significant personal and professional dangers in high-profile cases, which has strengthened the perception that the current system is inadequate. These worries continue to prevent many people from reporting misconduct, even in the face of legal protection. A general reluctance to use the channels available for exposing corruption or misconduct is another effect of this ignorance. Consequently, underreporting spreads widely, decreasing the efficacy of the current protections.

Enhancing the Enforcement of Whistleblower Protections

Given the critical role of whistleblower protections in reducing misconduct within organizations, it is essential to strengthen the enforcement of these protections. Figure 2 outlines several strategies proposed to improve the enforcement of whistleblower protections.

Figure 2: Enhancing the Enforcement of Whistleblower Protections



It is critical to address current issues by raising public awareness, expediting the reporting procedure, and thinking about the creation of an independent oversight agency to increase safeguards for whistleblowers. In addition to strengthening whistleblower rights, these actions would raise standards of honesty and accountability in the public and private sectors. Building public trust via knowledge and education is essential, as is developing a stronger legal framework. Furthermore, developing a cultural revolution that acknowledges whistleblowing as a vital public service is crucial to improving the country's ability to identify and effectively address misconduct. Campaigns for public education and measures to change societal views about whistleblowing are crucial to fostering an atmosphere that is encouraging to people who come forward. We may more effectively safeguard whistleblowers and uphold the credibility of government agencies if we give these areas prominence.

3. Methodology

Using a content analysis method, a qualitative research strategy was chosen for this study. The following actions are conducted because the primary goal of this research is to examine whistleblowing policies and how they are being implemented in ASEAN nations. Finding every nation in the ASEAN was the first stage. Finding the following information for each of the ASEAN nations was the second step:

- Any responsible institution for the implementation of the whistleblowing policy
- Any existence of a whistleblower act
- The name of the whistleblower act
- Other law that substitutes the Whistleblower act

The investigation involved extensive use of websites and online search engines.

4. Findings and Discussion

This section aligns with the study's primary research objectives by examining whistleblower protection in ASEAN countries. First, it investigates specific legislation on whistleblower protection, offering insights into how these nations view the role of whistleblowers in addressing criminal activities and assessing their commitment to accountability and transparency. Second, it reviews the relevant laws and procedures each country has implemented to safeguard whistleblowers, identifying strengths and weaknesses in these frameworks and highlighting best practices and areas for improvement. Finally, the section discusses the organizations and institutions responsible for managing whistleblower issues, including governmental and non-governmental bodies that enforce protections and support reporting processes. It will also explore how these entities collaborate to effectively address whistleblower concerns. Overall, these components provide a comprehensive overview of whistleblower protection in ASEAN, emphasizing legal frameworks and institutional support that create a safer environment for reporting wrongdoing.

Table 1 illustrates that among the 11 ASEAN countries, only Indonesia, Malaysia, and the Philippines have specific legislation for whistleblower protection, highlighting a significant gap in legal frameworks within the region. Other countries rely on provisions in various existing laws, which may not provide comprehensive safeguards. The legislation in Indonesia, Malaysia, and the Philippines reflects a strong commitment to protecting individuals who report wrongdoing, creating an environment that promotes transparency and accountability. Conversely, the fragmented protections in the remaining ASEAN nations may result in inconsistencies that could discourage whistleblowers and weaken anti-corruption efforts. This disparity raises important questions about the commitment of different ASEAN countries to support whistleblowers and underscores the necessity for a more cohesive approach to strengthen the effectiveness of anti-corruption initiatives throughout the region.

The table indicates that most ASEAN countries lack dedicated organizations for handling whistleblower-related matters, which can hinder effective protection and support for individuals reporting misconduct. In contrast, Indonesia and Singapore have established specific agencies for this purpose. Indonesia's Agency for Witness and Victim Protection safeguards the rights of whistleblowers, ensuring they receive necessary support and protection against retaliation. Similarly, Singapore's Independent Commission Against Corruption (ICAC) promotes integrity and encourages whistleblowing by providing a secure reporting platform. The existence of these organizations in Indonesia and Singapore reflects their commitment to supporting whistleblowers and sets a positive precedent for other ASEAN countries. By creating similar institutions, other nations could improve their whistleblower protection frameworks and foster greater transparency and accountability in governance.

As mentioned earlier, three ASEAN countries have established specific legislation dedicated to whistleblower protection: Indonesia's Law on Witness and Victim Protection, Malaysia's Whistleblowers Protection Act 2010 (Act 711), and the Philippines' Whistleblower Protection Act. These laws create a framework that encourages transparency and accountability by safeguarding those who report misconduct. In contrast, the other ASEAN countries lack dedicated whistleblower protection laws and instead rely on various existing regulations, which can lead to inconsistent protections and discourage individuals from coming forward. Many of these nations incorporate whistleblower provisions within their Prevention of Anti-Corruption Acts, which helps combat corruption but may not offer comprehensive protections like those.

Table 1: Comparison of ASEAN countries regarding whistleblower protection legislation and the institutions tasked with its enforcement.

Country	Existence of specific legislation about Whistleblower protection	Responsible Institution	Relevant legislations or procedures
Brunei	×	×	Penal Code Prevention of Corruption Act
Cambodia	×	×	Anti-Corruption Law
Indonesia	√	Agency for Witness and Victim Protection (LPSK)	Law on Witness and Victim Protection (Law No. 13/2006). Anti-Corruption Law of Indonesia
Laos	×	×	Law on Anti-Corruption 2012
Malaysia	√	×	Whistleblowers Protection Act 2010 (Act 711)
Myanmar	×	×	Anti-Corruption Law (ACL) 2013
Philippines	√	×	Whistleblower Protection Act (Republic Act No. 10353)
Singapore	×	Independent Commission Against Corruption (ICAC)	Prevention of Corruption Act Penal code Misuse of Drugs Act Betting Act. Drug Trafficking and Other Serious Crimes Act (CDSA)
Thailand	×	×	Labour Protection Act (LPA) Labour Relations Act (LRA)
Timor Leste	×	×	Witness Protection Law
Vietnam	×	×	Law on Denunciation Law No. 25/2018/QH14

In the three aforementioned countries, Cambodia, Laos and Myanmar rely on the Anti-Corruption Law when handling whistleblowers. Brunei uses the Penal Code and the Prevention of Corruption Act. Besides the Prevention of Corruption Act, Singapore also uses the Penal Code, the Misuse of Drugs Act, and the Betting Act. And the Drug Trafficking and Other Serious Crimes Act (CDSA) when dealing with whistle-blow cases. Even though Indonesia has its specific legislation for protecting whistleblowers, it also uses the Anti-Corruption Law of Indonesia for this purpose.

While acknowledging the crucial role of whistleblowers in exposing wrongdoing, the absence of dedicated frameworks means that the effectiveness of protections varies, leaving potential whistleblowers uncertain about their rights. To enhance individual rights and strengthen governance in the region, it is essential to establish standardized whistleblower protections, either through specific laws or by improving existing provisions within anti-corruption legislation. This would help create a safer environment for individuals to report misconduct.

5. Conclusion

Whistleblowing is a crucial tool in combating corruption by promoting transparency and accountability in both the public and private sectors. While some ASEAN countries, like Malaysia and the Philippines, have established strong legal protections, their effectiveness depends on public awareness and enforcement. Many nations are still developing such laws, facing weak enforcement and cultural resistance to reporting misconduct. Despite progress, disparities remain across the region, making it essential to strengthen legal frameworks, improve

enforcement, and foster a culture that supports whistleblowing. Regional collaboration and the exchange of best practices will be key to enhancing whistleblower protections and governance across ASEAN. The absence of specific whistleblower laws and organizations in many ASEAN countries is a challenge. However, whistleblowing helps strengthen governance by increasing transparency and accountability. Greater regional collaboration can lead to unified legal protections and stronger ethical governance.

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The Impact of Total Quality Management Practices on Operational Efficiency in Malaysian Hospitality MSMEs

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Abstract: Total Quality Management (TQM) is looked at as a possible solution in this study. Four main principles are looked at: leadership-driven, Involvement of People, Process Approach, and Mutually-Beneficial Supplier Relationship. The researchers used a quantitative method to create a survey with a questionnaire that looked at four different factors that affect operational efficiency: leadership-driven, involvement of people, process approach, and supplier relationship. This study employed a probability sampling method, namely simple random sampling, to target several supervisors and managers in one hospitality company located in the southern region of Malaysia. The sample size of this pilot study consisted of 36 respondents. The data were examined via SPSS, highlighting the reliability of both the independent and dependent variables. The study employed analytical approaches including descriptive analysis, reliability analysis, and multiple regression analysis. The study's findings showed that "Leadership Driven" and "Mutually-Beneficial Supplier Relationship" did not affect how efficiently operations ran. However, a significant positive relationship emerged between operational efficiency and both the "Involvement of People" and the "Process Approach." These findings point to a clear strategy for several ongoing successes in the hospitality industry: fostering staff empowerment through active engagement and optimising internal processes through the implementation of TQM principles. This research provides valuable insights for addressing current operational challenges and positioning the hotel for enhanced performance in the future.

Keywords: *Total quality management, operational efficiency, leadership driven, involvement of people, process approach, supplier relationship*

1. Introduction

Micro, small, and medium-sized businesses, or MSMEs, are essential to a country's economic growth (Md Husin & Haron, 2020). Through the provision of countless goods and services, the expansion of regional markets and societies, the creation of job opportunities, the encouragement of innovation, and the promotion of market competition, MSMEs make a significant contribution to the national economy (Md Husin & Haron 2020). Malaysian MSMEs made a significant economic contribution to the country in 2021, contributing 37.4% of the GDP and generating RM518.1 billion in value added, according to Loo, Ramachandran, & Raja Yusof (2023). According to Md Husin & Haron (2020), a micro-sized business employs fewer than five people or has a sales turnover of little more than RM300,000. A small business, on the other hand, makes between RM300,000 and RM3 million in sales and employs five to thirty people. In contrast, a medium-sized business in the services and other sectors employs 30 to 75 people and generates between RM3 and RM20 million in revenue.

According to past trends in the hospitality sector, particularly in MSMEs, several problems and major obstacles exist in reaching operational efficiency because of several elements like human capital competency, service quality requirements, and resource limitations. This relates to the application of Total Quality Management (TQM) concepts and procedures in hotel operations to pinpoint the opportunities and obstacles influencing operational effectiveness. TQM is a well-known quality approach that, according to Khan et al. (2020), improves organizational performance and produces high-quality services and goods. Maintaining focus and implementing organisational improvement processes, necessitates the use of systematic tools and techniques for managing organisational processes with continuous improvements in quality and customer satisfaction. Additionally, structures such as quality improvement teams must be established (Boikanyo et al., 2019). To

improve customer satisfaction and grow their clientele, hotels employ a variety of quality management strategies to achieve perfection (Mp, 2021). However, despite several research on the topic, Pambreni et al. (2019) noted that little is known about how TQM implementation affects organizational performance in Malaysia, especially in MSMEs.

Al-Ababneh (2021) asserts that the literature on Total Quality Management (TQM) remains limited within the hotel sector. Khan et al. (2020) assert that companies in industrialised nations demonstrate superior quality and competitiveness as a result of the TQM methodology. Conversely, organisations in developing countries possess limited practical experience with the strategy. Previous studies indicated that these organisations fail to identify the barriers hindering the effective adoption of TQM practices. The absence of support from top management for TQM programs was identified as a major obstacle to effective TQM implementation (Al-Ababneh 2021).

For this reason, there is an urgent requirement to investigate the implementation of Total Quality Management (TQM) principles within hotel operations. These principles include Leadership Driven, Involvement of People, Process Approach, and Mutually-Beneficial Supplier Relationship. The goal of this investigation is to identify the obstacles and opportunities that affect operational efficiency. The findings of several studies, which revealed that Total Quality Management (TQM) is not merely a method or instrument, but also an entire corporate mindset (Kriemadis et al., 2021) provide credence to this assertion. The author went on to explain that Total Quality Management (TQM) is a management concept that emphasizes the ongoing enhancement of all areas of an organization, including its products and services, as well as its processes and systems. Everyone in the organisation, from upper management to frontline workers, is involved in Total Quality Management (TQM), which is founded on the idea that everyone has a part to play in the process of continuously improving quality. All things considered, this research acknowledges the necessity of conducting a comprehensive investigation into the operations of the hotel, particularly about issues such as the management of suppliers and the rising prices of purchasing. These challenges, which are symptomatic of broader issues that small and medium-sized enterprises (SMEs) in Malaysia are confronted with, highlight the essential need to implement strategic initiatives that are anchored in the principles of total quality management (TQM). Through an examination of how TQM principles studied in this research affect operational efficiency, the purpose of this research is to provide answers to important issues concerning the specific difficulties and opportunities that exist within the hotel operational landscape.

The research aims of this study are to identify the attributes that contribute to operational efficiency toward MSMEs in the hospitality industry, as outlined below:
RO1: To determine a relationship between leadership driven, involvement of people, process approach and supplier relationship, and operational efficiency.

2. Literature Review

Leadership Driven

When COVID-19 hit the earth in 2019, it was the start of a chain of disastrous and unheard-of catastrophes. Businesses were compelled to transition from conventional to digitalised operations. Leaders found it difficult since they were largely unprepared for the quick change. Managers have to learn to adjust to the new environment and be more adaptable in their work practices to deal with the outbreak (Ar´anega, Montesinos & Núñez, 2023). A transformative leader would enable a smooth transition by swiftly adapting to such developments. The way transformative leaders manage their subordinates can be used to describe how they affect worker capabilities and competitiveness (Alrowwad, Abualoush, & Masa'deh, 2020). According to Al Doghan and Sundram (2023), operational efficiency will be impacted by prioritising resources such as time, people, equipment, supplies, and money as efficiently as feasible. Numerous studies have looked into the connection between various leadership philosophies, such as paternalistic, inclusive, and authentic leadership, and the vocal behaviour of employees. These studies consistently show that leadership has a significant impact on how likely employees are to express their thoughts and opinions (Ouyang, Zhu & Ma, 2022). Three different leadership roles—interpersonal, informational, and decision-making—exist in organisations and enterprises,

and each is essential to directing and overseeing the operations of the organisation (Anbu, 2019). The primary determinant of organisational activities is leadership. To guarantee the effectiveness of companies and organisations, entails influencing individuals to complete particular duties and making use of the available resources and instruments (Tegor, Johannes, Jaya & Thasimmim, 2023).

H1: *Leadership-driven has a significant relationship toward operational efficiency*

Involvement of People

According to Ansong and Ennin (2022), the hotel industry is constantly looking to improve services to meet and exceed the expectations of its patrons. As a result, the sector looks for workers with strong creative abilities to successfully meet the constantly shifting needs of clients. Individually, workers with creative tendencies are valued for their capacity to accept and move through the world of uncertainty with greater ease (Hensley, 2020). Research indicates that employee creativity fosters organizational growth and significantly affects a company's competitive advantage (Ansong & Ennin, 2022). According to research, a company's ability to develop is aided by its employees' inclusion. According to Okewukchy and Amaechi (2023), the degree of employee participation in decision-making affects hotel establishments' performance, productivity, and sales growth. Senior leaders may greatly raise social and shareholder value by highlighting the important advantages of high job satisfaction. This includes instructing managers about their important responsibilities and integrating relationships at work into performance reviews and management development. Managers can also be significant change agents by adopting servant leadership and showing kindness and genuine curiosity to all members of their business (Allas & Schaniger, 2020). Workplace motivation results from the interaction of internal and external factors that determine the shape, direction, intensity, and length of behaviours related to job performance (Ouyang, Zhu & Ma, 2022). To provide a better customer experience and achieve superior organisational performance, employee well-being can be crucial (De la Rosa, Armas-Cruz, Dorta-Afonso & García-Rodríguez, 2023).

H2: *The Involvement of people has a significant relationship with operational efficiency*

Process Approach

The hotel industry, like other sectors, is actively pursuing sustainable operations and embracing green consciousness. This encompasses the implementation of a process-oriented approach to optimise operational efficacy. The hospitality and hotel industry, as well as the entire global community, are all significantly affected by sustainability (Al Ghazali, Zaloumis & Khan, 2021). One of the primary goals of TQM is to improve the efficacy of processes by reducing costs, reducing service delivery time, and improving overall quality. This is accomplished by employing a comprehensive approach that takes into account all resources involved in the process, thereby facilitating a comprehensive perspective on process optimisation (Kowalik & Klimecka-Tatar, 2018). According to Rodriguez-Garcia, Ferrero-Ferrero, and Fernandez-Izquierdo (2023), hotels must develop strategies that effectively manage impacts, while simultaneously being responsive to the expectations and requirements of stakeholders and leveraging operational, administrative, and financial resources. Various issues can arise as a result of ineffective or inefficient processes, such as high employee attrition due to frustration, increased production costs due to defects and wastage, and the loss of customers due to lengthy delays, miscommunication, or subpar quality. A company's operational efficiency can be enhanced by reducing non-essential operations and eliminating inefficient procedures (Al Doghan & Sundram, 2023). There are numerous benefits to optimising processes, including increased productivity and employee engagement. We would then attain streamlined operations with minimal errors, fewer resource requirements, and reduced inventory costs. Furthermore, loyal customers are converted into enthusiastic brand advocates as a consequence of enhanced customer satisfaction. The optimisation of consistent and predictable outcomes is achieved through the efficient management of interconnected processes that operate as a unified system and a comprehensive comprehension of them. It is imperative to acknowledge and capitalize on the connections between operational procedures, information, and materials throughout the data generation chain. Additionally, the establishment of resilient connections throughout the system is facilitated by the vigilant monitoring and safeguarding measures that are implemented to ensure the integrity of these components (Sturtevant et al., 2022).

H3: *Process approach has a significant relationship toward operational efficiency*

Mutually Beneficial Supplier Relation

The term "supply chain management" refers to the process of managing a network that consists of three or more entities, which may be corporations or individuals, that actively participate in the efficient movement of products, assets, funding, and/or knowledge from the source to the ultimate customer. Specifically, it refers to all of the efforts and actions that have been performed by the business to facilitate a supply chain method that is seamless. According to Hinkosa (2023), the adoption of supply chain strategies is the source of rivalry in contemporary circumstances. Studies have shown that the major factor that contributes to the success of a company is a collection of unique resources that are highly valued, unusual, difficult to replicate, and cannot be replaced by other resources (Poku, 2022). According to Amaruddin (2021), it was discovered that the eight contemporary TQM principles are connected to ISO 9001 provisions regarding supply chain management (SCM). One of these clauses is the principle of supply chain management that is mutually beneficial to both parties. In a scenario involving a supply chain, the vast majority of businesses, and most of the outstanding firms in particular, are becoming increasingly dependent on their suppliers. According to the findings of a study, the factors that are primarily responsible for the supply chain system's inability to accomplish its objectives are inefficiency and ineffectiveness (Poku, 2022). Companies that have a network of linked supply chains generate more revenue than those that give the process of supply chain management less consideration, according to the author of the article. According to Sillanpaa et al.. (2015), the performance and capabilities of suppliers are extremely important in ensuring that businesses still maintain their competitive advantage. Poku (2022) asserts that supplier relationship management has the potential to significantly enhance and simplify the sourcing procedures that are carried out between an organization and its suppliers. As a result of the necessity of taking into consideration risk, competitive challenges, sustainability, and cost effectiveness, the author went on to say that supplier management has evolved into an essential business activity. According to Hinkosa (2023), it is projected that the successful implementation of supply chain management would result in an improvement in the link between suppliers participating in the early stages of the supply chain and customers participating in the later stages. This will ultimately lead to an increase in customer satisfaction and overall company productivity.

H4: Mutually beneficial supplier relation has a significant relationship toward operational efficiency

3. Methodology

The target population for this pilot study is supervisors and managers in one selected hotel located in the southern region of Malaysia. Based on purposive sampling, 36 respondents were found. These respondents were obtained by sending surveys to staff members at the supervisory level and above. This allowed a full understanding of their thoughts and experiences on how well the hotel ran. By directly engaging with the participants, we aimed to gather firsthand insights and information related to TQM implementation, operational challenges, customer satisfaction, and overall performance within the hotel. In this research, all the variables were measured using scales derived from previous studies (Buthelezi & Zondo 2023, Hinkosa 2023, Rahimi 2017). The specific scale used depended on the section being assessed. The respondents gave their level of agreement or disagreement with several statements regarding various attitudes, things, people, or events using the Likert Scale. The scale for operational efficiency, leadership-driven, involvement of people, process approach, and mutually beneficial supplier relationships ranges from 1 = Strongly Disagree to 5 = Strongly Agree.

4. Findings

Cronbach's alpha was carried out, and as shown in Table 1, the alpha value (α) for all items was above 0.6. Therefore, we can conclude that the items used in this study were both valid and reliable. Due to the α value being close to 1, it can be considered that the variables used have a high level of reliability. Next, Table 2 shows the breakdown of the respondents by gender, educational background, managerial positions, and tenure. Notably, 61.1% of the correspondents are males, while 38.9% are females. Thus, most of the hotel employees in this research are males. About 72.2% of the respondents possess tertiary education qualifications, indicating a workforce potentially well-prepared for adept TQM execution. Most employees have established roles within the hotel, with 66.7% having 2 to 5 years of working experience. A quarter (25%) have been with this company

for less than a year. While 2.8% have worked at the hotel for 6 to 10 years, 5.6% have worked there longer. This mix of experience levels can contribute both fresh perspectives and seasoned expertise to TQM implementation. Furthermore, the breakdown of managerial roles—i.e., 19.4% supervisors, 44.4% executives, and 36.1% managers—suggests a structured organisational hierarchy conducive to effectively implementing TQM strategies across different departments.

Table 1: Reliability Analysis

Variables	Number of Items	Cronbach's Alpha
Leadership driven	5	0.949
Involvement of people	5	0.947
Process approach	5	0.838
Supplier Relationship	5	0.867
Operational efficiency	5	0.736

Table 2: Respondents' profile

Criteria	Category	Number	Percentage
Gender	Male	22	61.1
	Female	14	38.9
Education Level	Tertiary Education	26	72.2
	Secondary Education	8	22.2
	Others	2	5.6
Management Level	Supervisor	7	19.4
	Executive	16	44.4
	Manager and above	13	36.1
Working Experience	1 year below	9	25
	2 - 5 years	24	66.7
	6 - 10 years	1	2.8
	More than 10 years	2	5.6

Table 3: Result of Multiple Regression

Dependent variable: Operational efficiency		
Independent variables	**Standardised Coefficient (BETA)**	**Sig.**
(Constant)		
Leadership driven	0.187	0.315
Involvement of people	0.800	<.001
Process approach	0.436	0.016
Supplier relationship	0.274	0.123
F value	14.036	
R square	0.644	

5. Conclusion and Discussion

As shown in Table 3, the four important factors in TQM have β values that show that the Involvement of People (^{2} = 0.800) has the most significant effect on operational efficiency, followed by the Process Approach (^{2} = 0.436). It is backed up by a t-value greater than 1.96 (Involvement of People = 3.712; Process Approach = 2.557) and Sig less than 0.05 (Involvement of People = <0.001; Process Approach = 0.016), which means that both variables are significant (Hair et al., 2017). Multiple regression analysis shows that the observed relationship is statistically significant when Sig < 0.05, which is less than a 5% significance level. This means that it is unlikely that the observed results were caused by chance alone in the sample (Wiastuti et al., 2023). Employees believe that job performance motivates them to fulfill assigned tasks and adhere to their job responsibilities. Additionally, it fosters loyalty and encourages them to take initiatives to improve their performance (Wiastuti et al., 2023). Following our finding in this research, the involvement of people emerges as the most influential

factor, evidenced by a β value of 0.800. This suggests a robust, positive relationship between the engagement of individuals within an organisation and its operational efficiency. The substantial β value of 0.800 not only underscores the significance of people's involvement but also indicates that for every unit increase in this factor, there is a substantial positive effect on operational efficiency. Putranti et al. (2022) determined that job engagement plays a crucial role in operational efficiency, as it has a significant relationship and a negative effect on staff turnover intention. This underscores the fact that employees with heightened engagement typically exhibit increased motivation and a greater sense of job satisfaction, emphasising the pivotal role of people's involvement in optimising operational efficiency. As for the involvement of people, according to Amin et al. (2017), the Process Approach stands as a pivotal component in the implementation of Total Quality Management (TQM). Similarly, Al-Ababneh (2021) deduced that an inclusive performance process involving employees is instrumental in attaining customer satisfaction. The process approach, characterised by a β value of 0.436, plays a pivotal role in operational efficiency. Although its influence is slightly lesser than the involvement of people, it underscores a significant positive correlation between structured processes and efficiency. Alshourah (2020) suggested a notable positive impact of continuous process improvement on the implementation of TQM. This finding resonates with the conclusions drawn by Al-Sabi et al. (2017) in their examination of the hospitality and hotel industry.

The data that was presented revealed that the two variables that were left had values that were greater than 0.05. These variables were Leadership Driven, which had a value of 0.315, and Mutually-Beneficial Supplier Relationship, which had a value of 0.123. Despite the robustness of the strong α, the contribution of the variables does not meet the criteria for statistical significance in this research. Even though leadership is an essential component in the process of cultivating a culture of quality, there is no guarantee that it will always have a direct and meaningful connection with operational efficiency in the hospitality business. It is possible that great leadership does not immediately affect operational efficiency, even though it is essential for determining the direction of the organisation and encouraging its people. There is a possibility that the benefits of leadership on efficiency will not become apparent for some time. If leadership is still in the process of implementing change, it is possible that efficiency improvements will not be observed immediately. This is especially true in industries such as hospitality, which are dynamic and strongly focused on customers. In addition, the particular leadership style (transformational, transactional, etc.) could not be compatible with the operational requirements of the company. For instance, a leadership style that emphasizes innovation and the empowerment of employees might not have a direct impact on efficiency measures such as the management of time, the control of costs, or the optimization of workflow.

Within the context of Total Quality Management (TQM), supplier relationships emphasize working closely with suppliers to maintain consistent quality, timely delivery, and cost-effectiveness. On the other hand, in the hotel business, the connections with suppliers could not always automatically convert to greater operational efficiency. This is due to several factors, such as the dependence and variability of suppliers, as well as the absence of integration in the supply chain. The operational efficiency of a hospitality firm, for instance, may be jeopardised by external circumstances that are outside the control of the business itself. These concerns may include delays caused by suppliers, problems with quality, or price hikes. Suppliers can face disruptions (such as problems with the supply chain or changes in the market) that can have an impact on the hospitality industry, even if the relationship between them is robust. Because a hotel, restaurant, or other facility is highly reliant on a limited number of suppliers, this dependence may result in inefficiencies if the provider is unable to achieve the standards that have been set. Some hospitality organisations operate with disjointed supplier networks that do not have integrated systems or communication with operational teams. It is possible for there to be inefficiencies in the supply chain if the suppliers do not meet the requirements of the company or if they do not exchange information promptly. For instance, ineffective communication between the purchasing department and the suppliers might result in stock shortages, delays in obtaining items, or overstocking, all of which affect the efficiency of the operating process. In conclusion, although leadership and connections with suppliers are essential components of Total Quality Management (TQM), the direct impact that these factors have on operational efficiency in the hospitality business may be minimal. If internal processes, market conditions, or external factors are more important to operational outcomes, then the focus of leadership on long-term strategy

might not result in rapid gains, and supplier relationships might have less of an impact on the outcomes of operations.

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