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GAME BASED LEARNING IN THE ERA OF E-COMMERCE AND SOCIAL COMMERCE

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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 is comprises papers of scholars from different universities of Malaysia, Indonesia, China and KSA. Benefits and Challenges of E-Wallets, Spending Behavior from the Perspective of Entrepreneurship Students, Game-Based Learning Using E-Game Flow, Financial Literacy Towards Sustainable Community, Online Food Delivery Mobile Applications, Waqf-Based Social Business, Social Entrepreneurship Intention, Optimizing Financial Transparency and Accountability, Market Valuation Analysis, Sentiment Analysis on Social Media, Mental Health of University Students, Impact of Job Design Factors on Job Satisfaction, Impact of Work-Related Stress on Employees' Performance, Integration of Big Data Analytics, Zakat Distribution in Healthcare Services, E-Commerce and Social Commerce, Knowledge Concealment Predictors, Digital Culture in Information Science Studies, Empowering Agribusiness, Influence of E-Leadership on Trainee and E-Learning Effectiveness, Smart Farming and Emotional Intelligence 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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E-Wallets Unplugged: Navigating Benefits and Challenges in a Post-Pandemic World

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Abstract: The COVID-19 pandemic has expedited the utilization of digital payment alternatives, with e-wallets becoming a significant component of the financial ecosystem. This study examines the diverse benefits and challenges of e-wallets in a post-pandemic context. The researchers conducted a systematic literature review (SLR) of peer-reviewed academic papers utilizing the Emerald Insights database. Forty-four articles published between January 2021 and September 2024 were reviewed, highlighting the study's benefits and challenges. The findings indicate that e-wallets enhance financial inclusion, promote convenience and accessibility, stimulate business and economic growth, support the digital economy, facilitate technological integration, and improve consumer convenience, especially in an increasingly cashless environment. Nonetheless, the study also examines the substantial challenges associated with this swift digital transformation, encompassing security issues, poor adoption rates, insufficient knowledge, trust deficits, regulatory hurdles, feature limitations, and user attitude challenges. This study seeks to elucidate the changing function of e-wallets in influencing the future of commerce through a thorough investigation. The study offers recommendations for e-wallet providers, policymakers, and researchers to successfully manage the complexity of e-wallet adoption, enhancing benefits while resolving the inherent challenges.

Keywords: *e-Wallet, Cashless, Sustainable Development, Benefits, Challenges*

1. Introduction

The emergence of e-wallets offers considerable advantages and distinct challenges. E-wallets are expected to influence consumer behavior substantially, shifting preferences from cash to electronic transactions. (Dimitrova, 2024). As digital payment systems progress, they provide ease and efficiency; nonetheless, they encounter obstacles that may hinder their extensive adoption. In the contemporary digital environment, the shift to cashless transactions is becoming essential, not just for convenience but also as an effective instrument in combating crime. In developing nations, the financial sector empowers consumers to perform contactless transactions (Rahman et al., 2024).

Transitioning to digital currencies and contactless payments can establish a safer environment, where financial transactions are both optimised and safeguarded against unlawful activity. Digital transformation, financial inclusion, financial technology, and e-wallets have advanced significantly due to improvements in information and communications technology and the dependence on smartphones for internet access. (Esawe, 2022). Mobile money accounts have emerged as a crucial method for executing financial transactions for numerous households in developing nations (Nguyen, 2020). This transition not only improves security for persons and businesses but also supports a wider community dedication to crime reduction and the promotion of economic resilience. Criminals frequently deposit their illegal earnings in financial institutions through cash transactions, complicating law enforcement's ability to trace the funds (Alba, 2003, Goel and Mehrotra, 2012). Consequently, nations with substantial cash flows may exhibit increased vulnerability to corruption among officials and bribery recipients.

The COVID-19 pandemic has heightened the demand for digital, contactless services, presenting issues for conventional banking and payment infrastructures. The transition to digital services has intensified, revealing the necessity for safe and dependable systems to manage heightened transaction volumes (Shaikh et al., 2023). The pandemic forced numerous individuals, even those who previously opposed digital banking technologies, to embrace digital banking services (Ahmed & Sur, 2023). Despite the prevalent negativity, the epidemic has afforded numerous chances for countries to implement various digital projects. The epidemic prompted a transition in consumer preferences favoring digital payment options, like e-wallets, over conventional payment systems (Ariffin et al., 2021). The acceptance of cashless transactions is more prevalent in Malaysia, driven by

technological improvements and the digital landscape, alongside the impact of COVID-19 (Kamis, Ismail & Abd Rahman, 2023). The post-pandemic era has experienced a notable transition towards the utilization of e-wallets, propelled by evolving consumer behaviors and the demand for contactless transactions. A primary alteration is that individuals endeavor to evade direct interaction with sick individuals and indirect interaction with objects in proximity to or utilized by infected individuals (Istijanto & Handoko, 2022). The pandemic commenced on March 11, 2020, with the post-epidemic period commencing approximately in March 2022 and extending into 2024 (Топорков, 2024). The post-pandemic phase for COVID-19 is typically regarded as commencing in 2021, following the initial waves of the pandemic and the distribution of vaccines. This study is undertaken post-pandemic, as the health implications of utilizing e-wallets have gained considerable relevance because of the COVID-19 pandemic (Ruslim et al., 2024). As countries progressively recover from the restrictions enforced by the pandemic, comprehending the changing environment is essential for navigating through the new normal. This study seeks to examine the advantages and consequences of the post-pandemic years, namely in the realm of digital finance (fintech), as well as the forthcoming problems.

This study enhances the existing literature on electronic wallets in multiple aspects. Initially, it analyses the development and evolution of e-wallets. Furthermore, it illustrates the significance of addressing the key issues for sustainable development. The methodology of this article was presented to identify benefits and challenges based on the previous literature review using systematic searching strategies. Next, the researchers identified several benefits and challenges particularly related to the e-wallet in post post-pandemic era. Finally, the article provides a detailed insight into the conclusions and recommendations that can be used for further investigation and add to the existing literature.

2. The Importance of Addressing These Key Issues for Sustainable Development

Addressing these critical concerns is essential for attaining sustainable development, as cashless directly influences economic stability, equitable society, and environmental health. The sharing economy, facilitated by digital platforms, effectively aligns the demand and supply of underutilized resources. Global expansion and influence across several industries are providing a novel approach to sustainable resource utilization. The United Nations ratified the Sustainable Development Goals (SDGs) in response to a worldwide initiative aimed at eradicating poverty, safeguarding the environment, and ensuring that all individuals experience peace and prosperity by 2030 (Aref, 2024). The examination of e-wallets is fundamentally associated with multiple Sustainable Development Goals (SDGs), including Goal 1: No Poverty, Goal 8: Decent Work and Economic Growth, and Goal 9: Industry, Innovation, and Infrastructure. E-wallets facilitate cashless transactions and enhance financial accessibility, hence encouraging financial inclusion and enabling individuals in underserved communities to engage in the digital economy. This access alleviates poverty and empowers consumers by equipping them with tools for savings, investment, and effective financial management.

In our progressively digitized society, e-wallets serve as a revolutionary instrument that perfectly corresponds with the Sustainable Development Goals (SDGs). E-wallets facilitate transactions, diminishing the necessity for cash management, hence potentially decreasing operational expenses for enterprises. (Tennyson & Mercy, 2014). Implementing e-wallets is anticipated to enhance banking activities and stimulate economic growth, notwithstanding existing discrepancies in user adoption (Undale et al., 2021). The e-wallet platform aligns with sustainability objectives to reduce paper use and carbon emissions linked to conventional banking (Nawi et al., 2024). Further, digital payments can result in sizable cost reductions and reduced environmental effects, fostering economic sustainability (Salman & Ismael, 2023).

Aside, e-wallets can encourage economic growth by elevating entrepreneurship and innovation, enabling small enterprises to prosper via expanded client access and streamlined payment processing. Aside, it also promotes how technology can close disparities and provide equitable opportunities for all. Digital payment can improve infrastructure, encourage sustainable industrialization, and promote innovation in line with SDG goals. This paper identifies the benefits and challenges of e-wallets, intending to emphasize their potential as drivers of sustainable development. Incorporating e-wallet technology is needed for attaining the Sustainable Development Goals, encouraging inclusive growth, and focusing on the robust global economy.

3. Methodology

This study leverages an extensive literature review as its principal methodology to examine the benefits and challenges related to e-wallets in the post-pandemic era. By systematically compiling and analyzing existing research (journal articles), the study aims to identify the key benefits and challenges related to e-wallet adoption. This literature study will include several views, such as user experiences, security issues, economic effects, and regulatory challenges. This study aims to provide a detailed knowledge of the benefits of e-wallets and the challenges associated with their deployment and widespread adoption by integrating ideas from many sources. This methodology will establish a robust basis for educated discourse regarding the future of e-wallet technology.

This strategy was developed to ensure systematic and methodical searching, based on three subprocesses: identification, screening, and eligibility. Provided that all database queries are reproducible, this procedure can be precisely documented in the review. The procedure of finding synonyms, variations, and associated terms of the study's main keywords is referred to as identification. This study was fixed on the post-pandemic context, with datasets retrieved from January 2021 to September 2024. This utilizes advanced search techniques, including Boolean operators, phrase searching, wildcards, truncation, and field code functions individually. The subsequent primary and enhanced keywords were employed to perform searches across all databases: ("ACCEPTANCE*" OR "ACCEPT*" OR "ACCEPTING*" OR "ACCEPTED" OR "ADOPTION*" OR "ADOPT" OR "ADOPTED") AND ("CASHLESS" OR "CASH-LESS" OR "E-PAYMENT*" OR "ELECTRONIC PAYMENT*" OR "ONLINE PAYMENT*" OR "ON-LINE PAYMENT*" OR "E-WALLET*" OR "ELECTRONIC WALLET*" OR "ELECTRONIC MONEY"). The main database used for this study is Emerald Insight, which offers an extensive array of academic journals concentrated on business, management, and social sciences. Emerald Insight is known for its stringent peer-reviewed material, rendering it an essential resource for obtaining high-quality research articles that explore diverse facets of e-wallet technology, the benefits, challenges, and implications for sustainable development (Ansari & Raza, 2020).

A total of fifty-one (51) articles have been generated because of the identification process in the primary and supplementary databases. Seven (7) items were excluded during the screening and eligibility phase due to non-compliance with inclusion criteria, resulting in the selection of forty-four (44) papers for evaluation.

4. The Benefits of e-wallets

During a time when ease and safety are crucial, electronic wallets and cashless systems have become important tools in modern finance. These digital payment options offer a range of advantages, such as enhanced security, convenient transactions, and instant expense monitoring. Through the utilization of e-wallets, individuals and companies can streamline their financial transactions, reduce the dangers associated with physical cash management, and improve economic productivity. The transition to cashless economies may decrease government expenditures and enhance employment opportunities. Nonetheless, the complete advantages of a cashless economy cannot be attained unless a substantial proportion of the population consistently participates in cashless transactions (Raj et al., 2024).

E-wallets provide instantaneous payments and convenient access to funds, rendering transactions effortless for users. Cashless transactions fulfill the increasing demands of consumers by providing more user-friendly and time-efficient technological applications (Ahmed & Sur, 2023). The prevalence of cash as a prime target for theft and robbery necessitates the implementation of cashless payment systems to substantially diminish chances for criminal activity. Cash facilitates anonymity for terrorists and rebels to conduct undetected transactions, with even a small amount of physical currency sufficient to fund a wide array of illicit activities (Raj et al., 2024). The transition to a cashless society and the proliferation of digital payment methods have streamlined transaction monitoring and diminished avenues for illicit activities and money laundering by providing a transparent record, hence ensuring complete accountability (Sakuntala et al., 2024).

Okonkwo et al. (2023), assert that e-wallets facilitate a range of transactions, encompassing online purchases, utility payments, money transfers, automatic and timely payments, and cost management. E-wallets are among the fastest-growing sectors in future mobile payment technologies because of their simplicity, user-friendliness,

security, and rapid service delivery (Mew & Millan, 2021). The e-wallet invention advantages businesses by facilitating cashless payment transactions, while offering banking institutions an additional revenue stream. Moreover, internet technology can facilitate online buying, especially through expedited transactions and price comparisons across many options (Oloveze, et al., 2022). E-wallets assist firms in augmenting sales, acquiring new clients, and maintaining existing customers (Rahman et al., 2024). The theoretical foundation of digital currency development posits that supply drives financing, hence fostering economic growth and development (Ekong & Ekong, 2022).

E-wallets significantly advance the proliferation of cashless societies, hence improving financial inclusion, particularly in underdeveloped areas (Kamis et al., 2022). The advent of novel digital payment channels in developed countries and their subsequent enhancements aimed at diminishing the extensive reliance on cash and cheques (Oloveze, et al., 2022). Moreover, the growth of digital currency has advantageous consequences for financial inclusion, secure remittances, and exchange rate stabilization, among other benefits (Ekong & Ekong, 2022). Advanced technology such as blockchain and artificial intelligence enhance transaction security and efficiency, hence cultivating user confidence. The quality of online shopping platforms positively influences consumers' online purchasing behavior, hence promoting the use of digital payment methods (Rahman & Hossain, 2023). The implementation of technology has enhanced banking services (Ohiani, 2021).

Therefore, e-wallets signify a substantial progression in the management of financial transactions by individuals and businesses. Their advantages are numerous, including enhanced convenience via seamless digital payments, enhanced financial inclusion by granting access to banking services for unbanked individuals, and heightened security measures that safeguard consumers from fraud. Further, e-wallets involve contactless payments, and expedited transactions, and promote sustainable habits by reducing dependency on cash. The e-wallet adoption can stimulate economic development and become a crucial part of the financial landscape. Thus, by promoting these benefits, the stakeholders can further enhance user acceptance and promote an effective and diverse financial environment.

The Challenges of e-Wallets Ahead

E-wallet technology has emerged as a prominent solution for cashless transactions as the world shifts progressively toward digital finance. E-wallets have transformed how businesses and consumers execute financial transactions by providing ease, speed, and efficiency. Nonetheless, despite their increasing popularity, the adoption and deployment of e-wallets encounter numerous challenges that must be resolved to ensure their sustainability and efficacy. Comprehending these challenges is crucial for stakeholders aiming to navigate through the intricate realm of e-wallet technology and leverage its complete capabilities. This study seeks to identify the primary challenges encountered by e-wallets and suggest several strategies for navigating in a progressively digital environment.

Security issues, regulatory adherence and the digital divide pose substantial obstacles that can hinder user trust and broad acceptance. Concerns about data theft and fraud frequently impede adoption (Mohammed et al., 2024). Privacy and access barriers may hinder the comprehensive adoption of cashless transactions (Dimitrova et al., 2022). The potential for banks and other entities to monitor consumers' online payment activity, which may result in privacy invasions and concerns, is regarded as a significant obstacle (Dimitrova et al., 2022). Customers still have the fear that cybercrime is mostly committed via e-banking platforms Customers continue to retain concerns that cybercrime predominantly occurs through e-banking platforms (Ohiani, 2021). Recognizing the privacy difficulties encountered by service providers and consumers will be crucial for the operation of digital platforms (Aref, 2024). Consequently, consumers said that the application should prioritize robust security for financial transactions to safeguard personal information over user-friendliness; so, they do not anticipate these applications to be straightforward to operate (Okonkwo et al., 2023). The increase in cyber risks during the pandemic has intensified apprehensions over the security of e-wallet transactions, causing customers to be hesitant about embracing these digital payment methods (Undale et al., 2021).

The low adoption is also one of the significant challenges for e-wallet implementation. The e-wallet sector remains in its infancy, with several participants investing significantly to attract customers and merchants, as indicated by studies (Ariffin et al., 2021; Kamis, Ismail, Rahman, et al., 2023). Undale et al. (2021) Noted that

female users exhibited greater concern over e-wallet security than their male users, while middle-income persons demonstrated a higher degree of risk aversion compared to those with lower incomes. This demographic heterogeneity is a challenge for e-wallet providers in meeting the distinct security requirements of various user groups.

Notwithstanding their growing popularity and convenience, a considerable barrier remains a deficiency of awareness among potential customers. This lack of understanding can impede the extensive adoption of e-wallets, as individuals may feel overwhelmed by the technology or unaware of its benefits. A significant number of prospective users, especially within lower-income demographics, may lack adequate knowledge of e-wallet utilization, hence constraining its adoption (Kamis et al., 2022). Inadequate awareness campaigns regarding the advantages of utilizing the device, insufficient policies to bridge this gap, and the baseless assumption of widespread consumer confidence in the e-payment channel contribute to significant challenges (Oloveze, et al., 2022; Sakuntala et al., 2024). Furthermore, inadequate understanding of e-technology among customers also contributes to difficulties in e-wallet navigation (Oloveze, et al., 2022). The retailers' insufficient understanding of m-payment mechanisms poses an obstacle to the adoption of m-payments (Jayarathne et al., 2022). This e-wallet payment method necessitates adequate infrastructure, as consumers in remote locations may possess varying attitudes regarding e-wallet usage (Ariffin et al., 2021). A common issue in digital technology is the tendency to prioritize technology over the essential people skills required for effective transformation (Philip et al., 2023). E-wallets may provide advanced technology; yet, without enough training and assistance for consumers, adoption may be difficult. If e-wallet providers neglect to prioritize user education regarding the advantages and functionalities of their platforms, they jeopardize the engagement of potential clients, especially those with limited digital proficiency.

Besides, trust has been identified as an essential factor in the acceptance of cashless payment systems or e-wallets. Research demonstrates that customer trust in cashless systems is crucial for their sustained utilization since it alleviates perceived threats linked to online transactions (Rahman et al., 2024). Establishing user trust is essential; numerous prospective customers may be reluctant to transition from conventional cash transactions to digital payments due to unfamiliarity or perceived risks. Trust can significantly influence the acceptance and success rate of new technologies (Oloveze, et al., 2022). A study by Nourallah et al. (2023) Affirmed the significance of trust in fostering the intention of younger generations to utilize digital platforms. Consumers find it unattractive due to significant concerns regarding the product quality of online retailers. (Oloveze, et al., 2022). The proliferation of mobile money has resulted in instances of fraud and exploitative practices, especially with mobile money agents, which can erode trust and impede adoption (Shaikh et al., 2023).

Moreover, unclear rules may hinder the efficient execution of e-wallet systems (Mohammed et al., 2024). The existing regulatory framework may insufficiently address the requirements of retailers (SMEs), resulting in diminished confidence in fintech solutions and establishing a barrier to implementation (Saadah & Setiawan, 2024). Supportive regulations can promote innovation and market expansion, but ambiguous guidelines may obstruct the advancement of mobile money efforts (Shaikh et al., 2023).

Although e-wallets provide various new features, such as contactless payments, connection with loyalty programs, and improved security measures, the same features may also pose challenges to user acceptance. The features of e-wallets, including simple interfaces, improved security protocols, and effortless transaction processes, significantly impact user acceptance. Limited screen dimensions impede intricate input for cashless transactions (Raj et al., 2024). The rationale for persisting with e-wallet utilization should extend beyond mere time efficiency and convenience to encompass inclusivity and the maintenance of appealing incentives. Furthermore, conveying the availability of these e-wallet advantages is crucial in marketing initiatives. (Oloveze, et al., 2022). Moreover, e-wallets that offer substantial information or high-quality content will enhance acceptance, and e-wallet providers ought to integrate features that confer a competitive edge through their products (Okonkwo et al., 2023). Istijanto & Handoko (2022) Offer critical insights for developing business strategies, indicating that e-wallet providers must consider both the advantages of e-wallet payments and the disadvantages of cash payments to promote continued usage among customers. According to Tomczak et al. (2023), young users who consider themselves digitally capable frequently immerse in advanced features, including gamification, integration of social networks, and personalized financial management tools. E-wallets

that fail to provide these functionalities may find it challenging to attract and maintain these young users, leading to a competitive disadvantage.

A major challenge impeding the extensive use of e-wallets is user attitude. A considerable number of prospective consumers exhibit skepticism or hesitance toward digital payment systems, frequently driven by concerns about security, privacy, and technological unfamiliarity (Rahman et al., 2024). This anxiety may engender distrust in e-wallet services, leading to reluctance to abandon conventional payment methods like cash or credit cards. Adverse opinions regarding the complexity of e-wallet functionalities may deter users from investigating or employing these services. Therefore, to raise this difficulty, e-wallet providers must adopt techniques that increase familiarity, foster user confidence, increase familiarity, and transform attitudes toward cashless transactions.

5. Conclusion and Recommendations

This study posits to illustrate the benefits and challenges of e-wallets adoption in the post-pandemic context. Based on the past empirical literature, forty-four (44) articles were identified to review. By considering the benefits and challenges, this study proposed various solutions, particularly for e-wallet providers, policymakers, and researchers that could enhance e-wallet adoption, fostering a more inclusive and efficient digital environment.

Firstly, for the e-wallet providers, this study emphasized the creation of user-centric e-wallet products and services, which is essential for increasing adoption. The advanced security features like encryption and two-factor authentication to safeguard customers' financial information, privacy and access issues continue to pose substantial challenges. The marketing efforts for user experience and loyalty should be promoted. Effective marketing methods, such as influencer collaborations, can enhance consumer confidence and awareness of the advantages of online buying. Furthermore, gamification can favorably affect perceptions of e-wallets by increasing user engagement through prizes, so rendering the experience more fun and promoting regular engagements. E-wallet firms must prioritize agility, user experience, and interaction with younger consumers to achieve success. Features such as instantaneous transfers and loyalty program integration render e-wallets appealing substitutes for conventional payment methods, enhancing user familiarity and propensity for adoption.

Policymakers can improve financial inclusion and stimulate innovation in the digital economy through the implementation of targeted initiatives. This entails initiating educational initiatives to enlighten the public regarding the advantages of e-wallets, highlighting simplicity, security, and financial accessibility. Financial incentives like tax deductions or cashback payments may be provided to promote the adoption. Clear laws that safeguard consumers and promote competition among e-wallet providers are essential for establishing trust in digital payment systems. Moreover, facilitating accessibility for all residents, particularly those in rural regions or with restricted digital literacy, via training initiatives and intuitive designs is essential for the extensive use of e-wallets.

Researchers can leverage findings from e-wallet research to investigate broader trends in cashless transactions, digital finance, technology adoption, and financial behavior. Deepening the understanding of how e-wallets might influence economic and social environments could enhance the academic discourse on financial technology and establish a basis for future investigations. Comprehensive e-wallet research is an essential asset for stakeholders, promoting collaboration and informed decision-making in the swiftly changing landscape of digital payments.

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University Students' Spending Behavior from the Perspective of Entrepreneurship Students

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Abstract: Investigating spending behavior among students is essential, particularly in understanding how they allocate funds toward academic priorities. This article aims to explore students' spending habits and the key practices that influence the allocation of semester-based educational funding. The study adopts a quantitative, cross-sectional approach, with 501 respondents selected from six higher education institutions in Melaka through a quota sampling technique. Data analysis was conducted using IBM SPSS software (version 28.0). The results indicate that both financial management knowledge and peer influence have a positive impact on students' spending behavior. This research contributes to the literature by enhancing the understanding of spending behavior patterns across the institutions studied, while also offering practical insights for higher learning institutions (HLIs) in Malaysia and their students. Limitations and suggestions for future research are also addressed.

Keywords: *University Students, Spending Behavior, Entrepreneurship, academic priorities*

1. Introduction

The concept of spending behavior refers to the act of allocating financial resources to fulfill needs and desires, often influenced by various factors, such as events, circumstances, or interpersonal relationships (Kumar, Sudin, Othman & Salehuddin, 2022). Individuals spend money on essential items like food, clothing, shelter, healthcare, transportation, and entertainment. Financial literacy becomes indispensable to managing such behavior efficiently. In support, previous literature has shown that inadequate financial literacy contributes to impulsive purchases, insufficient savings, and personal financial instability.

An alarming statistic from Malaysia's Insolvency Department highlights the gravity of this issue. Between 2018 and 2023, 46,132 Malaysians aged 25 to 44 declared bankruptcy. The primary reasons for bankruptcy were personal loans (42%), vehicle purchases (15%), and business loans (13%). These figures portend the necessity for financial education to mitigate poor financial decisions that culminate in such dire consequences.

Financial literacy has become the call of the hour. According to Fernando (2024), Looi, Nguyen, & Muthaiyah (2022), and Lusardi & Mitchell (2014), it has been deemed a vital tool in creating educated students. Financial literacy enables one to manage personal finances responsibly and make the right decisions on spending and saving. This automatically becomes highly relevant for those students who get scholarships or loans to look after themselves during university life.

Three commonly studied factors influencing spending behavior include peer influence (PI), price elasticity (PE), and financial management knowledge (FMK). Although all these factors have widely been examined, there is a scant amount of research specifically targeting university students depending on scholarships or loans for support. The present study, therefore, intends to investigate the factors that will affect the spending behavior of Malaysian university students who receive scholarships or loans for further education. Understanding these factors could help design better financial education programs and support systems to promote responsible spending and financial well-being among students.

2. Literature Review and Hypothesis Development

Spending behavior is a broad concept that simply describes how an individual spends his or her financial resources based on needs, desires, emotional changes, or environmental influences. Individuals spend their money differently depending on individual levels of income, upbringing, and environment. For instance, one will comfortably buy expensive and luxurious things without consideration, while another would save money

first before making purchases. Understanding these purchasing patterns is essential for achieving financial stability. An individual can have better financial health through proper prioritization of expenses and by being cautious (Kumar et al., 2022). Several scholars have argued that the building of financial awareness among university students is more important to promote the student's long-term financial stability.

Navigating university life can be challenging. In addition to managing academics and campus routines, one has to manage finances adequately. Even students who have scholarships or loans would need financial management to keep them going through the course of their studies. The three major variables normally researched in the context of students' buying behavior include peer influence (PI), price elasticity (PE), and financial management knowledge (FMK).

PI plays a significant role in shaping students' spending behavior. Many students feel the pressure to align their spending with that of their peers, whether on social activities, dining out, or purchasing trendy items. If not managed carefully, this can lead to financial strain. A close understanding of PE is also paramount. It refers to how sensitive a student is to changes in price when deciding to spend on a particular product. For example, they may be more inclined to purchase items when prices are low or discounted and less willing when prices increase. It, therefore, leads to sensitivity, which in turn affects their spending and financial situation as a whole. The sound foundation of FMK is important. A student who understands how to budget ways of saving and spending responsibly stands a better chance in handling their finance wisely. This knowledge will ultimately allow them to prioritize their expenses, make correct distinctions between wants and needs, and survive the college/university years without financial crises.

The relationship between peer influence (PI) and spending behavior (SB)

PI refers to the tendency of a person, in this case, a student, to imitate his or her peers' actions, attitudes, or lifestyles (Laninga-Wijnen & Veenstra, 2021). At the same time, PI might be both positive and negative, as peers can encourage constructive habits in their comrades or can lead them towards one or another kind of risky behavior. Thus, peer pressure management should be effective, considering that students have to balance the aspiration for group acceptance with the necessity to keep their individuality intact.

The university academicians are highly relevant in this regard; they not only play an important role in teaching but also in guiding students through the social dynamics that influence their spending decisions. In this way, academicians build up critical thinking abilities in students for better judgment and standing against peer influences that could lead to compulsive spending. Through active mentorship and discussions on real-world financial challenges, academicians encourage students to make informed, independent decisions. This can help them differentiate between needs and wants, thus debilitating the possible rise of peer-driven consumerism. By incorporating financial education into their curriculum, they can also equip the students with means of identifying and defeating emotional and social motives driving their spending behavior (Lusardi & Mitchell, 2014). The idea here is to take a more proactive stance in arming students with the ability to make objective decisions about peer influence against long-term security and well-being and temporary social compliance.

This interrelationship of PI with SB essentially means that understanding how peers influence spending behavior can help academicians and policymakers devise programs that will improve not only the level of financial literacy among students but also foster responsible decision-making among them. The financial behavior of students is directly influenced by PI because they tend to imitate the spending habits of their peers so that they will not lose their social acceptance. Based on this literature review, we propose the following hypothesis:

H1: *There is a significant relationship between peer influence and student's spending behavior*

The relationship between price elasticity (PE) and spending behavior (SB)

According to Huang, Dawes, Lockshin & Greenacre (2017), PE refers to the sensitivity of consumers to any changes in prices during purchasing decisions. It essentially measures how much students consider the price of a product in deciding whether to buy it. Students with high levels of price sensitivity are more likely to respond to a price increase by downshifting to lower-priced alternatives or lapsing into non-purchase. It contrasts with the others because people who have lower sensitivity will experience minor effects of price change and may still purchase goods or services that they want despite price increases. The students are more

elastic in items such as clothes, gadgets, or entertainment. In this context, the students would not buy these necessities if the prices increased a little or would be on the lookout for alternatives or cheaper prices.

However, when it comes to necessities like textbooks, educational materials, or transportation, the demand tends to be inelastic. Even if prices rise, students are likely to continue purchasing these goods because they are essential for their education and daily life. As a result, businesses that target students must carefully consider the elasticity of the products they offer. Understanding how students react to price changes can help businesses create tailored pricing strategies that appeal to this demographic. For example, offering student discounts or implementing flexible pricing during specific times (e.g., exam periods for textbooks) can attract more buyers and maintain loyalty. Therefore, considering these dynamics is crucial for businesses targeting students as customers and developing pricing strategies that align with their preferences and behavior. Based on the literature discussion, we propose the following hypothesis:
H2: *There is a significant relationship between price elasticity and student's spending behavior*

The relationship between financial management knowledge (FMK) and spending behavior (SB)
FMK encompasses the ability to assess and manage risks associated with investments and financial products (Fernando, 2024). As discussed by Lusardi & Mitchell (2014), individuals with lower FMK are most likely to make suboptimal investment decisions. Individuals with a higher level of financial literacy tend to have better investment results and be more willing to invest their assets in equities, which give higher returns than bonds but also carry greater risk.

Research indicates that FMK is related to responsible financial behavior among students. According to Chuah, Kamaruddin, & Singh (2020), there is a tendency for students with more FMK to be more responsible in their financial behavior. Such a relationship would imply that the more knowledgeable students are about finance, the more able they will be to conduct their finances more knowledgeably and carefully. Conversely, Lee Chock & Chin (2023), explain how university students do not possess adequate FMK regarding budgeting and management of expenses, which in the long run leads to poor financial decisions. It is, therefore, very necessary that students learn key concepts of finance and practices. Fernando (2024) confirms that improved understanding by students about expenditure and FMK will add to their confidence in handling money, reducing the chances of financial mistakes.

Eventually, increasing financial literacy among university students empowers them to make wise use of money and make the right money decisions. Indeed, filling the gaps in financial education will contribute positively toward improving the students' long-term financial position and stability. In the context of the above literature review, we would like to test the following hypothesis:
H3: *There is a significant relationship between financial management knowledge and student's spending behavior*

3. Methodology

This study's population consists of active students from six (6) higher learning institutions (HLIs) who enroll in entrepreneurship classes in the year 2024. The respondents are students pursuing diploma and bachelor's degree programs. Quota sampling technique has been applied. Quota sampling design refers to sampling plans where the authors split the entire population into mutually exhaustive subgroups (Sekaran and Bougie, 2016). In this study, the authors have divided the HLIs into two subgroups, namely; (a) Public HLI and (b) Private HLI. Each subgroup will represent three (3) Public HLIs and three (3) Private HLIs. At this stage, we distributed 100 sets of questionnaires via online and offline platforms for every subgroup – 6 HLIs. In terms of sample size, a few guidelines have been suggested by previous researchers. After considering their suggestions, the authors have considered 600 samples.

The survey questionnaire is divided into three (3) sections. Section A covers the questions related to the background of the HLIs' students. The demographic variables, such as gender, race, age, and HLI category are all collected in this study. Meanwhile, in section B, the questions cover variables such as peer influence (PI), Price Elasticity (PE) and Financial Management Knowledge (FMK). The items are modified and improvised to suit the study's population which is the students. The questions in Section C, on the other hand, cover Spending Behavior. In this study, the items are borrowed and improvised from Tuliao (2022). Thereafter, it is edited to

suit the context of this study. Altogether, 25 items are using a 5-Likert scale ranging from 1 (Completely Disagree) to 5 (Completely Agree) which are used to measure the items.

In this study, the authors used Statistical Package for the Social Sciences (SPSS) version 28.0 for data analysis. As for preliminary analysis, the authors used descriptive analysis to obtain the demographic profiles. In addition, we also performed multiple regression analyses to test the hypotheses of the study. According to Coakes (2013), the result of regression analysis represents the best prediction of a dependent variable from numerous independent variables. We also take into consideration the assumption underpinning the use of regression: (1) the outliers (2) multicollinearity versus singularity (3) normality, linearity and the independence of residual (4) the ratio of cases to independent variables.

4. Empirical Results

Out of 600 questionnaires distributed, a total of 501 questionnaires were returned, including 313 via online and 188 via offline data collection techniques. This means that the return rate of the survey is about 83.5 percent, which is more than the anticipated rate of 60 percent suggested by Trochim et al. (2016). These 501 questionnaires are suitable for further analysis and reporting in the study.

Table 1: Questionnaire distributed and returned

Higher Learning Institutions (HLIs)	Questionnaire Distributed	Questionnaire Returned	Technique
Private 1	100	71	Online
Private 2	100	66	Online
Private 3	100	79	Online
Public 1	100	93	Offline
Public 2	100	97	Online
Public 3	100	95	Offline
Total	**600**	**501**	

Demographic Analysis

Table 2 shows the demographic profile of those who responded to the questionnaire. The 501 students who took part in this survey were (60.1%, *n*=301) female and 39.1 percent (*n*=200) male. Most students were in the age range of 22-25 years old (50%, *n*=251), followed by the age range of 18-21 years old (42%, *n*=210), and more than 26 years old (8%, *n*=40). In terms of race, (47.1%, *n*=236) were Malay, (26.3%, *n*=132) were Chinese, (17%, *n*=85) were Indian, and 9.6% were other. The information on the HLI of students revealed that (56.9%, *n*=285) attended a public HLI, while (43.1%, *n*=216) attended a private HLI. Half of the students (50.9%, *n*=255) have a degree, followed by (49.1%, *n*=246) of the students with a diploma. Table 2 also revealed the name of the HLI area in Melaka that took part in the survey.

Table 2: Demographic analysis result

Characteristic		Frequency	Percentage
Gender	Male	200	39.9
	Female	301	60.1
Age	18-21	210	42
	22-25	251	50
	More than 26	40	8
Race	Malay	236	47.1
	Chinese	132	26.3
	Indian	85	17
	Other	48	9.6
Higher Learning Institution (HLI)	Public HLI	285	56.9
	Private HLI	216	43.1

Level of Education	Diploma	246	49.1
	Degree	255	50.9
Name of HLI	Private 1	71	14.2
	Private 2	66	13.6
	Private 3	79	15.8
	Public 1	93	18.6
	Public 2	97	19.4
	Public 3	95	19

Reliability Analysis

The assessment of the reliability of a measurement is conducted by using Cronbach's Coefficient Alpha to indicate the similarity of the items which will reflect the construct of interest (Hair, Black, Babin, & Anderson, 2018; Sekaran & Bougie 2016). Cronbach Alpha is a well-known estimation of internal consistency for social sciences studies. Cronbach's Coefficient Alpha is required to be more than 0.700, to indicate the reliable measures of their respective constructs (Hair et al. 2018). Likewise, Sekaran and Bougie (2016) point out that the measure of reliability with values of 0.600 to 0.700 indicates limited acceptability. Thus, the higher the obtained value of the coefficient, the more reliable is the measuring instrument. The Cronbach's alpha for the study of all variables ranged from 0.764 to 0.865, some of which are greater than the recommended threshold of 0.600 (Sekaran and Bougie, 2016). The reliability results are presented in Table 3.

Table 3: Reliability analysis result

Variables	Cronbach Alpha	Items
SB	0.856	4
PI	0.865	3
PE	0.764	5
FMK	0.850	4

Multiple Regression Analysis

Multiple regression is one of the methods that analysts and statisticians use to understand and create conclusions by confirming the hypothesis. The objective of multiple regression analysis is to use the independent variables whose values are known to predict the value of the single dependent value. In simple words, multiple regression is a method that analysts and statisticians use to understand and create conclusions by confirming the hypothesis. R-square represents the proportion of variance in the outcome variable which is explained by the predictor variables in the sample (Ozili, 2023). He added a low R-square of at least 0.1 (or 10 percent) is acceptable on the condition that some or most of the predictors or explanatory variables are statistically significant. If this condition is not met, the low R-square model cannot be accepted. The t-value helps to identify which independent variable influences the most variance on the dependent variable. It should be noted that the variables are statistically significant at the 1% and 5% levels.

Based on Table 4, the R-squared value (0.937) is acceptable and statistically significant. In addition, peer influence is the most influential factor leading to students' spending behavior. Lastly, it can be summarized that PI and PE are significantly related to SB at <0.001 significant level. Therefore, H_1 and H_2 are accepted. Whilst, FMK showed an insignificant relationship with SB. This caused H3 to be rejected.

Table 4: Multiple regression analysis result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PI	0.984	0.014	83.338	<0.001
PE	-0.074	0.011	-1.451	<0.001
FMK	-0.017	0.012	-6.361	0.147

*Dependent variable: spending behavior

R: 0.968	S.E. of regression: 316.440
R-Squared: 0.937	Sum Squared Residual: 21.262

Discussion of The Findings

In this section, we will map the discussion parallel with the literature review. It would be easy for the reader to follow the structure of the article.

Peer influence is the most dominant factor influencing student's spending behavior

It confirms that the relationship between peer influence and spending behavior is significant, as stated by $\beta = 0.984$ and $p < 0.000$. This agrees with previous literature indicating that peers are indeed a major source for developing attitudes, beliefs, and behaviors, especially in higher learning institutions where the students spend most of their time with other peers (Kumar et al., 2022). Apart from that, peer pressure amidst the social dynamics that characterize academic life may greatly influence the spending habits of students. Many students at HLI attempt to adopt the spending pattern of other people to fit into a particular clique to be accepted, or just to project an image. This is probably in the form of attending activities or social events, keeping abreast of whatever is in vogue, or buying something their classmates like. These dynamics make spending a means toward an end: acceptance or reinforcing a sense of belonging. At the end of it all, social acceptance and a feeling of belonging remain some of the usual forces driving money decisions for students.

It is noted that peer influence might have both a positive and negative impact on the student's life. In today's digital age, social media has emerged as the major force for peer influence; this tends to go beyond what any close, face-to-face interaction may do. Such platforms as Instagram, TikTok, Twitter (X), and Snapchat serve as virtual places where students observe their peers' spending behaviors and imitate them. For example, students can be more influenced to purchase certain brands or attend high-price events because their peers post about them on social media. Social media is curated; therefore, it may foster the feelings of "missing out" and press the students towards consumerism to maintain a socially desirable image of themselves.

On the other hand, students of other socioeconomic statuses may experience peer pressure differently. For instance, students from less well-off families may have to race to keep pace with their richer peers to be able to spend as much money as they do, which in turn can lead to financial difficulties or even debt. Alternatively, richer students will unconsciously place pressures on the rest by setting a greater standard of consumption that the others will have to live up to quite often without realizing what burden this causes.

University students are more sensitive to necessity products

The relationship between price elasticity and students' spending behavior is significant ($\beta = -0.074$, $p < 0.000$). These support the previous literature, which suggested that price elasticity could better facilitate the students to spend money wisely (Lai, Ting, & Wong, 2022). Price elasticity or sensitivity of consumers to changes in pricing is one of the important motivators that influence students toward spending. Students with limited budgets are more responsive to changes in prices especially in luxury goods. The price elasticity is higher for luxury products like entertainment, dining out, and fashion items, because such categories allow flexibility in adjusting to price increases or discounts in light of their income. Price elasticity, is generally low for necessities like textbooks, rent, or food items, as students cannot avoid buying these, even if their prices increase. In the case of discretionary spending items, higher price elasticity-like leisure activities or gadgets-gives flexibility to students to reduce or adjust consumption accordingly if the prices go up.

The price elasticity must be understood by the students in their effort to make wise decisions in their consumption. This will enable the students to identify that some products or services show higher or lower responsiveness to changes in their prices, hence making them undertake spending activities such that the best budget used would yield maximum benefit.

Financial management knowledge is crucial to control student's spending behavior.

The relationship between financial management knowledge and student's spending behavior was found to be insignificant ($\beta = -0.017$, $p = 0.147$), contradicting previous research by Azmi & Ramakrishnan (2018). This inconsistency in the findings may also be because several students are uninformed about the long-term effects of spending habits due to ignorance over the long-term aftermath of poor financial management (Kumar et al., 2022). Instead, most students make spending decisions based on emotions or social pressures without proper financial planning, rather than making a conscious, rational evaluation of how their choices are affecting their

finances. The high expenditures on necessities and the tendency to overspend on day-to-day essentials further mark the importance of practical financial education, as shown by the survey results.

On the other hand, the learning of financial concepts is mostly theoretical with less chance for students to be able to apply their knowledge in real life. This concept has been established by McCormick & Ward (2019) and without such experience, the knowledge gained would not effectively result in good spending behavior. This therefore brings critical questions concerning the effectiveness of the programs on financial education. In developing sound financial behavior among the students, there exists a gap between mere theoretical knowledge and its practical use. Strengthening financial education on real-life situations, emotional influences, and long-term spending decision outcomes may provide students with better opportunities to make choices.

5. Conclusion

This study highlights the complex dynamics influencing students' spending behavior. The significant relationships identified between peer influence and price elasticity suggest that social factors and sensitivity to price changes play crucial roles in shaping how students allocate their financial resources. Peer influence, as noted by Kumar et al. (2022), drives students to align their spending habits with those of their peers, leading to increased expenditures on social activities and trends. Additionally, the concept of price elasticity indicates that students are more likely to adjust their consumption patterns based on price fluctuations, especially for non-essential goods, as highlighted by Lai et. al. (2022).

In contrast, the lack of a significant relationship between financial management knowledge and spending behavior raises critical concerns. Despite students receiving some education in financial management, this knowledge does not necessarily translate into responsible spending practices. This finding aligns with research by Lusardi and Mitchell (2014), which emphasizes that financial literacy alone is insufficient for effective financial decision-making without practical application and awareness of long-term consequences.

Overall, these findings underscore the importance of addressing the social and economic factors that influence spending behavior while also recognizing the limitations of financial education in promoting sound financial practices among students. Future efforts should focus on enhancing the applicability of financial management education, incorporating real-world scenarios, and addressing the emotional and social dynamics that significantly impact students' financial choices.

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Evaluating Learning Engagement in *MyPerjuangan* Game-Based Learning Using E-Game Flow: A Case Study of History Education in Malaysia

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Abstract: Passing the History subject in Malaysia is compulsory for students who want to receive the Sijil Pelajaran Malaysia (SPM) certificate. Traditional teaching methods, often focused on rote memorization, have led to disengagement and low enjoyment among students. This research addresses the need for improved learning engagement and information management by developing *MyPerjuangan*, a game-based learning platform focusing on Malaya's Japanese occupation. The aim is to evaluate the effectiveness of game-based learning in managing educational content and enhancing student engagement in history education. The study developed the platform using the Game Development Life Cycle (GDLC) methodology. It employed the E-Game Flow model to evaluate user experience across several dimensions: concentration, feedback, goal clarity, and knowledge improvement. Data were collected through a survey of 10 respondents, consisting of teachers and students, with an overall satisfaction rate of 94.3%. The mean values for key factors such as concentration (92%) and knowledge improvement (100%) indicate high levels of engagement and effective information management within the platform. These findings suggest that *MyPerjuangan* successfully manages and delivers historical information engagingly, significantly improving students' interaction with the material. However, limitations such as the small sample size and the platform's exclusivity to desktop use were identified. Future research should expand the study to a larger, more diverse sample and explore multi-platform accessibility to enhance the system's scalability. In conclusion, game-based learning is valuable for improving educational content management and student engagement in history education.

Keywords: *Game-Based Learning, History Education, Student Engagement, E-Game Flow Model, Knowledge Improvement*

1. Introduction

In Malaysia, the Ministry of Education has mandated that students pass the History subject to obtain the Sijil Pelajaran Malaysia (SPM) certificate (Ministry of Education, 2021). Failure to meet this requirement prevents students from receiving their certification, which can have long-lasting consequences for their academic and professional futures. In the 2021 SPM examination, 11.91% of candidates—45,514 students—failed to pass either the History or Bahasa Melayu paper, making them ineligible for certification (Selangor Journal, 2022). Given the importance of history as a core subject, the high failure rate highlights a need for reform in how the subject is taught, particularly in addressing student disengagement with traditional methods.

The conventional approach to teaching history, which primarily relies on lectures, textbook reading, and memorization, has been cited as a significant factor contributing to students' lack of interest. Baderi et al. (2019) emphasize that these methods fail to stimulate active engagement and are perceived as monotonous by students. Studies have shown that students often find history dull and unrelatable, particularly when lessons emphasize rote memorization over interactive learning. Hassan and Mohammad (2019) propose that integrating technology through interactive, game-based learning platforms can provide a more engaging alternative. Game-based learning aligns with current educational trends promoting active participation, problem-solving, and immersive experiences, making history more enjoyable and accessible to students.

Current teaching methods in Malaysian secondary schools rely heavily on traditional approaches, such as lectures and textbooks, which have been found to limit student engagement with historical content (Talin & Kiamsin, 2018). These methods often focus on rote memorization, failing to capture students' interest and hindering their ability to connect with and appreciate the subject matter. Surveys conducted among secondary school students revealed that while many are interested in history, traditional teaching styles' repetitive and

unengaging nature results in low motivation and enjoyment. This poses a significant barrier to effective history education, as students struggle to retain knowledge and engage meaningfully with the material.

Furthermore, the lack of diverse instructional strategies that incorporate interactive and entertainment elements exacerbates the issue of disengagement (Diyana, 2023). Without more dynamic, student-centered teaching methods, history lessons remain static and unappealing, limiting students' understanding and retention of key historical events. To address these challenges, there is a clear need for innovative educational approaches that can stimulate student interest, particularly using game-based learning models that integrate interactivity, engagement, and real-time feedback.

2. Literature Review

A. History Education in Malaysia

Passing the History subject in Malaysia is mandatory to obtain the *Sijil Pelajaran Malaysia* (SPM) certificate (Ministry of Education, 2021). Failing this subject can significantly limit students' educational and career prospects. In 2021, 10.4% of candidates failed History, with a *Gred Purata Mata Pelajaran* (GPMP) score of 4.88, reflecting students' difficulties in mastering the subject. The SPM History syllabus encompasses various topics, including the Japanese occupation of Malaya and the development of Malaysia's constitutional framework. Although these topics are important for understanding national identity, many students find them challenging and disengaging (Ridzuan et al., 2020).

Research by Rashadi and Ahmad (2019) shows that students struggle with historical content due to a limited understanding of key events. Akengin and Cendek (2017) found that students often view history as disconnected from their present, diminishing their interest. Seman (2019) demonstrated that integrative teaching methods significantly improved student engagement. These studies highlight the need for innovative methods like game-based learning to improve student engagement and comprehension. By introducing interactive elements, history lessons can become more relevant, engaging, and enjoyable, leading to better learning outcomes.

B. Learning Engagement through Game-Based Learning (GBL)

This study explores the implementation of Game-Based Learning (GBL) in *MyPerjuangan*, a history-focused educational platform for Malaysian secondary school students, aimed at improving student engagement and learning outcomes. The evolution of Malaysia's education system has underscored the need for innovative teaching approaches that promote greater student involvement in history lessons. GBL integrates educational content with interactive game elements, encouraging active learning, critical thinking, and collaborative problem-solving (Dimitra et al., 2020).

Research has consistently shown that GBL positively impacts student attitudes, fostering greater engagement and academic achievement. Incorporating elements such as role-playing, competition, and collaboration within the learning process has been demonstrated to heighten motivation and performance (Pratama & Setyaningrum, 2018). *MyPerjuangan* adopts these principles, creating an immersive, interactive experience that aligns with modern educational strategies. The study applies the E-Game Flow model to assess crucial factors like concentration, feedback, and goal clarity, offering valuable insights into how GBL enhances both engagement and educational outcomes.

Compared to traditional methods, GBL provides a more engaging and dynamic learning environment, making historical topics more accessible and engaging for students. By leveraging GBL in the history curriculum, the study highlights its capacity to significantly improve students' interaction with the subject, leading to better retention of knowledge and overall academic success.

C. Enhancing Engagement with Game Elements

Elements of the Game-Based Learning Model: Game-Based Learning (GBL) incorporates various game elements to create an engaging and interactive educational environment. Key elements identified in the design model include challenges, badges, clear goals, feedback, exploration, and narrative (Aina Nadhirah & Mimi Hani, 2020). These elements provide structure and motivation, ensuring students remain focused while learning

through gameplay. Players receive immediate feedback and rewards, which enhance their engagement and enjoyment.

Advantages of Game-Based Learning: GBL offers several advantages, including fostering critical thinking, problem-solving, and collaborative skills. It enhances academic performance and engagement by making learning more interactive and motivating (Dimitra et al., 2020). Studies by Tavares Nuno (2022) and Kusuma et al. (2021) demonstrate that mobile and desktop games significantly improve learning outcomes. GBL's interactive and competitive elements, such as leaderboards and rewards, provide further incentives for students to stay engaged and achieve higher goals.

Types of Games: GBL utilizes various games, including serious games, educational games, and simulators (Pappas, 2023). Serious games are designed to deliver educational content with clear learning objectives, while gamified learning adds elements like badges and leaderboards to enhance engagement. Simulators offer realistic, hands-on experiences where students can practice skills and make decisions in controlled virtual environments.

Game Elements: Key game elements such as levels, scores, progress tracking, and rewards are critical in maintaining student motivation. Learners advance through levels of increasing difficulty, receive immediate feedback, and earn rewards like badges, which incentivize ongoing participation and achievement (Durin et al., 2018).
This model ensures that GBL is an effective tool for enhancing engagement and learning outcomes.

D. Example of Related Applications
Several game-based learning applications have effectively integrated historical content to engage learners.

"Through the Darkest of Times" (Paintbucket Games, 2020) immerses players in the resistance movements of the Nazi regime, allowing them to make decisions and face moral dilemmas. This approach fosters critical thinking and empathy while exploring historical events, making it a valuable educational tool.

"Mission US" (Mission US, 2023) offers an interactive way to learn American history by placing players as historical figures. The game uses storytelling and decision-making to help students understand the consequences of their actions within historical contexts. Its emphasis on primary documents and historical accuracy further enhances students' critical thinking.

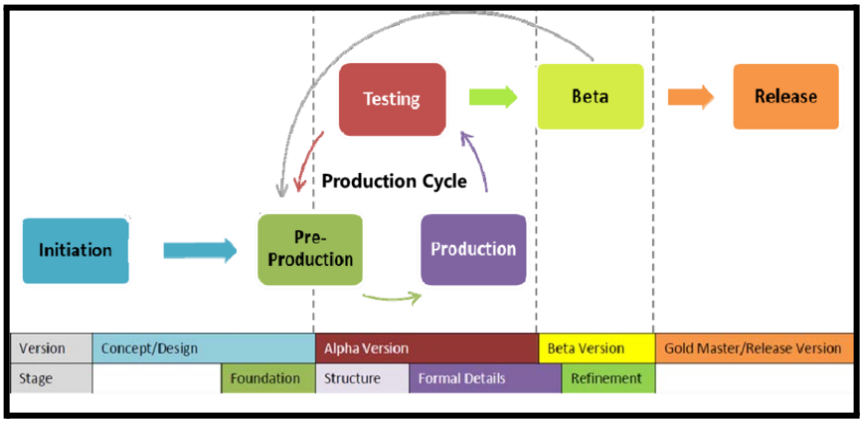
Lastly, **"Valiant Hearts: The Great War"** (Ubisoft Montpellier, 2014) combines narrative-driven gameplay with puzzle-solving to teach players about World War I. By incorporating real historical events and artifacts, the game offers an emotionally engaging learning experience that deepens players' understanding of the war's human impact.

These examples illustrate how game-based learning can blend historical content with interactive elements, making history more engaging and enhancing learning outcomes.

3. Methodology

GDLC Methodology The Game Development Life Cycle (GDLC) methodology is employed in this project to guide the development of the *MyPerjuangan* game-based learning application. As shown in Figure 1, the GDLC consists of six key phases: initiation, pre-production, production, testing, beta, and release (Ramadan & Widyani, 2013). Each phase is critical in ensuring a structured and iterative development process. During the **initiation phase**, the game concept is developed through comprehensive research, which involves gathering historical and educational content and conducting a survey to understand the target audience's needs. The **pre-production phase** focuses on game design by documenting game mechanics, flowcharts, and hardware requirements. In contrast, the **production phase** involves creating assets, integrating codes, and developing the game using Unity software. **Testing** includes alpha testing to identify bugs and functionality issues. In the **beta phase**, feedback from teachers and students at SMK Kangkar Pulai is collected to refine the game before its final **release**, which will occur at the school.

Figure 1: Phases of GDLC



Preliminary survey analysis

The survey conducted among students and teachers at SMK Kangkar Pulai provides crucial insights into the target audience's preferences and challenges in learning history. The survey sample consisted of 10 participants, with 67% of respondents from Form 5 and 33% from Form 4. Regarding gender, 55.7% were male, and 44.3% were female.

The data shows that **visual learning** is the most preferred style, with 60.4% of respondents favoring it. Other learning styles include **auditory learning** (45.3%), **kinesthetic learning** (17.9%), and **collaborative learning** (17%). A significant finding is that **68.9%** of respondents find traditional history lessons boring or unengaging, primarily due to the monotonous teaching style (60.4%), overemphasis on memorization (68.9%), and lack of interactivity (33%). Importantly, **77.4%** of students preferred learning history more interactively. Additionally, **53.8%** of participants strongly agreed that they enjoy playing video games, and **72.6%** had never played a history-based educational game. However, **74.5%** showed interest in playing such a game, and **84.6%** indicated they would be more likely to learn history through a video game format.

These findings highlight the potential of game-based learning to address students' dissatisfaction with traditional methods, offering a more engaging and interactive alternative that aligns with their interests and preferences.

4. Results

Description of GBL Model

The Game-Based Learning (GBL) design model forms the foundation of *MyPerjuangan*, an educational game that enhances historical knowledge through immersive gameplay. The model integrates ten core elements, although not all are fully utilized. These elements (shown in **Table 1**) include game goals, interaction, freedom, fantasy, narrative, sensation, and challenge, aligning with the game's objectives of engaging players while teaching them about historical events.

Table 1: GBL Design Model

Element	Description
Game goal	Educates players on historical events, enabling them to gain proficiency in history.
Game mechanism	The game operates as a historical adventure, involving quizzes on significant events and figures.
Interaction	Players engage with clues and quizzes, using critical thinking to progress through the game.
Freedom	Players can make mistakes without real-world consequences, fostering an environment for learning and retrying.
Game fantasy	Transports players to adventure settings, recreating key historical environments and events.
Narrative	Uses verbal storytelling and visual cues to guide players through historical topics and phases.
Sensation	Engages players with animations, sound effects, and interactive elements.
Game value	Players earn scores for completing quizzes, reinforcing the importance of mastering the content.
Challenge	Players face challenges through clues and quizzes, reflecting the experience of historical enthusiasts.

Incorporating these elements, *MyPerjuangan* creates an immersive and interactive experience where players actively engage with the content through verbal storytelling and visual elements. Figure 2 highlights the importance of narrative design, where verbal storytelling and cues guide players through different historical phases. Including interactive sound effects and animations further immerses players, making history education more engaging and enjoyable.

Figure 2: Verbal Storytelling



Figure 3: Scores for completing task



The game fosters a positive learning environment by allowing players the freedom to make mistakes and learn without penalties. The challenge and reward system, such as earning scores for correctly answering quiz questions, motivates players to deepen their historical understanding, as depicted in Figure 3.

Diagrams

The Use Case Diagram provides a simplified visual representation of how users interact with the system within the *MyPerjuangan* game. Figure 4 outlines twelve distinct use cases. Key functionalities include starting the game, selecting from five game levels (each tied to a Form 4 history topic), accessing the options menu for customization, and using game controls for smoother navigation. Players can also pause the game or return to the main menu. Adjusting sound and background music enhances the gaming experience, and players can exit the game directly from the main menu.

Figure 4: Use Case Diagram

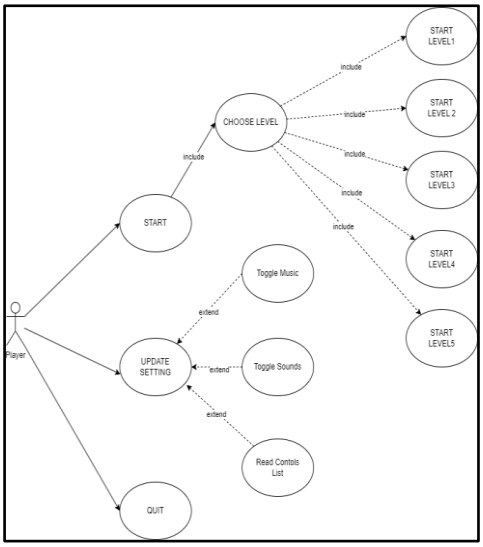
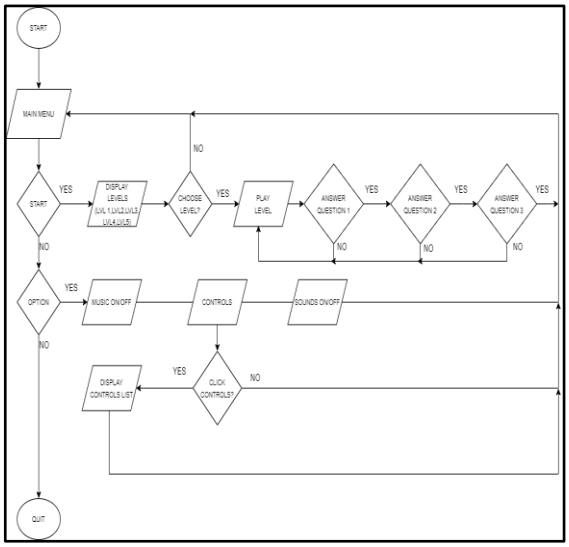


Figure 5: *MyPerjuangan GBL Flowchart*



The flowchart offers a visual roadmap of user interactions, detailing players' sequential steps while navigating the game. Figure 5 depicts the player's journey, from initiating the game at the main menu to selecting a level, customizing game options, and playing through the levels. Each interaction, such as selecting levels or modifying sound settings, is mapped out to ensure seamless flow. The flowchart also includes options to pause or quit the game, guiding users through different stages and interactions within the game.

E-Game Flow

User enjoyment testing is critical to enhancing the *MyPerjuangan* game. The **E-Game Flow questionnaire** assesses user engagement, focusing on key dimensions such as autonomy, challenge, delight, and stress. This tool serves dual purposes: gathering player feedback and ensuring compliance with the Game Development Life Cycle (GDLC) framework.

The insights from the questionnaire enable developers to understand how users interact with the game, identifying areas for improvement. By analyzing this data, iterative adjustments can be made to optimize gameplay enjoyment and educational effectiveness. Such refinements are essential in ensuring the game remains engaging while fulfilling its instructional objectives.

Figure 6 (Mohd Rozaidi et al., 2018), the **E-Game Flow Questionnaire Model**, visually represents the factors influencing user enjoyment, offering a framework for evaluating player satisfaction during gameplay.

Figure 6: E-Game Flow Questionnaire Model

Factors	Code	Content
Concentration	CO1	This game grab my attention
	CO2	This game provide content that stimulate my attention
	CO3	Generally speaking, I can remained concentrate in the game
	CO4	Most of the gaming activities are related to the learning task
	CO5	Workload in the game is adequate
Goal Clarity	GC1	Overall game goals were presented in the beginning of the game
	GC2	Overall game goals were presented clearly
	GC3	Generally speaking, I can remained concentrate in the game
	GC4	Intermediate goals were presented in the beginning of each scene
	GC5	Intermediate goals were presented clearly
Feedback	F1	I received feedback on my progress in the game
	F2	I received immediate feedback on my action
	F3	I am notified of new task immediately
	F4	I received information on my success (or failure) of immediate goals immediately
Challenge	CH1	The game provides "hints" in the text that help me overcome the challenges
	CH2	The game provides video or audio auxiliaries that help me overcome the challenges
	CH3	I enjoy the game without feeling bored or anxious
	CH4	The game provide different level of challenges that tailor to different player
	CH5	The game provides new challenges with an appropriate pacing
	CH6	The game provides "online support" that help me overcome the challenges
Autonomy	A1	I feel a sense of control and impact over the game
	A2	I know next step in the game
	A3	I feel a sense of control over the game
Immersion	I1	I forget about time passing while playing the game
	I2	I become unaware of my surrounding while playing the game
	I3	Generally speaking, I can remained concentrate in the game
	I4	I temporarily forget worries everyday life while playing the game
	I5	I experienced an altered sense of time
	I6	I can be involved in the game
	I7	I feel emotionally involved in the game
	I8	I feel viscerally involved in the game
Knowledge Improvement	KI1	The game increase my knowledge
	KI2	I catch the basic ideas of the knowledge taught
	KI3	I try to apply the knowledge in the game
	KI4	The game motivate the player to integrate the knowledge taught
	KI5	I want to know more about the knowledge taught

The E-Game Flow questionnaire is instrumental in guiding the development process, enabling informed improvements that enhance the user experience. This structured feedback loop ensures that the game continues to align with its educational goals while providing players with an engaging and enjoyable experience.

Overall Findings

The overall findings from the E-Game Flow questionnaire offer key insights into user engagement with the *MyPerjuangan* game. The evaluation covered concentration, goal clarity, feedback, challenge, autonomy, immersion, and knowledge improvement, providing a comprehensive view of the user experience.

High **mean values,** as referred to in Table 2 for concentration (4.8, 4.6) and goal clarity (4.7), suggest that players remained focused and found the game's objectives clear. Similarly, **feedback** (4.8) was positively rated, indicating that players received adequate guidance during gameplay. Regarding the **challenge**, scores varied from 3.8 to 4.9, reflecting differing perceptions of difficulty. Some players found the challenges appropriately stimulating, while others experienced them as more demanding. **Autonomy** (4.8) and **immersion** (4.5 to 4.9) were highly rated, showing that players felt in control and deeply engaged. The highest scores were recorded for **knowledge improvement** (4.8 to 5.0), confirming the game's success in enhancing players' historical understanding.

Table 2: Mean Value of Questionnaire

Aspect	Code	Question	Mean	Mean Percentage (%)
Concentration	C01	This game grabs my attention.	4.80	96.0
	C02	This game provides content that stimulates my attention	4.60	92.0
	C05	The workload in the game is adequate.	4.60	92.0
Goal Clarity	GC1	Overall game goals were presented clearly.	4.70	94.0
	GC2	I can remain concentrated in the game.	4.70	94.0
Feedback	F1	I received feedback on the progress of the game.	4.80	96.0
	F5	I received feedback on my success (or failure) of immediate goals immediately.	4.80	96.0
Challenge	CH1	The game provides "hints" in the text that help me overcome the challenges.	4.90	98.0
	CH3	I enjoy the game without feeling bored or anxious.	4.10	82.0
	CH5	This game provides new challenges with appropriate pacing.	3.80	76.0
Autonomy	A1	I feel a sense of control and impact over the game.	4.80	96.0
	A2	I know the next step in the game.	4.90	98.0
	A3	I feel a sense of control over the game.	4.80	96.0
Immersion	I3	Generally speaking, I can remain concentrated in the game.	4.50	90.0
	I6	I can be involved in the game.	4.60	92.0
	I7	I feel emotionally involved in the game.	4.80	96.0
Knowledge Improvement	K1	The game increases my knowledge.	4.80	96.0
	K3	I try to apply the knowledge in the game.	4.80	96.0
	K4	The game motivates the player to integrate the knowledge taught.	5.00	100.0

In conclusion, the game performed well in maintaining user focus, providing clear objectives and feedback, and improving knowledge. However, variations in the perceived difficulty suggest that the challenge level may benefit from further refinement.

5. Conclusion and Recommendations

The *MyPerjuangan* project was developed to support history teachers in Malaysia by creating an engaging and educational tool for teaching historical content. The game leverages vibrant graphics, smooth animations, intuitive controls, and appealing sound design to create an immersive environment. By transforming textbook-based history lessons into interactive gameplay, *MyPerjuangan* makes historical events more engaging and

accessible to students. Players receive immediate feedback through rewards, such as stars, and can track their progress across multiple levels. The game aims to blend accurate historical content with entertaining gameplay to offer students a novel way to learn and enjoy history.

Despite the project's success, several limitations surfaced during development and testing. One fundamental limitation is that the game is only accessible on desktop devices, excluding users who rely on mobile or tablet platforms. This restriction potentially limits the game's reach and impact. The game's content is also focused solely on Chapter 3 ("Pendudukan Jepun Di Negara Kita") from the Form 4 history syllabus. Although this chapter is valuable, the narrow focus reduces the game's broader appeal for students seeking a comprehensive history learning experience. Another limitation involves the game's immersion. While the game offers engaging content, it lacks advanced immersive technology such as virtual reality (VR), which could significantly enhance the learning experience. Incorporating VR could provide users with a more engaging, interactive environment and align the game with contemporary educational trends that leverage immersive technology to boost engagement and knowledge retention.

To address these limitations, several recommendations have been proposed to improve the game's accessibility and educational value. First, the game should be expanded beyond desktop accessibility to compatibility with mobile and tablet platforms. This expansion would cater to a broader audience and ensure the game is accessible to users with different device preferences, making it a more inclusive educational tool. Second, the scope of the historical content covered in the game should be broadened. By introducing additional topics from the Malaysian history curriculum, *MyPerjuangan* can offer a more comprehensive learning experience that appeals to a broader range of students. This would make the game more versatile as a learning tool and enhance its educational effectiveness. Finally, incorporating immersive technologies such as virtual reality (VR) would significantly enhance the interactivity and engagement levels of the game. By providing a more immersive experience, *MyPerjuangan* could offer a more prosperous, dynamic learning environment that aligns with cutting-edge educational technologies. This integration would significantly elevate the game's potential to engage users and improve knowledge retention.

Overall, *MyPerjuangan* successfully achieves its primary objective of creating an educational game aligned with the Malaysian history curriculum for Form 4 and Form 5 students. It addresses the challenge of making history more enjoyable using interactive game elements, resulting in a high user satisfaction rating of 94.3%. While limitations such as platform exclusivity and a narrow content scope exist, the proposed recommendations for diversifying platform accessibility, expanding historical content, and integrating VR provide a clear pathway for the game's future development. As an educational tool, *MyPerjuangan* represents a promising, innovative approach to making history learning more engaging for students and teachers.

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Let's Upcycle: Upcycling Awareness Mobile Application Using Game-based Learning Approach

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Abstract: Upcycling involves reusing materials to create new products, enhancing their value and helping to reduce waste. However, a lack of knowledge and awareness about upcycling can hinder its adoption, presenting a significant challenge. To address this issue, the "Let's Upcycle" mobile game application was developed to raise awareness and offer practical upcycling ideas to the general public. The application employs a game-based learning approach combined with gamification and was created using the ADDIE methodology to streamline the development process. The project's effectiveness was assessed through a User Experience Questionnaire, which yielded positive feedback of 91.1 percent regarding overall user experience. However, the app has some limitations, such as being available only in English and compatible solely with Android devices. Future updates will aim to address these issues.

Keywords: *Upcycling, Game-based Learning, Mobile Application, ADDIE methodology, user experience*

1. Introduction

Upcycling is popularly understood as an umbrella concept incorporating 'creative' forms of repair, reuse, repurpose, refurbishment, upgrade, remanufacture, and recycling (Sung et al., 2018). Utilizing objects that would typically be discarded in a better way is possible through upcycling, upcycling is operationally defined as a process in which a discarded material is re-utilized, and transformed into a product of higher value than its original status (Yoo et al., 2021).

Upcycling waste products is something that should be taken care of as it is one of the ways to protect the environment from being polluted by the amount of trash produced around the world. Upcycling is regarded as a strategy to reduce environmental impacts by combining circular material flows with slower production of materials and slower cycles of consumption (Singh et al., 2019). Although there is growing awareness of the urgency to address environmental challenges and an increased understanding of the mechanisms for achieving sustainability in recent years, upcycling still has a long way to go before it becomes a common practice among people.

Game-based learning (GBL) refers to redesigning the basic instructional task to make it more interesting, meaningful, and ultimately more effective for learning. (Plass & Pawar, 2020). The adaptation of digital instruction has been suggested to be a major emerging instructional advance that may shape the future of education (Zhang & Aslan, 2021). Previous research has shown that adaptation is a promising instructional technique in game-based learning (Wouters & van Oostendorp, 2017).

Therefore, to raise awareness and provide basic knowledge about upcycling, a game-based learning approach was proposed and developed. This game enables users to engage with and grasp the concept of upcycling while enjoying the gameplay. The fun and interactive experience not only captures users' attention but also motivates them to learn about and embrace upcycling.

2. Literature Review

Up-cycling is the conversion of waste materials to something useful or valuable, underlining is a useful concept that can be applied not only to the waste design industry but also to waste recycling and resource circulation (Yi et al., 2019). Upcycle uses the Do It Yourself (DIY) concept. DIY in upcycling is an approach to recycling that involves turning waste materials into useful objects. Initiatives for product sharing, mending, and repairing can avoid the purchase of new goods and replacement components and are consequently seen as ecologically friendly (Sung, 2017).

In recent years, smart technology has emerged in the educational domain as a tool to make learning more efficient. Research shows that the application of mobile learning as well as the use of game-based instructional strategies promotes students' learning and engagement (Chang & Hwang, 2019). Game-based learning (GBL) solutions can enable reflective, experiential, and intriguing learning environments (Bygstad et al., 2022). According to project management teachers, GBL methods may provide students with a memorable learning experience by affecting their emotions. (Jääskä & Aaltonen, 2022). Satrio et al. (2020) Recognized that the use of game-based learning will provide a better learning experience when it can collaborate with learning that provides instruction or guidance to students.

Specific to games, social influence has been found to positively influence the adoption and use of mobile games. (Baabdullah, 2018). Peer recommendations are significantly influential in virtual communities (Wang et al., 2020), including mobile gaming (Wang, 2022). Users can access the application anytime and carry it anywhere, as nearly everyone has a smartphone these days.

One of the popular models used in the field of instructional design as a guide for creating an effective design is the ADDIE model. The ADDIE model plays a crucial role in enhancing the competencies of secondary school teachers in designing effective instructional strategies (Handrianto et al., 2021).

3. Methodology

The following subsections demonstrate the flow of implementing the research idea using the ADDIE methodology phases: analysis, design, development, implementation and evaluation.

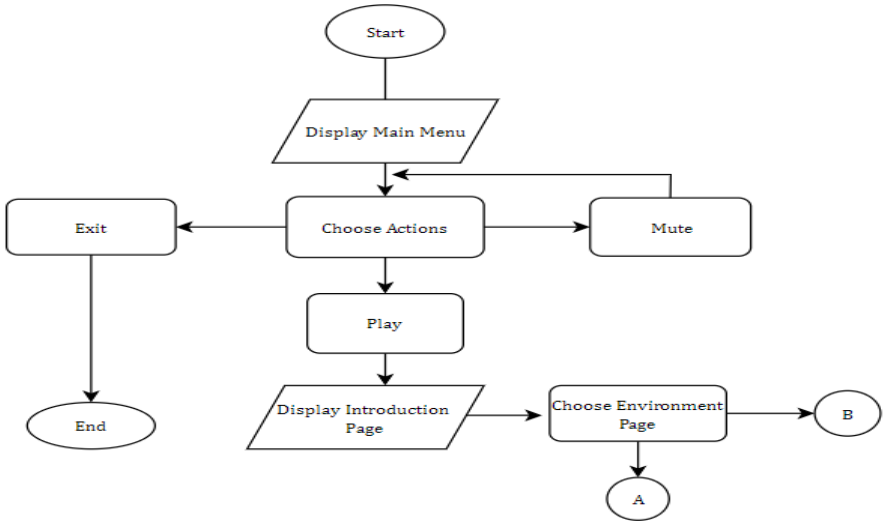
Analysis

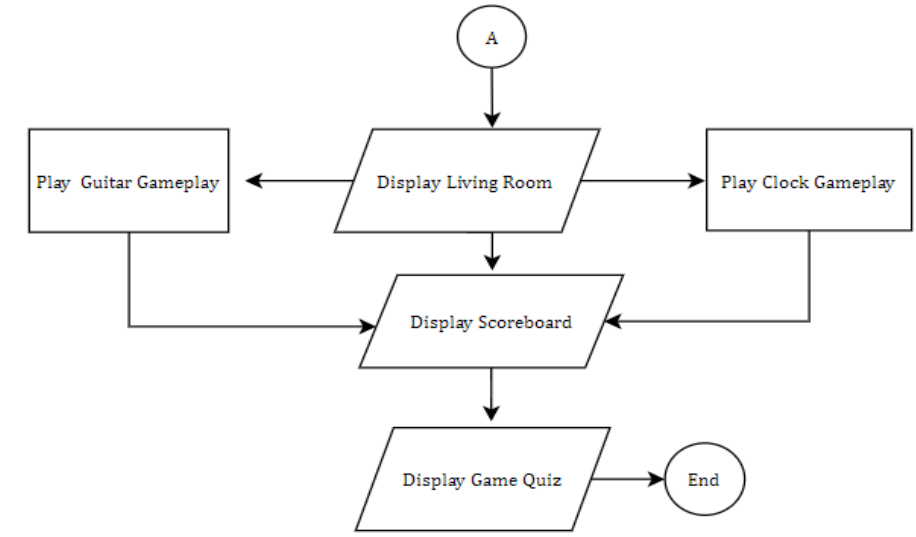
The project started by gathering information from various sources, including journals, trusted websites, and articles that provided in-depth insights into the topic. It identified a lack of knowledge and awareness about upcycling and a lack of creative ideas to upcycle things that are not being used anymore. The project objectives were to develop a mobile game application that educates users about upcycling through game-based learning and to evaluate the user experience using the User Experience Question (UEQ).

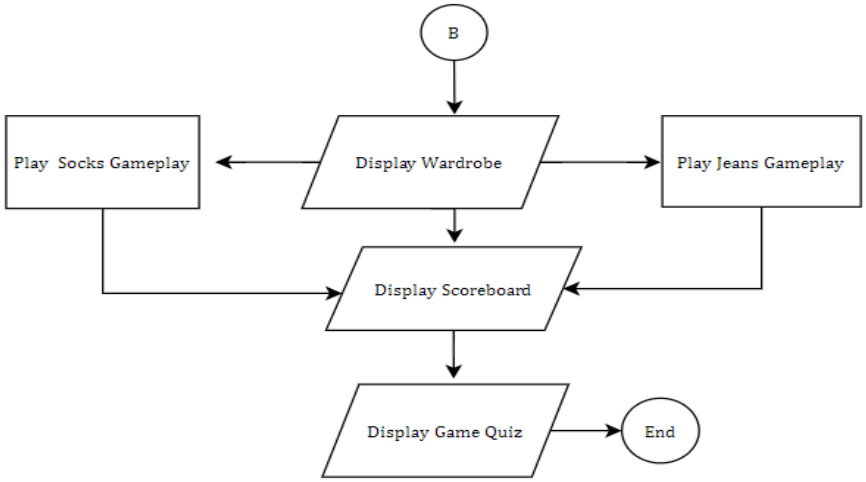
Design

The game's storyline was developed to make sure that the project's goals were met. A low-fidelity storyboard was created to visualize the game flow. The functions and the elements were identified and elaborated. The hardware and software that were needed for this game were downloaded and prepared for development. Design tools such as Canva, IbisPaintX, and Paint3D were utilized, while Audacity was used for audio editing, and Construct 3 served as the game engine. Figure 1 illustrates the overall flow of steps for the application.

Figure 1: Flowchart for Let's Upcycle Mobile-Based Application







Development

For the development phase, the required 2D elements for the game were created using IbisPaintX. The background images, buttons, sprites and animations were designed. The sprites were drawn layer by layer as the parts of the 2D elements had to be separated to produce moving-like animations and illustrations.

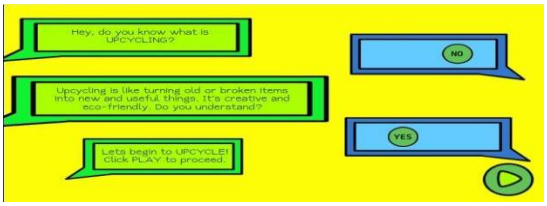
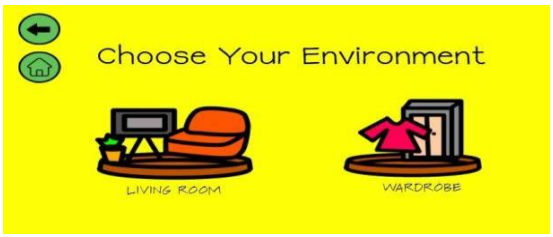
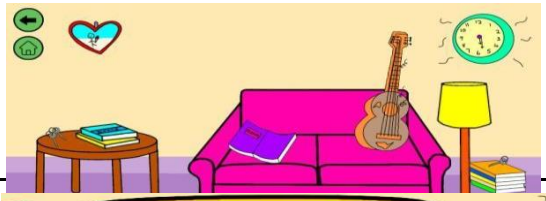
After designing the 2D elements, text elements were added to Construct 3 for the game title and instructions. Fonts were selected from websites offering free commercial fonts and imported into Construct 3. Importing the fonts into the project file was essential, as fonts could display differently on various devices if they were not available, making this step crucial to ensure consistency.

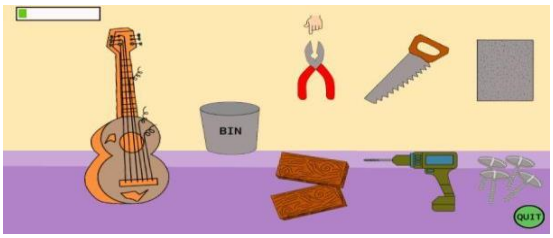
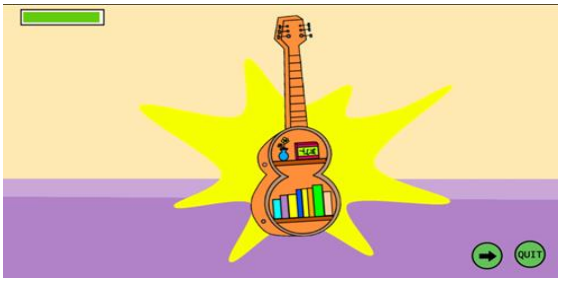
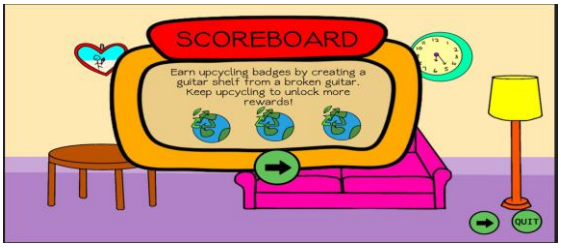
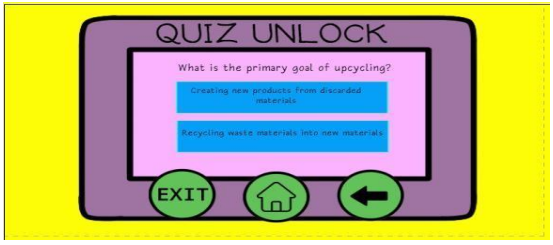
The objects created during the design phase were transferred to Construct 3 for game development. Animations and sprites were added to the layouts and arranged according to the storyline sequence. The interface included buttons, background images, and animations. Layouts and event sheets were incorporated into the project file, with event sheets scripted to implement animation movements and functions.

Background music and sound effects were edited using Audacity. Noise reduction techniques were applied to enhance audio quality. Sound effects were imported to match the animations, and background music was added

to improve immersion in the gameplay. Fig. 2 illustrates the high-fidelity storyboard for more visual detail.

Figure 2: High Fidelity Storyboard

	This is the Main Menu page. 3 buttons can be pressed. The button with the 'play' logo will direct the user to the introduction page. The mute button will mute the background music. The exit button will close the window.
	This is an introduction page, where the player is introduced to upcycling. This page contains conversation-like text and interactive buttons (YES/NO) to accept the answer from the user.
	This is the scene where the player needs to click and choose the environment where they are going to upcycle things.
	If the player chooses a living room environment, the instruction popup window will automatically appear. Users are asked to find the broken items in the living room.
	This is the living room environment. Players need to find the items that look broken in the living rooms and click on the item to upcycle.
	If the player clicks on the broken items (e.g. Guitar, Clock), the instruction popup window will automatically appear. Then, if the user clicks on the play button the user will be redirected to a gameplay page.

	This is the living room gameplay scene where the player is instructed to upcycle the item chosen step by step while following the hand instructions. Players need to drag and drop the objects/double-tap the objects according to the hand's instructions. The progress bar shows the progress of the upcycling process.
	This is the finished product scene when the user completes the step by step of the upcycling process. The final product is shown on the screen. This is an example of a broken guitar turning into a shelf.
 +	The Scoreboard popup shows the badges that were gained by completing the gameplay. Players get up to 3 badges if they complete the game and can unlock quiz rewards. The home button will be redirected to the home page.
	The quiz unlock page shows when a player gets 3 badges by completing the upcycling games. If the user clicks on quit the game, the badges will decrease and the player cannot access the quiz section. Players will get more badges if they complete the upcycling process. The EXIT button will close the window and exit the game. The HOME button will redirect to the homepage and the BACK button will redirect to the Choose Environment page. More items players upcycle, more quizzes unlock.

Implementation

Implementation follows the development stage in the ADDIE model. During this phase, the game prototype is finalized, to deliver content seamlessly and effectively. The game is exported as an APK file for usability testing. This testing assesses the game's quality, identifying any lags, errors, or bugs that need to be addressed. Issues are resolved based on user feedback, ensuring the game runs smoothly and is free of errors.

Evaluation

The evaluation phase involves public testing of the game. During this phase, a survey was conducted to assess user experience. The application was tested by 36 users to ensure that the goals of raising awareness among the public about upcycling were met. A Google Form containing download links for the application was distributed through various social media platforms, including WhatsApp, Instagram, and Telegram.

Participants were asked to complete all questions in the form and submit their responses.

The project's evaluation aimed to assess user experience, specifically focusing on the mobile game-based learning application. A Google Form survey was designed with two sections: one for gathering demographic data and the other for collecting feedback through a user evaluation questionnaire. A total of 36 respondents participated in the project testing phase.

The demographic findings based on the questionnaire results are presented in Table 1. The participants' ages ranged from 13 to 45 years old, with the youngest being 13 and the oldest being 45. Among the participants, 23 individuals (63.8%) were in their 20s, 12 participants (33.5%) were below 20 years old, and 1 participant (2.8%) was above 30 years old. The majority of people who took part in the survey were in their 20s. Out of all the participants, 35 (97.2%) were students. Furthermore, the survey had a higher representation of female participants, with a total of 33 individuals (91.7%) identifying as female.

Table 1: Demography of participants for Let's Upcycle

Question	Range	Frequency(n)	Percentage(%)
Age	19 and below	12	33.5
	20 - 29	23	63.8
	30 and above	1	2.9
Job	Full-time job	0	0.00
	Part-time job	0	0.00
	Student	35	97.2
	Unemployed	1	2.8
Gender	Female	33	91.7
	Male	3	8.3

To evaluate user experience, the questionnaire was adapted from the User Experience Questionnaire (UEQ). Participants answered a total of 20 questions, covering the dimensions of Attractiveness (A), Perspicuity (P), Dependability (D), Effectiveness (U), Novelty (N), and Simulation (S).

4. Results and Discussion

This section discusses the results and findings from the study. The mean values for evaluating the user experience of the game based on UEQ are presented in Table 2.

Table 2: Overall Mean Value

User Experience	Mean
Attractiveness	4.69
Perspicuity	4.53
Dependability	4.39
Effectiveness	4.51
Novelty	4.54
Simulation	4.66
Overall Mean	4.56
Overall Percentage (%)	91.1

The mean results of the game evaluation show that the attractiveness dimension scored highest at 4.69, closely followed by the perspicuity dimension at 4.53. The effectiveness dimension obtained a score of 4.51, while both the dependability and simulation dimensions scored 4.4. The novelty dimension received the same score of 4.4. Overall, the game achieved a positive user experience with an impressive overall mean of 4.56 and the overall percentage of user satisfaction is 91.1%., indicating a high level of satisfaction among users.

The results show the game received positive feedback across all evaluated dimensions, with particularly high scores in attractiveness, perspicuity, usability, and simulation. The overall user experience is rated favorably, with a majority of users expressing satisfaction with the game. The high overall percentage of 91.1% indicates that the majority of participants had a positive experience while interacting with the game. These findings suggest that the game effectively engages users and provides an enjoyable and educational experience, helping to raise awareness of the upcycling concept.

5. Conclusion

In conclusion, the "Let's Upcycle" mobile application has effectively raised awareness about upcycling through an engaging game-based learning approach. The project successfully developed the mobile application and assessed user experience using the User Experience Questionnaire (UEQ). The overall high ratings indicate that the game effectively promotes upcycling awareness and enhances knowledge through its content.

However, some limitations need to be addressed. The use of built-in fonts may cause appearance inconsistencies, and hand-drawn visuals can make the game seem flat. Additionally, the game is currently compatible only with Android devices and is available only in English, posing accessibility challenges for non-English speakers. Future work will involve properly importing fonts and utilizing suitable design tools for more consistent visuals. Expanding platform compatibility and adding multilingual support will further improve accessibility. Addressing these aspects will enhance "Let's Upcycle," making it more engaging and user-friendly in promoting upcycling awareness.

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Enhancing Hajj Education through Interactive Multimedia Game-Based Learning

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Abstract: The Hajj pilgrimage, a fundamental aspect of Islamic education, often lacks engaging educational tools to convey its experiential and cultural significance. However, traditional methods fail to bridge the gap between theoretical knowledge and practical understanding. Therefore, this study presents the development and evaluation of the "Islamic Insight: Hajj Board Game," an interactive 2D Game-Based Learning (GBL) tool designed to educate students about the Hajj pilgrimage. The game was developed using Agile methodology, incorporating Unity, Canva, and Microsoft Visual Studio tools. The primary objectives were to design a comprehensive storyboard, create the game, and evaluate user experience. The evaluation phase utilized the Game Experience Questionnaire (GEQ) to gather insights from 39 respondents. The GEQ results indicated a positive reception, with high ratings in competence (mean = 4.26) and immersion (mean = 3.85). Participants found the game engaging and educational, with positive affect scoring a mean of 3.35. However, the challenge aspect received a moderate rating (mean = 2.58), and the negative effect was low (mean = 2.18), suggesting minimal negative emotions during gameplay. Overall, the Hajj Board Game successfully provided an engaging and informative experience, enhancing students' understanding of the Hajj pilgrimage. Future research should focus on improving accessibility and expanding the game to mobile platforms to reach a broader audience.

Keywords: *Hajj board game, Game-based learning, pilgrimage*

1. Introduction

The Hajj pilgrimage, one of the five pillars of Islam, is a significant religious duty that every able-bodied Muslim must undertake at least once in their lifetime if they have the means to do so (Shahul et al, 2021). Despite its importance, traditional teaching methods often fail to convey the experiential and cultural dimensions of this sacred journey, leading to a disconnect between theoretical knowledge and practical understanding. This gap is particularly evident in educational settings where students may struggle to grasp the full significance of Hajj through conventional instructional approaches.

To address this challenge, the Hajj Board Game was developed as an innovative educational tool that leverages Game-Based Learning (GBL) methodologies. GBL integrates game mechanics into the learning process to enhance engagement and motivation, making complex subjects more accessible and enjoyable for students (Cerra et al., 2022). By incorporating interactive multimedia elements, the Hajj Board Game aims to provide a more immersive and engaging learning experience, bridging the gap between theoretical knowledge and practical understanding.

Development of the Hajj Board Game was done through Agile, organized and iterative process steps. This allowed us to make our work iterative, drawing on continuous feedback to be sure that the game matched both what was required in an educational sense and also what would feel fun to its intended audience. The Game Experience Questionnaire (GEQ) was used to evaluate user experience aspects which have been reported as competence, immersion, challenge, positive affect and negative affect elements together with learning impacts on the game.

In conclusion, the Hajj Board Game represents a significant advancement in educational tools for teaching the Hajj pilgrimage. By combining GBL methodologies with interactive multimedia, the game offers a unique and effective way to enhance students' understanding and appreciation of these important religious pillars of Islam. Hence it is able to help students understand better the pilgrimage.

2. Literature Review

Overview of Game-Based Learning: Game-Based Learning (GBL) is the use of digital gaming within a learning environment to motivate students in their education tasks. GBL has been used in classrooms as well as computer-based environments to ensure that high levels of motivation and enjoyment are observed among students (Taub, Azevedo, Bradbury, & Mudrick, 2020) GBL uses interactive multimedia-including text, images, audio, video and interactive elements – to create immersive digital learning spaces. It increases student engagement, encourages more active learning and gives a conducive environment to explore educational content.

Employing interactive multimedia in educational settings, an improvement of learning and reinforcement of knowledge for students (Kumala et al, 2021). It allows students to participate in work through ideas and get immediate responses. According to Maharani and Asyhari (2020), interactive multimedia is practical and effective because it can deliver a more flexible learning experience, using the elements of educational technology. In addition, GBL has been shown to increase learner motivation and engagement (Chen et al, 2022). Consequently, GBL accompanied by multimedia-related interactivity will foster greater knowledge-based as well as engagement for the learners.

Definition of Interactive Multimedia: Interactive multimedia Is a creative art-based technology that uses the computer to interact with user input to display digital information such as text, graphics images, and videos (Farrer, 2023). Such games generally interweave gameplay and narrative with educational content, to not compromise game mechanics with additional learning criteria. The interactive part of the event is also an integral layer insomuch as it enables participants to interact, make choices, and move through virtual worlds—creating a perception of presence and participation. Several studies that have recently been conducted also supported the beneficial impact of interactive multimedia on students' learning experiences (Nur et al., 2020; Hisey, Zhu & He, 2024).

Benefits of Game-Based Learning. GBL has lots of benefits that can generate a motivating and immersive educational environment. Multimedia presentations also excite the students that a study by Kumala (2021) has made clear to maintain student knowledge and engagement when it comes to learning. In addition, the GBL provides tailored-made learning which is adapted to each student and promotes real-time practice and feedback which facilitates monitoring of own progress in turn influences self-regulatory strategy. In many cases, interactive computer-based learning is proven to be better than traditional lectures, it seems more flexible and accommodating (Hartt & Mostafapour, 2020; Eltahir et al., 2021).

Hajj Education in Games: Students need to study Hajj as it will give them an in-depth understanding of the pilgrimage and why it is needed within Islam. Hajj Board Games can make students learn about the rituals and procedures of Hajj through these interactive board games. Septiani et al. (2020) suggested that it affects the formation of student character. Well, through playing the game, students will get more familiar with the topic of Hajj and therefore they become more interested and motivated to study that aspect of their religion. Find Hisey, Zhu, & He (2024) and Xa & LIu (2021): Interactive media games make learning more fun.

Current Challenges and Limitations in Hajj Education: Lack of learning methods is a challenge for Hajj education. Interactive and multimedia-based games come as an innovative way to counter these hurdles and provide an immersive experience that can engage students. Recent research is considered to be done to aid in the efforts including gamification elements such as rewards and challenges enhancing active learning and improved memory (Hartt, Hosseini & Mostafapour, 2020; Eltahir et al., 2021).

Hajj Education Malaysia: Hajj education for all Muslims holds especially valuable life lessons for students. Some studies indicate the significant role of interactive multimedia in self-improvement and resolving issues (Latifah, Ma'arif, & Afyuddin, 2024; Nikmah et al, 2022). For example, based on previous research and observation there is still much use of traditional teaching methods in Malaysia due to sociocultural factors, lack of resources or belief that the conventional methods work well (Syawaludin, Gunarhadi and Rintayati, 2020; Irawan, Rahardjo and Sarwanto, 2020). However, a few recent researches indicate that interactive multimedia within GBL outperforms traditional media (Hartt, Hosseini & Mostafapour, 2020; Eltahir et al., 2021).

Game-Based Learning Games: Interactive multimedia in GBL refers to digital content that allows users to engage dynamically and interactively. These games typically feature captivating visuals, realistic sound effects, intricate narratives, and dynamic gameplay elements.

Existing Interactive Multimedia Games include:
Edpuzzle - Edpuzzle is an online platform that enables teachers to create engaging video lessons by adding questions, quizzes, and annotations to videos. It promotes active learning and supports various video formats, allowing teachers to monitor student progress and give personalized feedback.
Kahoot! - Kahoot! is a well-known game-based learning platform that allows teachers to create and host interactive quizzes, surveys, and discussions. Participants answer questions using their devices, and the game occurs in real-time with a leaderboard displaying scores. Kahoot! Provides a vast library of ready-to-play games or allows educators to develop custom quizzes tailored to specific topics or curricula.
Quizizz - Quizizz is an interactive quiz game where teachers can create and share quizzes with their students. Participants can compete as individuals or teams, and the game includes a live leaderboard to enhance excitement and motivation. Quizizz features a wide range of question formats, making it versatile for various subjects and educational goals.

Summary: The review of related literature indicates that game-based learning (GBL) and interactive multimedia improve educational experiences. Game-Based Learning (GBL) — Game-augmented learning wherein games are used to complete the learning engagingly and entertainingly. The inclusion of multimedia elements is becoming increasingly important in the creation of engaging and interactive learning environments.

Even though traditional approaches to teaching may still be popular in Malaysia, it seems that the benefits of interactive multimedia elements in GBL are well accepted. Studies demonstrate that interactive multimedia surpasses the effectiveness and efficiency of traditional media 2-fold. Examples: Multimedia games (interactivity), e.g. Edpuzzle, Kahoot!, and in any educational scenario other tools such as Kahoot!, and Quizizz stand as testaments of GBLs capability. Such platforms offer an engaging and interactive learning experience to enable active learning and personalized instruction.

In conclusion, we can see from the literature review that educators should emphasize blending game-based learning and interactive media into teaching to enhance student engagement, motivation, and learning performance.

3. Methodology

The methodology for developing the Hajj Board Game, an educational tool designed to enhance students' understanding of the Hajj pilgrimage, followed a structured and iterative approach using the Agile methodology. Initially, a comprehensive requirement analysis identified essential features and functionalities, followed by creating detailed game flowcharts and storyboards to visualize the game's structure and user experience. These visual tools ensured a well-organized and engaging game design. During development, Unity was used for game development, Canva for graphic design, and Microsoft Visual Studio for coding. This combination facilitated the creation of interactive 3D environments and user-friendly interfaces. The testing phase involved various types of testing to ensure the game functioned correctly, with continuous feedback integrated to resolve issues. The deployment phase included finalizing and releasing the game, ensuring it was accessible to students. The review phase evaluated the game's performance and user experience, incorporating feedback for iterative improvements. The Game Experience Questionnaire (GEQ) as shown in Table 1 below was used to assess various aspects of user experience, including competence, immersion, challenge, positive affect, and negative affect, providing valuable insights into the game's impact. This structured methodology, supported by detailed flowcharts and storyboards, successfully created an engaging and educational game that effectively teaches students about the Hajj pilgrimage.

Table 1: Adopted GEQ for Project Evaluation

Factor	Code	Question	NAA (1)	S (2)	M (3)	F (4)	E (5)
Competence	Q1	I felt skillful					
	Q2	I felt competent					
	Q3	I was good at it					
Immersion	Q4	It was aesthetically pleasing					
	Q5	I felt imaginative					
	Q6	I found it impressive.					
Challenge	Q7	I thought it was hard					
	Q8	I felt challenged					
	Q9	I had to put a lot of effort into it.					
Positive Affect	Q10	I felt content					
	Q11	I thought it was fun.					
	Q12	I enjoyed it					
Negative Affect	Q13	I thought about other things					
	Q14	I found it tiresome.					
	Q15	I felt bored					

Design and Development

The design and development of the Hajj Board Game, aimed at enhancing students' understanding of the Hajj pilgrimage, followed a structured and iterative approach using the Agile methodology. Initially, a comprehensive requirement analysis identified essential features and functionalities, followed by creating detailed game flowcharts and storyboards to ensure an engaging user experience. The development phase utilized Unity for game development, Canva for graphic design, and Microsoft Visual Studio for coding, resulting in a functional prototype. Testing ensured the game functioned correctly, with continuous feedback integrated to resolve issues. The deployment phase involved finalizing and releasing the game, ensuring it was accessible to students. The review phase evaluated the game's performance and user experience, incorporating feedback for iterative improvements. The Game Experience Questionnaire (GEQ) assessed various aspects of user experience, including competence, immersion, challenge, positive affect, and negative affect, providing valuable insights into the game's impact. This structured approach successfully created an engaging and educational game, demonstrating significant potential as an educational tool for learning about the Hajj pilgrimage.

4. Results and Discussion

This part aims to evaluate the Hajj Board Game as an educational tool and user experience. The primary instrument used for this assessment was the Game Experience Questionnaire (GEQ), which assesses multiple user experience components such as competence, immersion, challenge, and positive and negative effects. There were 39 respondents in all who contributed through evaluation, ultimately yielding three alternate impacts for map and game readings.

Demographic data presented in Table 2 below revealed that the majority of participants were male [n = 8 (61.5%) and n =5 (38.5%) female]. The majority of participants were aged between 22-25 years (71.8%) followed by the age group 18-21 years old (12.8%). This demographic breakdown signals the game is for young adult consumers, similar to its in-game education aspect.

Table 2: Demographic Of Respondents

Question	Range	Frequency	Percentage (%)
Gender	Male	24	61.5
	Female	15	38.5
Age Group	18-21	5	12.8
	22-25	28	71.8
	26-30	4	10.3
	31 and above	2	5.1

The GEQ results provided a comprehensive view of the participants' experiences with the Hajj Board Game. The findings are categorized into five key aspects: competence, immersion, challenge, positive affect, and negative affect. Table 3 below shows the result of GEQ.

The participants had considerably positive attitudes toward their perceived competence during gameplay. For the statement "I felt skillful" (Q1), 59% of participants used the highest rating of 5, and 40% rated it as a 4, so this can be considered overall positive at about 92.3%. For instance, in the case of "I felt competent" (Q2), quite similarly 46.2% rated it as 4 and 46.2% rated Q5 out of the possible maximum score into an overall positive grading of 92.3%. When it came to the question "I was good at it" (Q3), almost half of the respondents gave a rating of 4 rather than 5 -48.7%- that figure paired with an identical 48.7% also opting for rating level 5, led to a solidly positive response on this score, overall rate at an annual high-score for all Qs: namely 97.4%. These findings are indicative of participants feeling highly competent, thereby suggesting that the game supported high-quality skill development and mastery.

Table 3: Overall Mean Percentages Comparison

Game Experience	Total Mean
Competence	4.26
Immersion	3.85
Challenge	2.85
Positive Affect	3.35
Negative Affect	2.18
Overall Total Mean	16.49

The immersion side of things, too, got a thumbs up. For Q4: "It was aesthetically pleasing", 59% of respondents gave a score of 5 while 40% scored it as 4. Question "I felt creative"(Q5): 46.2% of the participants chose the response alternative "4", with an additional 46.2% choosing this variant as the maximum score, "5". For comparison, for "I found it impressive" (Q6) a total of 48.7% rated at a 4, and the other 48.7% thought it enough to warrant the highest rating of a 5. The fact that they are so consistently top-rated indicates that this game does a good job of engaging users with the visual and imaginative aspects, creating an immersive experience.

The challenge aspect received mixed responses. For "I thought it was hard" (Q7), 32.3% rated it as moderately challenging, while 29% provided a slightly challenging rating. The question "I felt challenged" (Q8) had a balanced distribution, with 29% choosing moderately and 28.2% opting for slightly challenging. For "I had to put a lot of effort into it" (Q9), 32.3% rated it as moderately challenging, while 28.2% provided a slightly challenging rating. These responses suggest that the game presents a moderate level of difficulty, which may vary based on individual player skills and experiences.

Participants conveyed diverse sentiments in the positive affect category. For "I felt content" (Q10), 51.3% rated it as 4, while 15.4% gave it the maximum score of 5. The question "I thought it was fun" (Q11) saw 59% rating it as 4, with an additional 28.2% awarding the highest score of 5. For "I enjoyed it" (Q12), 48.7% chose a rating of 4, and an impressive 48.7% opted for the maximum score of 5. These results indicate that the game provides

a generally positive emotional experience, with participants finding it enjoyable.

The negative affect category showed varied responses. For "I thought about other things" (Q13), 59% rated it as moderately distracting, while 15.4% provided the highest score of 5. The question "I found it tiresome" (Q14) had 51.3% rating it as slightly tiresome, with an additional 28.2% opting for moderately tiresome. For "I felt bored" (Q15), 56.4% chose a slightly bored rating, and 28.2% selected moderately bored. These responses suggest that while the game generally maintains user engagement, there are areas where improvements can be made to reduce distractions and enhance sustained interest.

The overall game experience was evaluated across the five key aspects, with the following total mean scores: Competence (4.26), Immersion (3.85), Challenge (2.58), Positive Affect (3.35), and Negative Affect (2.18). The overall total mean across all sections was approximately 3.244, representing a moderately positive game experience. In terms of percentage, the overall total mean was around 64.88%, indicating that, on average, participants had a positive but not overwhelmingly high experience with the game.

The results of the evaluation indicate that the Hajj Board Game is effective in providing an engaging and educational experience for users. The high ratings in the competence and immersion categories suggest that the game successfully supports skill development and creates an immersive learning environment. The positive affect ratings further reinforce the game's ability to provide an enjoyable experience. However, the mixed responses in the challenge and negative affect categories highlight areas for improvement. The moderate level of difficulty may need to be adjusted to better match the skill levels of different players. Additionally, efforts should be made to minimize distractions and enhance sustained engagement to reduce negative effects.

The demographic findings suggest that the game appeals to a young adult audience, which is relevant for the educational context. The positive feedback from this demographic indicates that the game effectively meets the needs and preferences of its target audience. Overall, the Hajj Board Game demonstrates significant potential as an educational tool for teaching about the Hajj pilgrimage. The iterative development process, guided by user feedback and the Agile methodology, has resulted in a game that is both engaging and educational. Future improvements should focus on addressing the identified areas for enhancement to further optimize the user experience and educational impact.

5. Summary

In conclusion, the Hajj Board Game has proven to be an effective educational tool, providing a positive and engaging learning experience for users. The evaluation results highlight the game's strengths in supporting skill development, creating an immersive environment, and providing an enjoyable experience. The identified areas for improvement offer valuable insights for future enhancements, ensuring that the game continues to meet the needs and preferences of its target audience. Through continuous refinement and user feedback, the Hajj Board Game can further solidify its role as a valuable educational resource. For future work, expand the game's content to include the rituals and significance of Umrah. This will provide a comprehensive learning experience covering both major Islamic pilgrimages.

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Exploring the Influence of Reels and Short Videos on Hiking Motivation

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Abstract: This study investigates the influence of reels and short hiking videos on hiking motivation and interest among hikers. This research examines how reels and short videos affect individuals' motivation to participate in hiking. The popularity of social media platforms like Instagram and TikTok has transformed how people perceive and engage with outdoor activities. This study explores how short-form video content influences participants' attitudes and motivation toward hiking by surveying the hikers. The results indicate that visually appealing content significantly boosts motivation, encourages outdoor exploration, and fosters a sense of community among viewers. These findings highlight the potential of social media as a powerful marketing tool for promoting outdoor activities and provide valuable insights for organizers aiming to increase participation in hiking and other nature-related pursuits.

Keywords: *Outdoor Activities, Hiking, Short Reels, Social Media*

1. Introduction

Recently, there has been a notable rise in outdoor recreation, with hiking becoming one of the most popular activities across diverse demographic groups. Social media platforms have evolved into powerful tools for sharing experiences and inspiring others to explore the outdoors, particularly through short-form video content on platforms such as Instagram and TikTok (Becker, 2020). These platforms allow users to share visually captivating and easily consumable content that motivates others to explore nature and engage in outdoor activities (Benton, 2019). As more individuals turn to social media for inspiration and encouragement, it is essential to understand how reels and short videos influence hiking behavior.

Research indicates that visual content plays a significant role in shaping decision-making, especially regarding recreational activities (Floyd & Shinew, 2018). Short-form videos, known for their brevity and engaging visuals, can evoke strong emotional responses that prompt viewers to take action (Liu & Zhang, 2021). The interactive features of these platforms also foster a sense of community, enhancing motivation to participate in hiking and other outdoor activities (Becker, 2020). Although the positive effects of social media on outdoor engagement are recognized, the precise ways in which short videos impact motivation for hiking have yet to be fully explored.

This study aims to analyze the influence of reels and short videos on individuals' motivation to hike, focusing on the emotional and social factors that drive this engagement. By implementing a quantitative survey method, this research seeks to provide a comprehensive understanding of how digital content influences hiking behaviors. The findings will offer valuable insights for outdoor organizers and marketers aiming to promote hiking and encourage wider participation in outdoor activities.

2. Literature Review

There are several subtopics relevant to this study, such as the benefits of outdoor activities, recent trends in hiking, and the influence of social media in promoting hiking activities.

Outdoor Activities

Outdoor activities, encompassing a wide range of physical exercises such as hiking, biking, and camping, have long been recognized for their contributions to both physical and mental health (Outdoor Foundation, 2022). Engaging in outdoor activities is highly beneficial for physical well-being. Regular participation in activities like hiking, biking, or jogging helps improve cardiovascular fitness, strengthen muscles, and enhance endurance

(Barton & Pretty, 2010). According to the Outdoor Foundation (2022), 50% of Americans participated in outdoor activities in 2021, with hiking and biking being among the most popular choices.

Outdoor activities also have significant positive effects on mental health. Research demonstrates that spending time in natural settings reduces stress, anxiety, and depression (Korpela et al., 2014). A study by Jordan and Hinds (2016) highlighted the therapeutic benefits of nature, emphasizing that outdoor experiences can foster emotional healing and personal growth.

Recent Trends in Hiking

Hiking has become increasingly popular in recent years, driven by factors such as health awareness, digital media influence, and the growing desire for outdoor experiences. Several factors are shaping the world of hiking today, including the post-pandemic hiking boom, technology-enhanced hiking, and the influence of social media.

The COVID-19 pandemic led to a surge in hiking as people sought safe, socially distanced activities. According to a 2021 report by the Outdoor Foundation, participation in hiking grew by over 16% from 2019 to 2020, with millions of first-time hikers taking to the trails during lockdown periods. The pandemic reshaped recreational habits, making outdoor activities more appealing due to their associated physical and mental health benefits (Zhao et al., 2022).

Secondly, technology plays a larger role in hiking today, with apps such as AllTrails and Strava helping hikers find new trails, track their progress, and share their experiences online. GPS navigation tools and fitness trackers have also enhanced the hiking experience by providing detailed maps, route planning, and real-time information on weather and terrain (Qin et al., 2022). Social media platforms allow hikers to document and share their journeys, further connecting the hiking community. However, there is ongoing discussion about the balance between technology and immersion in nature, as excessive screen time can detract from the benefits of outdoor experiences (Smith & Jones, 2020).

Lastly, platforms like Instagram, TikTok, and YouTube have had a substantial impact on hiking trends. The rise of visually-driven platforms has popularized certain hiking locations, turning previously obscure trails into "must-visit" spots. Instagram hashtags such as #hikingadventures and viral TikTok videos showcasing scenic routes have contributed to the growing appeal of hiking, particularly among younger generations (Qin et al., 2022). Short videos highlighting picturesque trails often inspire viewers to explore these areas for themselves.

Influence of Social Media to promote hiking

In recent years, social media platforms like Instagram, TikTok, and YouTube have transformed how users engage with outdoor activities, including hiking. Research on the influence of short-form video platforms, such as TikTok, suggests that these platforms significantly impact user behavior and motivation through engaging content and algorithmic recommendations, particularly among younger audiences (Kaur & Dhir, 2022). Studies highlight how the immersive nature of short videos and "flow experiences"—which include enjoyment and time distortion—can influence behaviors like social media addiction and may play a role in shaping users' motivation for outdoor activities like hiking (Becker, 2020).

The rise of "Instagrammable" hiking spots and adventure tourism is evident, with travellers seeking unique experiences in lesser-known locations. For instance, in the last three years, there have been 88K Twitter posts using the hashtag #hikingadventures in Malaysia and 955K globally. Additionally, there have been 344K Twitter posts on #hiking in Malaysia, highlighting the growing interest in hiking as a social media trend (Outdoor Social Media Report, 2022).

3. Methodology

This study adopts a quantitative survey approach to gain a thorough understanding of the influence of short-form video content on hiking motivation.

Sample Population

The study targeted a diverse group of individuals, aged 18 and older, who engage in outdoor activities. A total of 66 participants were recruited through social media platforms and hiking-related online communities. The sample included individuals with varying levels of hiking experience, from beginners to seasoned hikers, to capture a broad range of perspectives and insights.

Data Collection

Participants were asked to complete an online survey consisting of 15 questions, which included a mix of multiple-choice and Likert scale items. The survey aimed to assess key variables such as demographics, the frequency of short-form video consumption, motivations for hiking, and factors influencing their hiking decisions.

The survey also explored specific motivators, such as scenery, adventure, and community engagement, and examined how these factors, influenced by short-form videos, affected participants' likelihood to engage in hiking activities. The summary of the survey results is presented in the result and discussion section.

4. Results and Discussion

The survey conducted for this study is aimed to glean valuable insights from both novice and experienced hikers. It sought to gather demographic data, assess participants' hiking experiences, and solicit opinions on the influence of reels and short videos on their motivation to hike. The survey sample comprised 66 respondents, providing a diverse representation of hikers. Table 1 provides a summary of the demographic information and survey results.

Table 1: Survey questions and results

Question	Option	Result (%)
Section 1: Demographic Information		
Age :	18-24	18.2
	25-34	36.4
	35-44	28.8
	45-54	9.1
	54 and above	7.6
Gender :	Male	30.3
	Female	69.7
How often do you engage in hiking?	Never	18.2
	Occasionally (1-2 times a year)	30.3
	Sometimes (3-5 times a year)	21.2
	Regularly (6-10 times a year)	12.1
	Frequently (more than 10 times a year)	18.2
Section 2: Short-Form Video Consumption		
Which platforms do you primarily use to watch short-form hiking videos? (Select all that apply)	Instagram	57.6
	TikTok	77.3
	YouTube Shorts	15.2
	Facebook	31.8
	Other: _____	7.5
How often do you watch short-form videos related to hiking?	Never	4.5
	Rarely (less than once a week)	39.4

	Occasionally (1-3 times a week)	25.8
	Frequently (4-6 times a week)	30.3
What type of content do you enjoy the most in hiking short-form videos?	Trails reviews	62.1
	Scenery views	83.3
	Group hikes	33.3
	Tips & tricks	45.5
	Other:_____	3.0
Section 3: Motivation to Hike		
After watching a short-form video about hiking, how likely are you to plan a hike? (1 = Not likely at all, 5 = Very likely)	1	7.6
	2	12.1
	3	22.7
	4	24.2
	5	33.3
What motivates you to hike after watching short-form videos? (Select all that apply)	Beautiful scenery	81.8
	Nice hiking trails	60.6
	Adventure and exploration	63.6
	Recommendations from others	45.5
	Feeling part of a community	30.3
	Other: _____	3.0
How do you feel when you watch short-form hiking videos? (Select all that apply)	Inspired	69.7
	Excited	74.2
	Overwhelmed	34.8
	Motivated	65.2
	Indifferent	21.2
	Other: _____	3.0
Have you chosen specific hiking locations or trails based on videos you've seen?	Yes	71.2
	No	28.8
If no, what factors influenced your decision not to choose any hiking locations or trails after watching the videos? (Select all that apply)	Difficulty levels	42.6
	Safety concerns	48.9
	Duration & Accessibility	46.8
	Scenery quality	21.3
	Lack of information	44.7
	Other:_____	8.5
Section 4: Short-Form Video Effect		
How important do you think social media is in promoting outdoor activities like hiking? (1 = Not important at all, 5 = Extremely important)	1	0.0
	2	4.5
	3	9.1
	4	25.8
	5	60.6
Do you feel a sense of community or connection with other hikers when you watch their videos online?	Yes	62.1
	No	34.8
	Sometimes	3.0

Analysis of the data revealed several key findings regarding the impact of reels and short videos on hiking motivation. For the demographic, the majority of participants were aged 25-34 (36.4%) and predominantly female (69.7%). This demographic data indicates a significant representation of younger individuals engaging in hiking.

A significant majority of participants (71.2%) indicated that watching short-form videos made them more likely to consider specific hiking locations or trails based on videos they have seen, with many citing beautiful scenery and adventure and exploration as primary motivators.

Thus, the results indicate that the most influential motivators for hiking after watching short-form videos were beautiful scenery (81.8%) and adventure and exploration (63.6%). This highlights the importance of visually appealing content in inspiring outdoor activities.

Moreover, the emotional responses to short-form videos were overwhelmingly positive, with 69.7% of respondents feeling inspired and 74.2% feeling excited after viewing hiking content. This suggests that short videos effectively evoke emotions that can lead to increased hiking participation.

Furthermore, 62.1% of respondents felt a sense of community and connection with other outdoor enthusiasts when watching these videos, which encouraged them to participate in hiking. This indicates the potential for social media to foster connections among outdoor enthusiasts.

An additional thought on how short-form videos have influenced your hiking motivation or experience also has been asked of the respondents that many individuals experienced immediate emotional responses to the content, describing feelings of excitement and inspiration that prompted them to plan hiking trips shortly after viewing the videos. Participants also noted that nice hiking trails significantly enhanced their motivation to explore new trails.

Overall, these findings highlight the powerful role that short-form video content plays in shaping individuals' attitudes toward hiking and promoting outdoor activities. These findings align with existing literature that suggests visual content, particularly short-form videos, can significantly impact recreational behaviors and decision-making processes (Floyd & Shinew, 2018; Becker, 2020).

5. Conclusion and Recommendations

This research has investigated the significant influence of reels and short videos on individuals' motivation to engage in hiking, underscoring the role of visual media in shaping outdoor recreation behaviors. The findings reveal that short-form video content not only inspires viewers through captivating imagery but also fosters a sense of community among outdoor enthusiasts. Participants reported increased motivation to hike after engaging with visually appealing content, illustrating the power of social media as an effective tool for promoting outdoor activities.

As outdoor organizers strive to attract a wider audience, leveraging the potential of short videos can be an effective strategy to encourage participation in hiking. The emotional and social connections fostered by this content can play a crucial role in motivating individuals to explore nature and adopt healthier lifestyles. However, creators and marketers need to be mindful of potential issues, such as unrealistic representations of outdoor experiences, which could lead to disillusionment among viewers and negatively impact their engagement with hiking.

Future research should delve deeper into the long-term effects of short-form video consumption on actual hiking participation and examine how various demographic groups respond to different content styles. Investigating factors such as age, gender, and prior hiking experience will provide a comprehensive understanding of audience motivations. By further understanding these dynamics, stakeholders in outdoor recreation can develop more effective strategies to engage and inspire the next generation of hikers.

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"ANXISCAPE": An Adventure in Conquering Anxiety Via Game-Based Learning For Students

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Abstract: This study discusses the development and evaluation of a Game-Based Learning (GBL) application designed to educate students about anxiety disorders. The study addresses the challenge of engaging students in mental health education by creating an interactive game called "AnxiScape" using the Game Development Life Cycle (GDLC) methodology. The game aims to enhance students' understanding of anxiety through an enjoyable and immersive experience. Evaluation results, based on the E-Game Flow Model and Heuristic Evaluation, indicate high levels of user enjoyment (90%) and usability (85.4%), demonstrating the game's effectiveness in capturing attention, providing feedback, and improving knowledge. Integrating educational content with interactive elements can significantly enhance learning outcomes. The study suggests future improvements to optimize the game's performance and balance educational depth with user engagement.

Keywords: *Game-Based Learning, Anxiety, Game Development Life Cycle, Mental Health Education*

1. Introduction

Anxiety disorders are the most common mental health issues resulting in excessive worry, social fears, sudden panic attacks, and avoidance behaviors (Adwas et al., 2019; Szuhany & Simon, 2022). These conditions, such as separation anxiety disorder, specific phobias, selective mutism, social anxiety disorder, panic disorder, agoraphobia, and generalized anxiety disorder, often start when people are young (Craske & Stein, 2016). For college and university students, starting school is a big step into adulthood. It comes with more responsibilities, like managing academics, hobbies, friends, relationships, money, and sometimes a part-time job (Craske & Stein, 2016). Balancing these responsibilities can be stressful, leading to common mental health problems like anxiety, depression, sleep disorders, and eating disorders (Cuttilan et al., 2016; Tavolacci et al., 2015).

Anxiety involves having constant thoughts and worries that make you feel tense all the time - It's like having too much worry and fear about everyday things, leading to a belief that bad things will happen in the future (Shi et al., 2022). This can cause health problems, sleep issues, and difficulties in thinking clearly. Because of this, anxiety is a significant concern for colleges and universities, but its global prevalence among students is still uncertain (Perrotta, 2019). It's important to evaluate anxiety levels to understand their impact on student's academic success and well-being (Tan et al., 2023).

Nowadays, a wealth of information is easily accessible through our devices. Technology allows for quick and efficient information sharing while making it engaging by using multimedia elements. For instance, GBL is an approach that has the potential and appeal to help students learn abilities such as creativity, problem-solving, collaboration cooperative interaction, and communication (Liu et al., 2020). , therefore, the goal of this project is to enhance students' understanding of anxiety disorders while providing an engaging experience through the interactive game "AnxiScape".

2. Literature Review

Anxiety Disorders

Anxiety disorders are the most common type of mental health disorder, usually starting in late adolescence or early adulthood (Penninx et al., 2021). They involve issues with brain circuits responsible for detecting and responding to danger. Anxiety disorders are common mental health issues that often occur with depression, making treatment more difficult (Thibaut, 2017). The International Classification of Diseases (ICD-10) identifies different types of anxiety disorders, such as phobias, panic disorder, generalized anxiety disorder, and mixed anxiety and depression (Ströhle et al., 2018). Stress is a response to challenges in our lives and can affect our thoughts, feelings, and behaviors if not managed well (Isha et al., 2023). Anxiety disorders can impact a

person's overall well-being, including their emotions and social interactions. It's important to note that mental health is not just about avoiding illness; it also involves building positive traits like resilience and self-esteem.

Types and Symptoms: Comprehensive Guide to Anxiety Disorders

There are several types of anxiety disorders, each with its signs and symptoms, all of which involve excessive worry or fear (Adwas et al., 2019). Panic disorder involves sudden panic attacks with intense fear and physical symptoms. Social anxiety disorder causes fear of social situations due to worry about judgment. Separation anxiety disorder results in excessive worry about being apart from loved ones. Obsessive-Compulsive Disorder (OCD) features repetitive thoughts and behaviors. Post-Traumatic Stress Disorder (PTSD) develops after trauma, leading to flashbacks and avoidance. Generalized Anxiety Disorder (GAD) is marked by constant worry about everyday life, while specific phobias are intense fears of particular things, causing distress (Chand & Marwaha, 2024).

Effective Approaches for Anxiety Prevention

Preventing anxiety is important because it can lead to serious problems. Programs that use Cognitive Behavioural Therapy (CBT) can help reduce anxiety and depression, especially in young adults, by teaching them how to manage emotions and improve social skills. These programs work best when they include practice sessions and feedback. Being aware of what triggers your anxiety, like stress from work or school, helps you manage it better. Using coping strategies can keep you calm. Having supportive friends is also important, as they provide a safe place to share concerns and get advice, which can prevent anxiety from taking over your life (Shi et al., 2022; Nasca, 2024; Nauphal et al., 2023).

3. Methodology

Selecting a game development strategy is imperative to ensure a streamlined development process. The Game Development Life Cycle (GDLC) methodology involves several stages to oversee video game development, which usually consists of initiation, pre-production, production, testing, beta, and release phases.

Initiation Phase

The outcome of initiation is the game's premise and an introduction to the game. This game's design concept is based on the preferences of platformer gamers, especially those who enjoy adventure and challenge games that are both entertaining and educational, allowing users to discover new things and broaden their perspective. Students in university are the intended audience for this initiative (19 to 23 years old). Since many students in university are familiar with anxiety disorder, they will easily catch up with the concept of the Game Anxiety Odyssey.

Pre-production Phase

This phase involves planning gameplay and the game's style. This includes familiarizing with the game engine, selecting the game platform, and generating an early design for the game are some of the activities that take place at this stage of the process.

Production Phase

The requirements for the construction phase and the criteria for the implementation phase are the two distinct types of requirements that must be satisfied to finish the development of this game. The two types of build phase requirements were hardware requirements and software requirements. This includes the hardware and software specifications determination. The minimum requirement for this project is 12GB of RAM, AMD Ryzen 5, and Radeon Vega Mobile Gfx 2.10 GHz graphic card. For the software, Windows 11, Construct 3, Canva and Aseprite are used.

Testing Phase

Playtesting helps us understand how the game features work, how useful they are, and if the game is too easy or hard. While playing, if a tester finds a problem, like a mistake or a sudden game ending, they write down what caused it and how they made it happen again. Testers play the game on laptops and share their thoughts on the game, including how fun it is, the story, and the controls.

4. Findings

Based on the questionnaire data, a greater portion of the participants involved in testing the game project were male, comprising 16 individuals (53.3%), while females constituted 14 individuals (46.7%). Additionally, the findings indicate that most respondents were 20 and 22 years old, with 7 students representing 23.3% of the participants, followed by 19 and 20 years old with 6 students, accounting for 20%. Furthermore, most of the responses were provided by students 20 years old and 22 years old. Table I showcases the survey results.

Table 1: Respondent's Demography

Question	Range	Frequency (n)	Percentage (%)
Gender	Male	16	53.3
	Female	14	46.7
Age	19	6	20
	20	7	23.3
	21	4	13.3
	22	7	23.3
	23	7	20

User Enjoyment

The evaluation questions provided were based on the EGameFlow. A total of 8 questions were chosen for this project's user enjoyment testing, as they were the most suitable to use. The survey comprised a total of 8 questions that describe the user's enjoyment when playing the game. The questions are then segregated into 5 main factors namely concentration (E1, E2), goal clarity (E3, E4), feedback (E5), immersion (E6, E7), and knowledge improvement (E8). The total number of responses for this survey was 30 respondents. Table II indicates the findings of the survey.

Table 2: Frequency and Mean Score for User Enjoyment Evaluation

Factor	Questions Code	Frequency					Mean
Concentration	E1	0	0	0	9	21	4.70
	E2	0	0	0	9	21	4.70
Goal Clarity	E3	0	0	5	11	14	4.30
	E4	0	0	1	9	20	4.63
Feedback	E5	0	0	7	9	14	4.23
Immersion	E6	0	0	2	10	18	4.53
	E7	0	0	4	7	19	4.50
Knowledge Improvement	E8	0	0	2	9	19	4.57
					Total Mean		**4.52**

Based on the results from Table II, the majority of participants found the game engaging. For E1 and E2, 70% of respondents strongly agreed that the game captured their attention and provided stimulating content, while 30% agreed. In E3, 46.7% strongly agreed that the goals were clear, 36.7% agreed, and 16.7% were neutral. For E4, 66.7% strongly agreed they understood the learning goals, 30% agreed, and 9% were neutral. Moving to E5, 46.7% strongly agreed they received feedback on their progress, while 30% agreed, and 23.3% were neutral. In E6, 60% strongly agreed they lost track of time while playing, 30.6% agreed, and 6.7% were neutral. For E7, 63.3% strongly agreed they became involved in the game, with 23.3% agreeing, and 13.3% neutral. Lastly, for E8, 63.3% strongly agreed the game increased their knowledge, 30% agreed, and 5.6% were neutral. Overall, most participants responded positively to the game's ability to capture attention, provide feedback, and enhance learning.

Usability

The evaluation questions provided were based on the Heuristic Evaluation. The survey comprised a total of 8 questions that describe the usability of the application.

Table 3: Frequency and Mean Score for Usability

Factor	Questions Code	Frequency					Mean
Game Usability Component	GU1	0	1	1	13	15	4.40
	GU2	1	0	3	11	15	4.30
	GU3	0	0	2	14	14	4.40
	GU4	0	0	0	11	19	4.63
	GU5	0	0	1	11	18	4.57
	GU6	0	1	6	13	10	4.07
	GU7	3	1	17	4	5	3.23
	GU8	0	0	2	10	18	4.53
					Total Mean		**4.27**

According to the results of the evaluation, GU1 indicates that 50% of respondents strongly agreed with the statement “Interesting game visual graphic,” while 43.3% agreed. The remaining respondents were split, with 3.3% selecting neutral and another 3.3% disagreeing. For GU2, 50% strongly agreed that there was “Suitable audio with the game,” and 36.7% agreed. Additionally, 10% were neutral, and 3.3% strongly disagreed. In GU3, 46.7% strongly agreed with “The Screen layout is visually pleasing,” and another 46.7% agreed, while 6.7% were neutral. For GU4, 63.3% strongly agreed that “The Navigation menu is easy to use,” and 36.7% agreed, resulting in 11 respondents confirming ease of use. In GU5, 60% strongly agreed that “Control keys are consistent,” while 36.7% agreed, and 3.3% were neutral. In GU6, 33.3% strongly agreed that “The Interactive features provided are sufficient,” 43.3% agreed, 20% were neutral, and 3.3% disagreed. For GU7, 16.7% strongly agreed with “The game gives feedback on the player's actions,” 13.3% agreed, 17.3% were neutral, 1 respondent disagreed, and 10% strongly disagreed. Finally, in GU8, 60% strongly agreed that “The game increases my knowledge,” confirmed by 18 respondents, while 33.3% agreed, and 6.7% were neutral.

Overall Findings

The level of agreement for each aspect is shown by the total values in the user enjoyment and usability evaluation. A 5-point scale is used for the survey: 1 means 'Strongly Disagree,' 2 is 'Disagree,' 3 is 'Neutral,' 4 is 'Agree,' and 5 is 'Strongly Agree’. Tables IV and V were calculated using Microsoft Excel. This software is important for data calculation and is often used for analyzing and displaying data for analysis and business purposes. Table IV shows the overall mean value for the user enjoyment survey, and Table V shows the overall mean value for the usability survey.

Table 4: Total Overall Mean for USer Enjoyment

Enjoyment Category	Total Average
Concentration	4.70
Goal Clarity	4.47
Feedback	4.23
Immersion	4.52
Knowledge Improvement	4.57
Overall Mean	4.50
Percentage (%)	90%

Table 5: Total Overall Mean for Usability

Usability Category	Total Average
Game Usability Component	4.27
Overall Mean	4.27
Percentage (%)	85.4

The findings demonstrate the program's effectiveness in assessing the usability and user enjoyment of "AnxiScape: An Adventure in Conquering Anxiety Via Game-Based Learning (GBL) For Students." These results show that the program successfully achieved its third objective, which was to evaluate user enjoyment and usability of the application.

5. Conclusion and Recommendations

In conclusion, the development and evaluation of "AnxiScape" demonstrate the potential of Game-Based Learning (GBL) as an effective tool for mental health education, specifically in addressing anxiety among students. The project successfully utilized the Game Development Life Cycle (GDLC) methodology to create an engaging and educational platform that resonates with its target audience. The mean evaluation results for user enjoyment and usability are 90% and 85.4% respectively. This indicates that the game not only captures the attention of students but also provides a meaningful learning experience. The positive feedback on various aspects such as concentration, goal clarity, feedback, immersion, and knowledge improvement underscores the game's effectiveness in making complex mental health concepts accessible and engaging. Furthermore, the study highlights the importance of integrating educational content with interactive and enjoyable elements to enhance learning outcomes. Future enhancements, including optimizing the game's performance across different devices and balancing educational content with user engagement, are essential for further improving the game's impact. Overall, "AnxiScape" represents a significant step forward in leveraging technology to address mental health education, offering a promising approach to help students better understand and manage anxiety.

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Effectiveness of YouTube Videos in Learning Database Courses among University Students

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Abstract: This research explores the effectiveness of YouTube videos as supplementary resources for students studying database subjects. With the growing use of digital media in education, it is vital to understand how these resources impact learning outcomes. Using a mixed-methods approach, the study collects quantitative data through surveys and qualitative insights through interviews. The results indicate that YouTube videos significantly improve students' understanding, engagement, and retention of database concepts. The study concludes with recommendations for educators on effectively incorporating YouTube into their teaching strategies. This paper investigates the effectiveness of YouTube videos as a learning tool for students studying database subjects. With the increasing availability of online resources, it is essential to evaluate how these resources impact student learning outcomes. The study utilizes a mixed-methods approach, combining quantitative data from surveys and qualitative data from interviews with students. The findings suggest that YouTube videos enhance understanding, engagement, and retention of database concepts, while also providing flexibility and accessibility. Recommendations for educators on integrating YouTube into curriculum design are discussed.

Keywords: *Database Course, Multimedia Learning, YouTube Videos, Higher Education.*

1. Introduction

Several online resources have been adopted as a result of the move to digital education, with YouTube emerging as a crucial platform for educational information. Videos on a variety of topics, including intricate areas like databases, can be found in its vast library. YouTube is becoming a more popular learning tool for students, thus it's critical to evaluate its efficacy, especially in specialized fields. According to Abbas and Qassim (2020), YouTube primarily creates knowledge by providing multimedia educational resources.

The advent of online learning platforms has transformed traditional educational methodologies. YouTube, with its vast repository of instructional content, has emerged as a significant resource for students. This study aims to assess the effectiveness of YouTube videos specifically in the context of learning database subjects, which are often perceived as complex and challenging.

In recent years, the landscape of education has evolved dramatically due to advancements in technology and the increasing accessibility of online resources. YouTube, as one of the largest video-sharing platforms, has become a pivotal tool in the educational domain, offering a vast array of instructional videos across various subjects. With over 500 hours of video uploaded every minute, YouTube has become an indispensable educational tool globally (YouTube, 2022). As the largest video-sharing platform, it provides an accessible repository for learners seeking supplemental content in various subjects, including technical courses like databases. Given the complexity of database concepts, this study seeks to understand the extent to which YouTube videos serve as an effective learning tool among these, database management has emerged as a crucial area of study, essential for students pursuing careers in information technology, data science, and related fields. However, database concepts can be intricate and challenging, often requiring students to grasp abstract principles and complex technical skills.

For students who want to work in data science and information technology, database courses are crucial. However, because of their technical complexity and abstract character, these subjects might be difficult. The purpose of this study is to assess how useful YouTube videos can be as teaching resources in this situation. The following are the main research questions.

How effective are YouTube videos in enhancing students' understanding of database concepts? What are students' perceptions of YouTube as a learning resource? Which characteristics of YouTube videos contribute to their effectiveness? By addressing these questions, this research aims to provide insights to help educators effectively integrate YouTube into their curriculum.

The integration of YouTube videos into the learning process presents an opportunity to enhance student engagement and understanding. Video content allows for dynamic presentations of information, catering to diverse learning styles through visual and auditory stimuli. Previous research suggests that multimedia resources can significantly improve comprehension and retention (Mayer, 2009; Guo et al., 2014). Despite this potential, there remains a gap in the literature specifically addressing the effectiveness of YouTube videos for learning database subjects.

This study aims to explore the effectiveness of YouTube as a supplementary learning resource for students studying databases. It seeks to assess students' perceptions of using YouTube videos, evaluate how these videos impact their understanding and retention of database concepts, and identify specific features that enhance their learning experience. By examining these factors, the research intends to provide actionable insights for educators on integrating YouTube into their curriculum effectively.

Ultimately, understanding the role of YouTube in learning database subjects can help educators tailor their teaching strategies to better meet the needs of their students, thus fostering improved academic outcomes in this vital area of study. As digital resources continue to proliferate in educational settings, this research contributes to a more nuanced understanding of how to leverage online video content to enhance learning experiences.

2. Literature Review

Previous research indicates that multimedia resources can facilitate learning by catering to different learning styles (Mayer, 2009). In particular, video content can enhance engagement and improve comprehension (Guo et al., 2014). However, few studies have examined the specific impact of YouTube videos on database learning, highlighting a gap that this research aims to address.

Multimedia Learning

The impact of multimedia learning has been extensively studied, with Mayer's Cognitive Theory of Multimedia Learning suggesting that combining visual and auditory elements enhances comprehension and retention (Mayer, 2020). Videos, as a type of multimedia, engage learners through dynamic presentations, making complex subjects more accessible (Mayer, 2020). Moreover, according to Guan et al. (2018), numerous studies have demonstrated the value of multimedia technology in education and the broad use of these tools. Technology is typically used in multimedia, and because of its many advantages, multimedia applications are widely used in education (Almara'beh et al., 2015).

The cognitive theory of multimedia learning, which makes three assumptions about how individuals learn from instructional multimedia content, is one theory that must be understood to use multimedia for learning. These presumptions might be expressed as active processing, dual-channel, and limited capacity (Alemdag and Cagiltay, 2018)

YouTube has become a significant educational resource, allowing students to access content flexibly and at their convenience. Research shows that students often prefer video-based learning due to its interactive nature (Berk, 2020). However, challenges remain, such as identifying credible sources amid the vast array of available content (Mackey & Jacobson, 2017).

Visual Aids in Learning Database

Visual learning aids, such as charts, graphs, pictures, and diagrams, have been shown in studies to improve student learning results in a range of settings (Qasserras & Qasserras, 2023). According to Pateşan et al., (2018), several studies have verified that visual aids can enhance the quality of instruction by helping students

retain important information for longer periods, clarifying difficult concepts, and catering to their preferences for visual processing.

In the context of database education, visual aids have been shown to improve understanding (Cheng et al., 2020). Despite YouTube's growing popularity, limited research has focused on its effectiveness in this specific area. This study seeks to address this gap by examining student experiences and learning outcomes related to YouTube videos in database subjects.

3. Methodology

This study adopts a mixed-methods approach, combining quantitative survey data with qualitative insights from interviews. A sequential explanatory design was implemented, collecting survey data first, followed by interviews for deeper insights.

Participants

The participants for this study consisted of 89 undergraduate students enrolled in a database management course at Universiti Teknologi MARA (UiTM) Malacca. The sample was diverse, with students from various academic backgrounds and differing levels of familiarity with database concepts. This variety ensures that the study captures a wide range of experiences and perceptions regarding the use of YouTube videos in learning database management.

Data Collection

Data were collected in two stages.

Surveys: The first stage involved an online survey distributed to all 89 participants. The survey was designed using a structured questionnaire, which included sections on demographics, YouTube usage patterns, perceived effectiveness of YouTube videos, and challenges faced while using the platform. Students rated their learning experiences using a 5-point Likert scale, which measured their level of agreement on various aspects of YouTube's role in learning database concepts. The survey was conducted anonymously to ensure honest and unbiased responses.

Interviews: After the survey, semi-structured interviews were conducted with five volunteers to collect qualitative data. These interviews provided an opportunity to explore the participants' experiences with YouTube videos for learning database concepts in greater depth. The open-ended questions focused on the types of videos the students found most useful, their perceived learning outcomes, and any challenges or limitations they encountered while using YouTube. This qualitative component was crucial for providing context to the quantitative survey results and uncovering additional insights not captured by the surveys.

By using a mixed-methods approach, the study ensures that the results are both grounded in measurable data and enriched with personal experiences, providing a nuanced understanding of the role of YouTube videos in the academic learning process.

4. Results and Discussion

The survey conducted for this study aims to examine the influence of YouTube videos in learning database courses. It is divided into three main sections: demographic information, the frequency and type of YouTube usage, and the perceived effectiveness of YouTube in learning database concepts. The demographic section collects data on the respondents' age, gender, and academic background. The second part explores how often and what types of YouTube videos students use for learning database topics. Lastly, the effectiveness section focuses on how students perceive YouTube videos in terms of understanding, engagement, and retention of course material. Table 1 provides a summary of the demographic information and survey results.

Table 1: Survey questions and results

Question	Option	Result (%)
Section 1: Demographic Information		
Age :	18-24	96.6
	25-34	2.2
	35-44	1.1
	45-54	0.0
	54 and above	0.0
Gender :	Male	43.8
	Female	56.2
Part :	1	41.6
	2	0.0
	3	34.8
	4	0.0
	5	12.4
	6	9.0
	7 and above	2.2
Section 2: YouTube Usage		
How often do you use YouTube for learning database concepts?	Never	21.3
	Occasionally (1-2 times in a week)	32.6
	Sometimes (3-5 times in a week)	33.7
	Often (6-10 times in a week)	12.4
	Always (more than 10 times in a week)	0.0
What type of YouTube videos do you find most helpful for learning databases?	Tutorial Videos	87.6
	Lectures by Professors	60.7
	Real-World Applications	42.7
	Q&A Sessions	25.8
	None	1.1
Section 3: Effectiveness of YouTube Usage		
YouTube videos enhance my understanding of database concepts. (1 = Not likely at all, 5 = Very likely)	1	9.0
	2	6.7
	3	28.1
	4	42.7
	5	13.5
I feel more engaged when learning from YouTube videos compared to traditional lectures	1	11.2
	2	10.1
	3	50.6
	4	22.5
	5	5.6
I retain information better after watching YouTube videos.	1	7.9
	2	9.0
	3	30.3
	4	43.8

	5	9.0
YouTube videos provide relevant real-world examples that help me understand database concepts.	1 2 3 4 5	6.7 9.0 36.0 37.1 11.2
What challenges do you face when using YouTube for learning databases?	Difficulty finding credible sources Overwhelmed by the amount of content Distraction from unrelated videos Difficulty understanding certain topics Other:_____	58.4 47.2 55.1 59.6 2.2

Table 1 provides a detailed summary of these survey results, showcasing trends such as the high preference for tutorial videos and the frequent challenge of finding credible sources. The results also reflect the significant role of YouTube in enhancing students' comprehension and engagement in learning database concepts.

The demographic data indicates that a majority of the respondents (96.6%) fall within the age range of 18-24, which aligns with typical university student populations. The gender distribution is fairly balanced, with 56.2% female and 43.8% male respondents. This provides a representative sample for the target population, making the findings more applicable to a broad student demographic. The varied responses in the “Part” section (referring to the level of academic engagement) suggest that students with different levels of exposure to database subjects participated, adding depth to the survey results.

In terms of how often students use YouTube for learning database concepts, the survey reveals that a majority of students utilize YouTube regularly, with 66.3% using it occasionally (1-5 times a week). This suggests that YouTube is a commonly used supplementary resource in their studies.

Regarding the types of YouTube videos students find most helpful, 87.6% prefer tutorial videos, followed by lectures from professors (60.7%), and real-world applications (42.7%). This highlights that students are seeking both conceptual understanding and practical application in their learning, and they value tutorial-style content that breaks down complex database concepts into digestible formats.

The third section of the survey focuses on the perceived effectiveness of YouTube in learning database concepts. A significant portion of students (42.7%) agreed that YouTube videos enhance their understanding of these topics. Additionally, 43.8% of respondents indicated that they retain information better after watching YouTube videos compared to traditional lecture formats.

However, the effectiveness of YouTube is not without its challenges. 58.4% of students reported difficulty finding credible sources, and 55.1% mentioned distractions from unrelated content. This suggests that while YouTube is a valuable resource, students often struggle with information overload and quality control.

In summary, the results confirm that YouTube is a valuable educational tool for university students studying database courses, though it requires structured use and quality control to maximize its effectiveness. The findings provide a foundation for educators to integrate YouTube videos more effectively into their teaching strategies.

5. Conclusion and Future Research

The findings of this study indicate that YouTube is an effective supplementary tool for enhancing learning in database courses among university students. The use of tutorial videos, in particular, has proven to be beneficial in simplifying complex concepts and improving student engagement and retention. The survey results also

highlight that students appreciate the flexibility and accessibility of YouTube as a learning platform, allowing them to revisit content at their own pace.

However, the study also reveals challenges such as difficulty in identifying credible sources and the distractions caused by unrelated content. These issues suggest the need for structured guidance from educators in navigating the vast amount of information available on YouTube. By incorporating curated playlists or recommended channels into their teaching, educators can help students optimize their learning experiences.
Future research could examine the long-term impacts of YouTube use on academic performance and explore strategies for enhancing the credibility of educational content available on the platform. By leveraging the strengths of YouTube, educators can create more engaging and effective learning environments for their students.

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Game-based Learning of Fundamentals of Islam

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Abstract: Back in the old days, our method of learning Islamic Education was always the traditional way which included pen and paper and two-way communication between a teacher and the student. In this digital era, a new method of learning has been implemented which uses electronic devices. Learning Islamic Education often creates boredom among young students, and this will affect their concentration and understanding. To cater to this problem, a game-based learning method needs to be implemented in classrooms. The scope of the project is for young learners of Islamic Education in primary school. This study aims to research the effectiveness of game-based learning methods by using video games. The development of the game is based on the Game Development Life Cycle (GDLC) methodology. GBL Model is the model that was used to ensure it fits for education purposes. Results show that most players understand the learning content and suggest there is room for improvement.

Keywords: *Islamic education, Islam fundamentals, Game-based Learning*

1. Introduction

Islam is derived from the Arabic principle that carries the meaning of peace and submission (to Allah, the almighty). Islam is also a religion that includes rituals and spiritual values. The pillars of Islam must be understood properly as a value of ritual as well as spiritual, which must be transformed into our life, in the form of civilized human resources (Fajar, 2017). Every Muslim was taught about the Fundamentals of Islam such as the Five Pillars of Islam (Rukun Islam) then followed by the Six Pillars of Faith (Rukun Iman).

The Five Pillars of Islam are the core beliefs and practices of Islam. They consist of the Shahadah (declaration of faith), 5 Prayers, the fast of Ramadhan (sawm), almsgiving (zakat) to the needy and pilgrimage (Hajj) to those who are able. The Six Pillars of Faith (Iman), part of the Muslim's beliefs is very important and holds weight on Judgment Day (Rahmah, 2012). The first pillar is the belief in Allah The Almighty. Next is the belief in the Angels (Al-Malaa'ika), the angels are messengers of Allah. Third is belief in the books of Allah such as The Torah, Zabur, Injil and Quran. The fourth is belief in the 25 prophets mentioned in the Quran. Next is belief in Yawmil Qiyaamah (Final Day). This is the assessment of humanity for all deeds. Lastly, the belief in Allah's predestination (Qada & Qadar). Allah has recorded all from the beginning of life until the final day. Everything happens according to the will and decree of Allah. However, Allah gives the freedom to humans to make their own choices.

Muslims were taught those fundamentals during their years in kindergarten & primary school but some methods of learning implemented by the teachers back then were less interesting while some did not provide further explanation. Through the years, teachers have been inventing games for their students so that they can learn better with more interest. Nowadays with the evolution of technology, video games started to be used in education. With more appealing and interactive content many teachers & instructors used game-based learning or gamification as one of their teaching methods.

Even with the evolution of technology, many schools are still using the traditional method of learning, usage of textbooks & notes. Traditional methods may not be able to inspire learners to be creative and think outside of the box. They usually have a fixed structure. Students must read the contents of the books to learn and this does not guarantee their understanding of the topics they are referring to. For students who have difficulties in reading, they might feel less motivated. Those methods can be less effective and might affect students' concentration and interest in learning. Students nowadays are more attracted to digital interactive media. When trainees(students) participate in traditional learning activities, they rarely display the level of effort and motivation that is typical of simulation games, thereby limiting the learning potential (Tennyson & Jorczak,

2008). In this rising age of video games, it can be one of the media that shapes our comprehension and understanding of the world. The agenda in game-based learning is to learn while playing, when the learner likes the game they get hooked to it, and invested in the content. They learn faster and recall better. Learning through playing can enhance students' cognitive development processes (Mohamad Ashari et. al, 2013), especially in interactive media. Education these years needs technology to deliver Islamic Education lessons effectively and interestingly that is suitable for modern-day education (Jasmi et. al, 2012).

Normally, there are a lot of students in a classroom. Most of them are dependent on teachers. However, not all students get equal attention as needed. The student's role in the traditional learning environment is as a passive receiver of information. Students learn in an individualistic and competitive manner in which phenomena are disseminated through a set of rules, rituals, and routines established by the instructor and field of study (Diane Sevening EdD & Mark Baron, 2003). Due to this issue, some students are unable to receive enough direct feedback from their teachers. The fundamentals of Islam should be learned with guidance to truly understand the topic to avoid any misunderstandings. Nonetheless, games, provide students with more constructive feedback allowing them to express their views through a collaborative environment (Limniou & Mansfield, 2018). With the integration of games, little to no students will be left in their studies.

The current school curriculum in national schools does include the fundamentals of Islam in Pendidikan Islam subject. The time allocated for Pendidikan Islam subjects in national schools is only 96 hours a year. In December 2018, Ex-Prime Minister Dr Mahathir Mohamed said to reduce the school's Islamic Education curriculum hours and focus more on subjects that will produce quality students. Due to time constraints for the subject, students are unable to learn with detailed explanations and understandings. They must be in line to finish the syllabus in time. Students must study & learn independently at their own pace. Nowadays, many students play (computer) games in their leisure time, thus acquiring skills that can easily be utilized when it comes to teaching more sophisticated knowledge (Kai Erenli, 2013). With game-based learning, they can learn while playing anywhere on their own time. Video games can be used to create an interactive learning process to enhance their motivations. With this, video games can be a learning support tool for Islamic education thus making Islamic Education fun and interactive creating a whole new better perspective of Islam by the community and other religions. Many students play (computer) games in their leisure time, thus acquiring skills that can easily be utilized when it comes to teaching more sophisticated knowledge.

Game-based learning (GBL) is an environment where game content and gameplay improve knowledge and skills acquisition where games involve problem-solving and challenging activities (Kirriemuir & McFarlane, 2004). Game-based learning uses teaching through repetition, failure and the accomplishment of goals concept. Game-based learning and gamification is a trend that has been implemented in many settings including workplace training, education and social media (Pho & Dinscore, 2015). For this study, Game-Based Learning will be implemented in bringing the fundamentals of Islam in the form of educational games to students so that they can learn, engage and understand without losing interest. This project aims to provide another way of interactive learning on the fundamentals of Islam. Game-based learning (GBL) allows students to develop critical thinking and motivates them to learn and progress more. From another perspective, this product of GBL can fill their free time with something beneficial. Plus, this can also prove that Islamic education is not outdated and can be taught with updated technology.

2. Literature Review

Islam began with the prophet Muhammad PBUH. Islam is derived from the Arabic principle that carries the meaning of peace and submission (to Allah, the almighty). Its central article of faith is that "There is no god but Allah, and Muhammad is his messenger". Islam is also a religion that includes rituals and spiritual values like the Hajj pilgrimage, Solat and fasting. The pillars of Islam which are part of the Fundamentals of Islam must be understood properly as a value of ritual as well as spiritual, which must be transformed into our life, in the form of civilized human resources (Fajar, 2017). However, Islam is not a cult, it is universal.

Followed by more than 1.8 billion people today, Islam is the fastest-growing religion and will soon be the world's largest. Islam is the dominant religion in Central Asia, the Middle East and some other parts of Asia. The country with the largest Muslim population in the world is Indonesia, with 229 million Muslims. In Malaysia, 61.30% of

our country's population are Muslim and that is more than 16 million of our country's total population as of 2020. While the world's population is projected to grow 32% in the coming decades, the number of Muslims is expected to increase by 70% – from 1.8 billion in 2015 to nearly 3 billion in 2060 (Lipka & Hackett, 2017).

In general, the first category can be referred to as the Five Pillars of Islam, Muslims must observe and practice the pillars of Islam. They consist of the Shahadah (declaration of faith), 5 Prayers, the fast of Ramadhan (sawm), almsgiving (zakat) to the needy and pilgrimage (Hajj) to those who are able.

The Shahadah is a declaration of faith where there is no god but Allah and the prophet Muhammad pbuh is his messenger. Although it is a statement that needs to be said once and believed in, however, the reason why it is included in pillars is that a Muslim has to put it into practice in their conduct. The 5 Prayers (Solat) are required for Muslims daily. It will be one of the first things to be asked on the Judgment Day. The third pillar is the Fasting (sawm) of Ramadhan, all healthy adult Muslims are required to abstain from food and drink, as well as smoking and lust-related actions between sunrise and sunset. Through this temporary deprivation, they renew their awareness of and gratitude for everything Allah has provided in their lives. The word zakat means both "purification" and "growth". Muslims are supposed to donate some of their property to charity. Zakat is calculated upon a certain amount of money or personal belongings such as gold or silver saved for a certain period. The fifth pillar is Pilgrimage (Hajj). This is an obligation only for those who are physically and financially able to do so. The annual Hajj begins in the twelfth month of the Islamic lunar year. Pilgrims wear simple garments that remove distinctions of class and culture, meaning all stand equal before Allah.

Islamic education has existed since the birth of Islam itself (Zakaria, 2002). Islamic education continues throughout our lives in both formal and informal ways. The term "Islamic Education" has a broad meaning, but society today assumes Islamic Education is the school subject or knowledge of Islamic religion in school. Among the goals of Islamic Education is clearly to produce beings who are righteous, believing and compassionate. Islamic Education is towards building good and healthy behavior. Furthermore, the purpose of Islamic Education is also to be righteous to Allah, develop good morals among humans, care about the importance of religion and provide awareness in terms of the physical and spiritual self.

Islamic Education is a compulsory subject for every level of school. This is in line with the statement that Islam is a federal religion in the Malaysian constitution (Ahmad, 1996). The Islamic Education curriculum consists of three aspects which are Beliefs (Iman), Issues of Islam (Shariah) and Morals. The Six Pillars of Faith (Rukun Iman) are placed inside the Beliefs category. The Shariah section covers all matters related to human deeds in daily life that are guided by the laws of Allah in regulating human relations with Allah and between mankind. The Morals section is a practice that complements both beliefs and Shariah aspects and educates students on how to interact in community life. The three aspects stated will then form the pillars of Islam, pillars of faith and morality.

The focus of Islamic Education in school is first, on the basic education in the Quran. Second, the formation of beliefs and guidance of the Fardhu 'Ain Foundation. Next, the adoption of Fardhu 'Ain and Fardhu Kifayah practices demanded by Islamic Shariah. Fourth, the application of manners based on Islamic morality to the students. The fundamentals of Islam can be found in the second category inside the 'Ulum Syar'iah section where the pillars of Islam and pillars of faith are taught to students. It begins by cultivating the foundations of the Islamic faith based on monotheism. Starts with the Six pillars of faith (Rukun Iman) then followed by the Five pillars of Islam (Rukun Islam). The fundamentals of faith are then nurtured and strengthened by the Naqli and Aqli arguments and their impact on life (Ahmad, 1996). Strengthen the beliefs of Allah's angels and messengers by providing an understanding of their facts and duties. This goes the same for the teaching on the holy books that Allah has sent by discussing their contents and purpose.

Worship in Islam has a broad and deep meaning, it includes prayers, fasting, zakat and more. Prayers (Salah) are Muslims' main channel to connect to Allah rather than other worshipping methods because prayers are not the only ones that will be accounted for on the Final Day but other deeds depending on the perfection it is. Because prayer (Salah) is the main worship and compulsory for every Muslim, students are also taught how to perform it in critical conditions or situations, for example, war and unhealthy body conditions. Next, students were taught about fasting (sawm) in both Fardhu and Sunat including its benefits, exceptions and penalties.

Then, the education of zakat and its importance in Islamic society. Zakat educates us on the sacrifice of property. Lastly, the concept of Hajj is taught including its importance and history. During this section, students also taught about slaughter, sacrifice and aqiqah.

The teachings of Islam emphasize that its people will always excel in life here and in the hereafter. Islamic Education is still being taught now from primary school to universities but the teaching methods in schools may not be interactive to students. Teachers are required to help students engage and maintain motivation, game-based learning has been established to promote a positive attitude toward learning and to develop memory skills together with its potential to connect students and help them to develop self-constructed learning. Islam has never shied away from the latest technologies and developments to produce the best education. However, the method of teaching and learning that was practiced by Rasulullah Pbuh must be taken as a reference and guidance (Jasmi & Tamuri, 2007).

Game-based learning refers to the borrowing of gaming principles and applying them to real-life settings to engage users. Game-based learning and gamification is a trend that has been implemented in many settings including workplace training, education and social media (Pho & Dinscore, 2015). Game-based learning uses teaching through repetition, failure and the accomplishment of goals concept. Most video games are built on this method. Usually, a well-designed game for learning will offer suitable difficulty to keep it challenging but easy enough for the player to win.

Game and learning modules are combined because to traditional method of learning is less interesting or interactive and game-based learning can improve students' motivation to learn. Students' concentration is higher when in the flow state of play (Squire, 2008).

Game-based learning (GBL) has been quite popular in education research in the past years. Videogames can stimulate an increase in midbrain dopamine which is linked to a higher ability to store and recall information (Howard-Jones et. al, 2014). With the help of GBL, games can help students develop a better understanding of mathematical concepts, students engage with the media and it can be used as a learning support tool (Katmada et. al, 2014). This is because video games have great entertainment value that can boost players' motivations and understanding. As listed by (Al-Azawi et. al, 2016) below are some of the reasons why games can be a useful tool in teaching and learning:

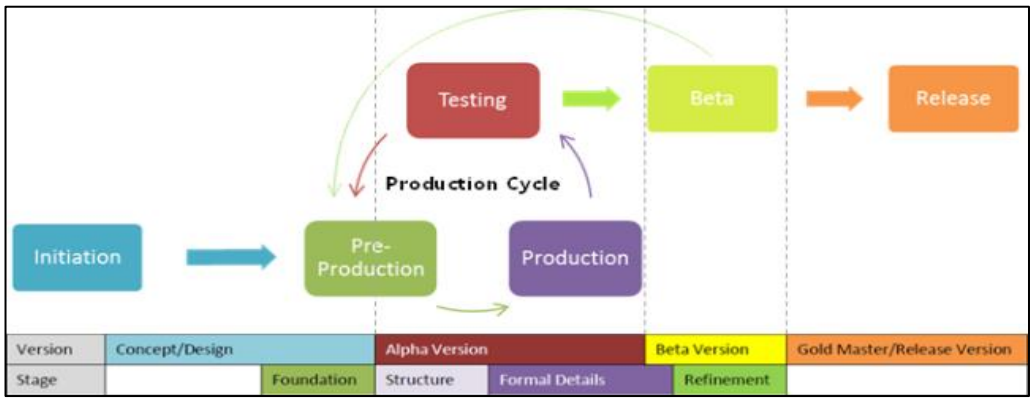
- Able to assist children in setting goals and providing feedback.
- Allow players to experience curiosity and challenge that may stimulate learning.
- Games can be used for research and measurement tools.
- Games may help in developing IT skills among students.

In addition, Game-Based Learning also offers creativity among players and generates critical thinking skills including decision-making and problem-solving.

3. Methodology

The Fundamentals of Islam game project methodology will be using the Game Development Life Cycle (GDLC) model as the project methodology. Game Development Life Cycle (GDLC) is a framework to build a video game. It is similar to the Software Development Life Cycle (SDLC) but with few adjustments and its main objective is to entertain the users. GDLC focuses on the traditional standardized concepts of engineering to build a stable software infrastructure. There is a great field of intersection between SDLC and GDLC, so the GDLC models implicitly inherit the benefits given by SDLC (Patel et al., 2017). The reason for using the GDLC model is that GDLC is typically appropriate for any form of game creation, the GDLC model uses iteration in the key development process for a higher degree of flexibility towards adjustments during development.

Figure 1: GDLC Model



(Source: Ramadan & Widyani, 2013)

The GDLC model starts with getting ideas on the Initiation phase, then proceeds to plan in the pre-production phase. Next, start the development in the Production phase. GDLC allows iteration in the development process that links the Pre-Production phase, Production and Testing phases. However, in this project, the cut-off point is the testing phase. This project does not process to the beta and release phase because the goal is to create a proof-of-concept prototype only.

4. Results and Discussion

A use case is a list of actions or steps in any software and systems engineering that typically define the interactions between a role and a system to achieve a goal. Figure 2 below shows this project's use case diagram.

Figure 2: Game Use Case

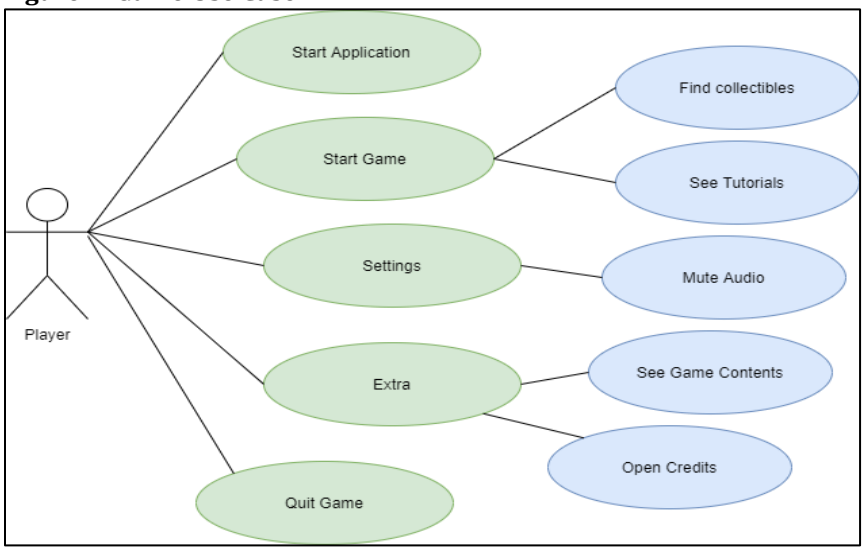
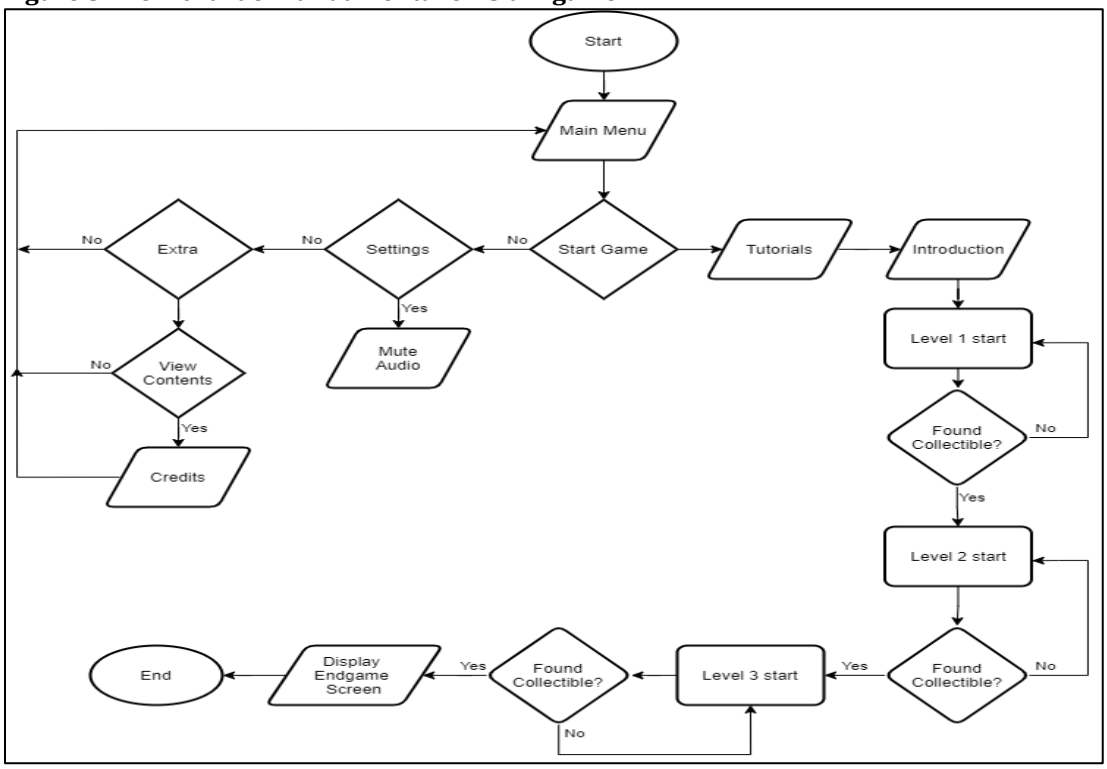


Figure 3 shows the flow of the Fundamental of Islam game. It tells how the gameplay starts till the end. When the player launches the game, a simple game logo will be shown then go to the game's main menu. In the main menu, players can find a few button options for them to select. Start the game to begin the game, Settings to go into settings and View Intel to see the intel from the game. When the player chooses to start the game, the game will start with a background story of the game and explain the objectives. For Settings, the player will be given the option to adjust game audio. Players also are given the option to view the contents of Fundamentals of Islam from the game in the main menu on the Extras page.

Figure 3: Flow chart of Fundamental of Islam game



Once the player starts the game, the player will be put into the first chapter of the game, player needs to find the contents of Rukun Islam scattered around the map as a challenge. Once they find all the contents in the corresponding level, they will proceed to the next chapter of the game. In the second chapter, the player needs to find the contents of Rukun Iman. The player then proceeds to level 3 of the game to find the contents of the Rukun Solat. If they manage to find all of them, the game will show the end scene and the game is over.

The implementation of the game inside this project will be based on the GBL Design model. The model consists of several criteria including goals, fantasy, interactions, challenges and sensations. Game goals are the objectives that need to be found by the players. They are scattered around the 3 maps. Before the game starts, an interface will brief the player regarding the objectives including the total number of them to be found. Figure 4 shows the introduction page to brief the player about the objectives. The game's objective is hidden and scattered around each of their corresponding map as shown in Figure 5. The player needs to collect all of them.

Figure 4: Introduction Page

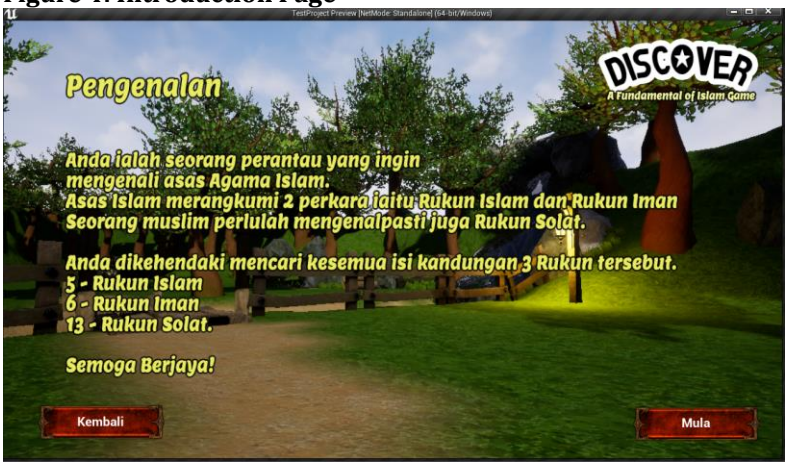
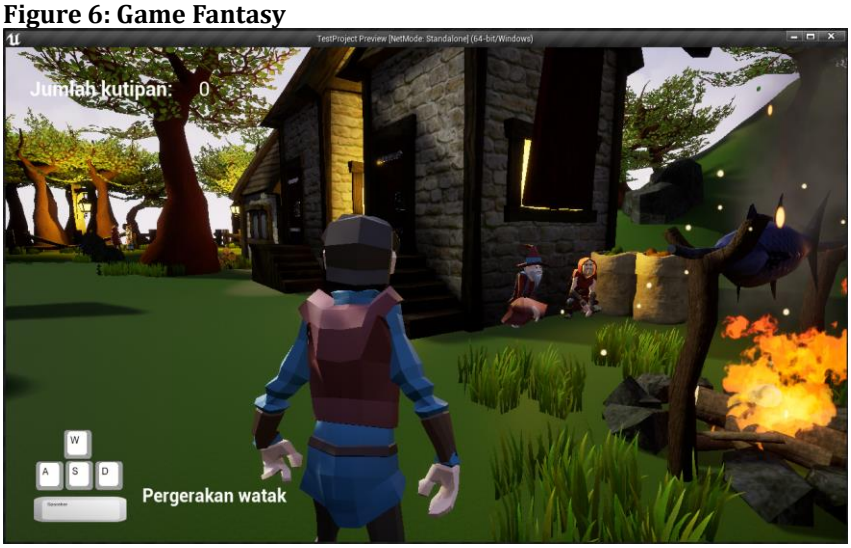


Figure 5: Collectible Objective



In the Discover game, the world environment is a medieval theme where the buildings and characters appear in medieval-like clothing and architecture. This helps the player feel attracted and interested through the game as shown in Figure 6.

Figure 6: Game Fantasy



In this game, the player's objectives are to collect all the contents of the Fundamentals of Islam which were scattered around all the maps. The challenge for the player is the collectibles are hidden and some are placed in higher places. This can be tough for some players due to the game's open-world formula. This game only includes simple player interaction because it is targeted at younger player age which is in primary school. The interaction is the player movements, menu navigation and collecting the objectives as shown in Figure 7.

Figure 7: Player Interactions



In terms of menu navigation, the player can interact with the buttons provided in the menus as shown in Figure 8. This allows players to navigate to other menu pages for example the settings or the extras page.

Figure 8: Menu Navigation



Player feedback was recorded after they finished the game via questionnaire. The feedback was from the selected group of young players. Figure 9 shows the player's opinion regarding the learning content of the game. Majority of the players somewhat agree with the learning content inside the game. From the chart in Figure 10, the game interface opinion has mixed results from the players. However, the majority of them understood the game's Interface. Figure 11 shows the players' opinion on the game interactivity function, most of them are somewhat satisfied with the simple game interactivity.

Figure 9: Opinion on Learning Content Chart

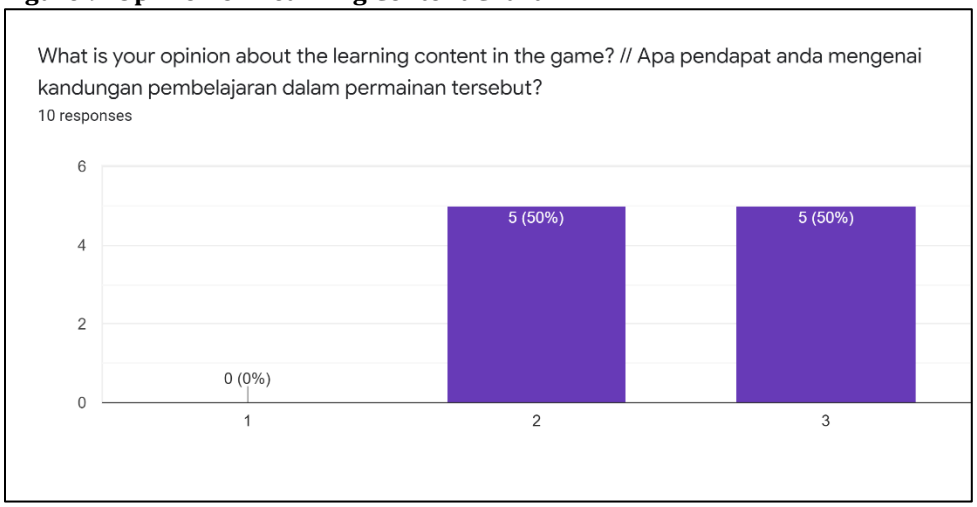


Figure 10: Opinion on Game Interface

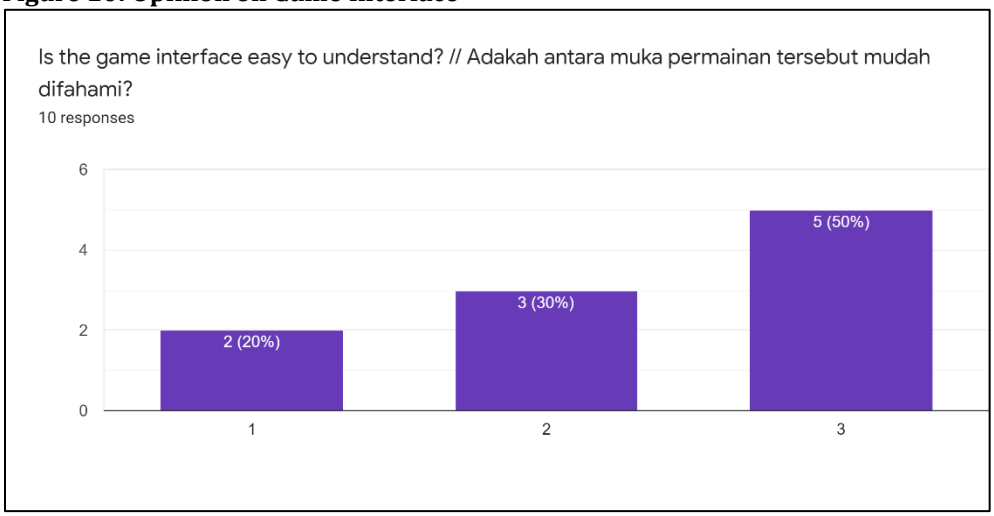
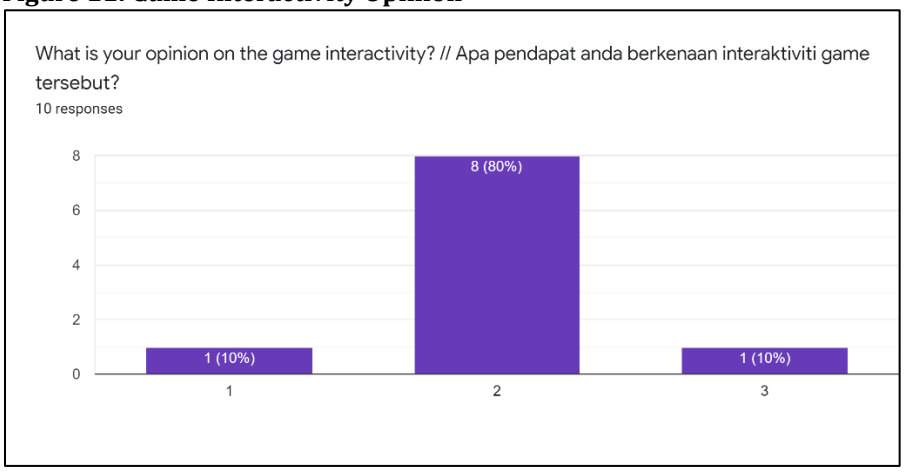


Figure 11: Game Interactivity Opinion



5. Conclusion and Recommendations

It is important to educate and share knowledge with others especially among other Muslims regarding the Fundamentals of Islam alongside its' other important points as the Rukun Islam, Rukun Iman and Rukun Solat are the main pillars of becoming a proper Muslim. However, as technology evolves through the years, new generations often forget the three main points. This is due to the traditional learning method is less interactive and engaging enough for the students to learn with passion. Plus, some students are slow and are left behind among their classmates. By using the Game-Based Learning approach, the said students can catch up and learn in a fun and interactive way. Results that have been achieved from usability testing show that the majority of users are satisfied and enjoy the game. Most importantly, they were able to learn and refresh about the Fundamentals of Islam through the game. This proves that games can be an alternative way to education. Overall, all objectives that have been stated have been successfully achieved.

Recommendations

The Fundamental of Islam game project was designed for students who are learning Pendidikan Islam. To maximize the student's satisfaction when playing the game, changes in this project are important as the game is in the school. In that scenario, to enhance the game, fresh features and elements need to be applied to the project:

Adding a graphic setting into the game

This is to allow the user to select their optimal graphics settings according to the PC specification that they used. If the user has a low-end pc, the user needs to change the graphics settings for the best performance and gaming experience.

Add Language Option

The available language in the game is only in Bahasa Melayu, it might be troublesome for non-Malay speakers to understand the interface and game flow. With other languages included at least English, non-Malay speakers can understand the game better. This addition can increase the chance for the game to be in the public market.

Add More Interactivity

Even with the available interaction that can be made in the game, more interactivity would be a good addition to make the game more fun to play. More interactions mean more player engagements.

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Real-Time Vegetable Identification and Detection Implementing Yolo

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Abstract: Fruits and vegetables are essential sources of nutrition, crucial for preventing chronic diseases like diabetes, cancer, and cardiovascular issues. Maintaining a healthy diet, including the recommended servings of vegetables and fruits, is important for overall well-being. However, many individuals, particularly those unfamiliar with grocery shopping, struggle to distinguish between different types of vegetables due to their similar physical characteristics, leading to confusion and poor dietary choices. Therefore, this project aims to design and develop a real-time vegetable detection and identification system through a mobile application using deep learning and provide healthy recipes based on the identified vegetable. This project used the YOLOv5 object detection algorithm for vegetable detection, utilizing manually captured vegetable images from phones as the dataset. The collected data were organized into a unified folder. The Modified Waterfall model was adopted as the methodology, excluding the maintenance phase, encompassing requirement gathering, design, implementation, and testing. The testing phase demonstrated that the model met all the project's objectives and successfully identified and detected vegetables with a mAP of 95.7%. All functionality test cases and an accuracy test confirmed that the system effectively resolved the problem. The system was developed as a mobile application to enhance accessibility for target users. Future enhancements could include refining the detection model and incorporating a wider range of vegetables or including other ingredient datasets to broaden its scope.

Keywords: *Vegetable detection, Vegetable identification, YOLOv5, Mobile application*

1. Introduction

Fruits and vegetables are a constant and main source of nutrition for humans, animals and all other living creatures (Shri Ramswaroop Memorial University, 2019). It is also beneficial in health, especially for early prevention of several chronic diseases such as diabetes, certain cancers, and cardiovascular diseases. Having a healthy body has become an aspiration for many individuals, whether it entails maintaining good physical health or ensuring stable mental well-being. One of the ways to have a healthy body is people need to keep track of their daily dietary habits. Based on the knowledge that people have learned about the pyramid of food, fruit and vegetables are in the second level. What it means by level two is that people need to eat plenty of it, for example, three servings of vegetables and two servings of fruits in a day.

In today's society, people are increasingly recognizing the importance of consuming vegetables in daily life especially among groups of people either younger or older generations. It is a good thing when people are conscious of the importance of eating vegetables, but they also need to know there are various types of vegetables. Vegetables can be classified into biological groups including leafy green, cruciferous, marrow, root, edible plant stem, and allium. Nevertheless, some individuals still have difficulty distinguishing between certain vegetables because of their similarities in terms of size, shape and color.

An article from Malay Mail, Zi (2020) Reported that TESCO Malaysia has released a useful handbook aimed at husbands who are new to family shopping during the MCO. BBC News posted an article by BBC Monitoring, titled "Coronavirus: Malaysian men in shopping muddle amid lockdown.", in the article the journalist wrote that most husbands were having a hard time having to distinguish between bewildering varieties of vegetables, spices and herbs. The journalist also highlighted a tweet from a Twitter user who expressed he is feeling dizzy trying to differentiate which one is spinach and bok choy. The similarity in colors and shapes among various vegetables frequently leads to confusion among individuals when trying to differentiate between them, particularly for those who rarely cook and are not familiar with grocery shopping. This confusion is caused by

the overlapping appearances of certain vegetables, making it difficult to discern one from another solely based on visual cues. As a result, individuals may struggle to accurately identify vegetables, leading to uncertainty and potential errors in grocery shopping and meal preparation.

According to Morol et al. (2022), the issue some people are encountering is that they sometimes choose ingredients without being familiar with their names or properties. Additionally, some people also may acquire items from the grocery store without knowing how to use them in recipes. When people do not have enough knowledge about the ingredients they buy, it might result in wasted food and poor dietary choices especially if the ingredients are vegetables.

Deep learning techniques play a crucial role in vegetable identification and detection. This may not only help people when buying vegetables but also for production, such as automating processes in agriculture. While these techniques have indeed offered a better result when identifying and detecting a vegetable, it is also important to acknowledge that challenges still exist when using deep learning techniques. Based on Shri Ramswaroop Memorial University et al. (2019), the author wrote in the journal that vegetable detection and classification are a challenging objective in daily production and use, and the complexity increases when other parameters such as shape, size, and color are taken into consideration. As the complexity increases, it may lead to inaccurate results. Given that this challenge persists in the realm of deep learning, there is a need to develop a better solution by employing a more promising algorithm such as YOLO.

The goal of the project is to develop a mobile application that will help the targeted user identify the vegetable in real time. This project is mainly focusing on leafy green vegetables. By using this mobile application, users will have a reliable tool for quickly and accurately identifying leafy green vegetables, it can also enhance their overall grocery shopping experience. The importance of the project lies in the fact that the system can offer to help in identifying vegetables based on real-time and cease the confusion about vegetables. In terms of the usefulness of the proposed system, the system offers real-time vegetable detection and healthy recipes for people who are having a hard time deciding what kind of healthy dish to cook while going on a groceries shopping. Other than the importance and usefulness of the proposed system, it also is a benefit because it may lead to improved health outcomes, and make meal planning and preparation more convenient.

2. Literature Review

Vegetables play an important role in promoting overall health and well-being. For some people that want to lose weight, they need to know the right way of healthy eating plate. Vegetables are a variety of foods that provide nourishment of essential vitamins and minerals to the body. The various categories of vegetables have been mentioned in the previous chapter. The variety of colors from different arrays of vegetables is evidence of the numerous phytochemicals present in vegetables. These phytochemicals have been shown to have a positive impact on human health, including reducing the risk of chronic diseases such as cancer, heart disease, and diabetes (Ülger et al., 2018).

Vegetables are edible when raw or cooked and serve an important role in human nutrition because it has low fat and carbohydrates but is high in vitamins, minerals, and dietary fiber. Nutrition experts advised people to consume more fruit and vegetables and also recommended five or more portions a day (Ebabhi & Adebayo, 2022). Vegetables offer plenty of health benefits and a rich array of essential nutrients that contribute to overall well-being. The nutritional value of vegetables varies across different types, but collectively, they provide essential nutrients such as vitamin A, vitamin C, potassium, folate, and dietary fiber. These nutrients are crucial for maintaining a healthy immune system, promoting proper digestion, and supporting cardiovascular health.

Even though everyone knows that vegetables are important to their body, the challenges and complexities surrounding their proper identification of vegetables are still lacking. The challenges faced in 2020 due to the COVID-19 pandemic prompted the Malaysian government to implement a Movement Control Order (MCO), restricting grocery shopping to only the head of the household. TESCO Malaysia responded with a handbook for husbands navigating this new responsibility. However, reports from Malay Mail and BBC News highlighted the difficulties men faced in distinguishing vegetables during shopping, leading to humorous anecdotes and potential food waste. The issue extends beyond the pandemic, as some people often lack knowledge about the

ingredients they purchase, such as when they do not know how to make recipes using those ingredients (Morol et al., 2022). This problem might result in wasted food and suboptimal dietary choices.

There are various types of vegetables available in this world. As mentioned in the previous chapter, vegetables can be categorized into five different types, which are leafy green, cruciferous, marrow, root, edible plant stem, and allium. This project will be focused on leafy green vegetables that are available in Malaysia. The top five leafy green vegetables commonly recognized by people are Kangkung, Sawi, Bayam, Kailan, and Bok Choy. According to Kumar et al. (2020), Green leafy vegetables occupy an important place among food crops as these provide adequate amounts of vitamins and minerals for humans. They are rich sources of vitamins like beta-carotene, ascorbic acid, riboflavin, folic acid and minerals like calcium, iron, phosphorous, etc. Table 1 lists some of the leafy green vegetables available in Malaysia.

Table 1: Green Leafy Vegetable

Name	Image	Nutritional Value
1. Water Spinach (Kangkung)		• Vitamin A • Vitamin C • Vitamin K • Calcium • Iron
2. Spinach (Bayam)		• Vitamin A • Vitamin C • Calcium • Iron • Folic acid • Protein • Fiber
3. Chinese Broccoli (Kailan)		• Vitamin A • Vitamin C • Vitamin K • Calcium • Folate
4. Chinese Mustard Greens (Sawi)		• Vitamin A • Vitamin C • Calcium • Iron • Fiber

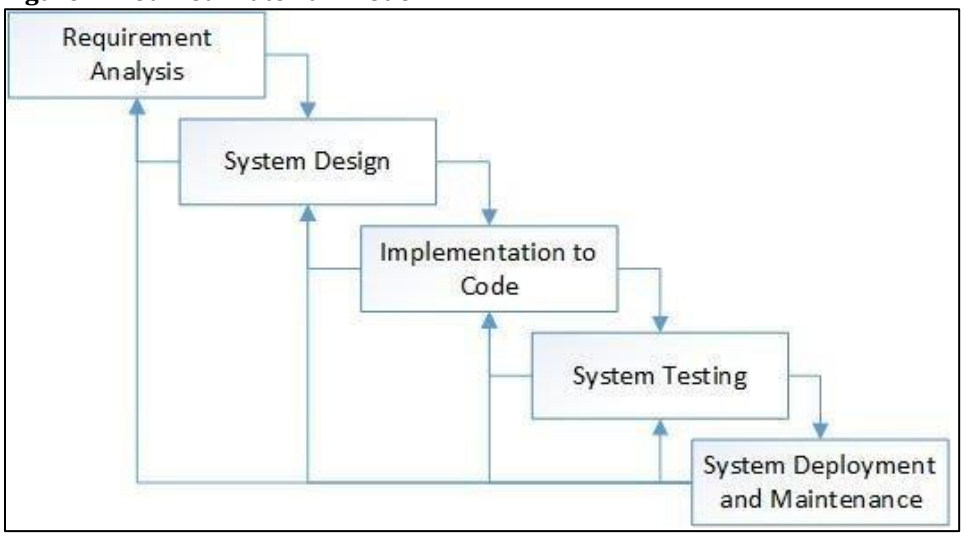
		• Folic acid
5. Chinese Cabbage (Bok Choy)		• Vitamin A • Vitamin C • Vitamin K • Iron • Calcium • Potassium

You Only Look Once (YOLO) is a viral and widely used algorithm, and it is famous for its object detection characteristics. (Jiang et al., 2021). YOLO is a one-stage object detector that uses a specific CNN network and bounding boxes to predict and locate a specific object in each region of feature maps (Sumit et al., 2020). Its ability to process in real-time makes it ideal for applications that need immediate analysis, including security surveillance and autonomous vehicle technology. Additionally, YOLO's integrated method simplifies the classification and localization process by removing the necessity for distinct stages, thereby boosting efficiency. A series of YOLO versions have been released since the first version of YOLO was released and developed in 2016 through a research paper titled "You Only Look Once: Unified, Real-Time Object Detection" by Joseph Redmon, Santosh Divvala, Ross Girshick, and Ali Farhadi. Joseph Redmon and Ali Farhadi only introduced the version of YOLO until YOLOv3. YOLOv4 was introduced by Alexey Bochkovskiy in 2020 and the version has been improvised to address the limitation of the previous version. As of 2023, YOLO has progressed to its seventh version, referred to as YOLOv7. YOLO breaks through the max-speed limit of CNN and realizes an excellent balance of speed and accuracy. YOLOv2 outperforms state-of-the-art methods like Faster R-CNN with ResNet in terms of 76.8 mAP at 67 FPS and 78.6 mAP at 40 FPS. (Du, 2018).

3. Methodology

This project will use the Modified Waterfall Model as the project methodology that will help to provide a structured framework that facilitates the efficient implementation of project tasks. The Modified Waterfall Model is an iterative and phase project management methodology that builds upon the traditional Waterfall Model by introducing elements of flexibility and adaptability. The traditional waterfall model is a sequential approach to project methodology, where a project flows through a series of steps or phases. In contrast, the Modified Waterfall Model allows the phases to overlap and allows changes to be made in the design phase (Nugroho & Izzah, 2017). The phases in the Modified Waterfall Model are similar to the traditional design which includes, requirements gathering, design, implementation, testing, and maintenance. Figure 1 shows the phases of the Modified Waterfall Model.

Figure1: Modified Waterfall Model



(Source: Nugroho & Izzah, 2017)

The main change is that the phases in this advanced model are permitted to overlap. Since the phases are allowed to overlap, a lot of flexibility has been introduced. Several tasks can function concurrently, which ensures that the defects or errors are removed in the development stage which can save the any overhead cost of making changes before implementation. In case there are any errors introduced because of the changes made, rectifying them is also easy. This helps to reduce any oversight issues. Table 2 shows the summary of each phase in the Modified Waterfall Model. In this project, the maintenance phase is not implemented because the mobile application being developed is a proof-of-concept prototype and does not require maintenance.

Table 2: Summary of Modified Waterfall Model

Phase	Activities	Deliverable
Requirement Analysis	Define information about vegetables. Determine the problem statements and objectives Compile the evidence of previous related works Design the appropriate use case diagram for the system Design the expected user interfaces of the mobile application	Background of study Problem statement Objectives Project scope Significance Use Case diagram User Interface
Design	Design the appropriate flowchart of the system Select a suitable technique to execute in the project Plan the project timeline using the Gantt chart	System Flowchart System Algorithm
Implementation	Define the hardware and software requirement Build the mobile application	Implementation of the vegetable identification mobile application
Testing	Execute system testing Review all the functionality to ensure the system works as intended	Test case

4. Results and Discussion

For the implementation of the system, Android Studio was used. Android Studio is a specialized integrated development environment (IDE) for Android that offers coding, testing, and debugging tools, making it crucial for creating and launching Android systems. Below in Figure 2 is a screenshot of the Home Page. When users first open the application, this is the first page they will see, designed to provide immediate and easy access to

the primary functions of the app. The layout is user-friendly, with three prominently displayed buttons: How To Use, Take Photo, and Choose Photo.

Figure 2: Screenshot of Home Page



Once input is received from the user, it will be shown on this page by the system. When the user selects the 'Predict' button, the system will examine the input and forecast the type of vegetable. Figure 3 shows the screenshot of the Predict Page.

Figure 3: Screenshot of Predict Page



When the user clicks on the 'Predict' button, the prediction result of the input will be displayed. If the input is valid and the model correctly predicts the vegetable, a 'Recipe' button will become visible. This prediction is made using the TensorFlow Lite file. The TensorFlow Lite file, named 'best-fp16.tflite', along with 'customlabels.txt', is loaded in the assets directory. Figure 4 shows a screenshot of the Result Page, while Figure 4 shows a code snippet of the model and label being loaded in the code.

Figure Error! No text of specified style in document.**: Screenshot of Result Page**



The recipes shown are determined by the predicted vegetable. For instance, if the predicted outcome is Water Spinach, a compilation of recipes with Water Spinach as an ingredient will be shown. All recipes are sourced from the internet and compiled into a JSON file the code uses to display the relevant recipes. Figure 5 shows the screenshot of the Recipe Page.

Figure 1: **Screenshot of Recipe Page**



Table 3 presents the functionality testing of the system, indicating whether the expected status is a failure or success based on the outputs produced.

Table 3: Results of Functionality Testing

Test Case	Expected Output	Pass/Fail
View Home Page	When the user clicks on the mobile application's icon it will immediately show the home page. On the home page, there are two buttons. Users can choose whether to take a photo which is a real-time image or upload a photo such as a still image from the gallery.	Pass
View Detection Page	The vegetable will be detected on this page.	Pass
View Result Page	After the user clicks on the identify button on the detection page, it will go to this page to show the result of the vegetable detected.	Pass

Table 3: Results of Functionality Testing (Continued)

View Recipe Page	This page will show up when the user decides to scroll down to see the suggested healthy recipe.	Pass

Testing for accuracy in deep learning is an integral part of the model development process, as it conveys how well the model would generalize to new, unseen data. Normally, one would split up the data into a training and a validation set. While training shall be on the former, checking performance should be on the latter. This is where a validation set comes in handy: estimating how well it is going to perform on real-world data by assessing the accuracy.

Figure 6: Result of YOLOv5 model training

```
Validating runs/train/yolov5s_results/weights/best.pt...
Fusing layers...
custom_YOLOv5s summary: 182 layers, 7257306 parameters, 0 gradients
                 Class     Images  Instances          P          R      mAP50   mAP50-95: 100% 12/12 [00:08<00:00,  1.36it/s]
                   all        376        375      0.969      0.948      0.957      0.904
                 Bayam        376         83      0.957      0.813      0.848      0.792
             Bok-Choy         376         64      0.995          1      0.995      0.973
               Kailan         376         67      0.949       0.97      0.962      0.916
             Kangkung         376         92      0.978      0.973      0.986      0.855
                 Sawi         376         69      0.967      0.986      0.993      0.983
Results saved to runs/train/yolov5s_results
CPU times: user 49.2 s, sys: 5.85 s, total: 55.1 s
Wall time: 1h 20min 6s
```

Based on the above Figure 6, shows the result of training a YOLOv5 model for 100 epochs, providing a detailed summary of the training and validation process. Results include detailed class-wise performance metrics that are valuable to understanding how well the model works on each category in the dataset. Key metrics presented are Precision, Recall, mean average precision at an IoU threshold of 0.50, and mean average precision averaged over IoU thresholds from 0.50 to 0.95 (mAP50-95). These metrics are critical in evaluating the accuracy and robustness of the model.

Results showed good performance of the YOLOv5 model in correctly detecting and classifying the different kinds of vegetables in the dataset. The results, along with the weights from this training, were saved in the runs/train/exp directory and could be used for further analysis and execution in live applications.

The most important metric for assessing the performance of object detection models like YOLO is mean average precision since it provides a very fine-grained measure of how well a model can identify and classify different objects within images by combining precision and recall: precision explains how many of the predicted positive cases are positive. In contrast, recall defines the capability of identifying all the positive cases. The mean average precision (mAP) integrates both these factors to give a comprehensive appraisal of the model's performance.

To calculate the map, start by gathering predicted bounding boxes with confidence scores and ground truth boxes for each class. Sort the predictions in descending order by confidence, then determine true positives (TP) and false positives (FP) using Intersection over Union (IoU), considering predictions with IoU above a threshold of 0.5 as TP. The formula for calculating precision and recall is shown in Equation 1 and Equation 2.

$$Precision = \frac{TP}{TP+FP} \quad (1)$$

$$Recall = \frac{TP}{TP+FN} \quad (2)$$

After getting the precision and the recall values at various confidence thresholds, the next step is to calculate the average precision (AP) for each class. The formula is based on the Equation 5.3.

$$AP = \sum_n (Recall_n - Recall_{n-1}).Precision_n \quad (3)$$

Finally, calculate mAP by averaging the AP values across all classes using Equation 5.4, where N is the number of classes, and AP_iIs the average precision for class? i.

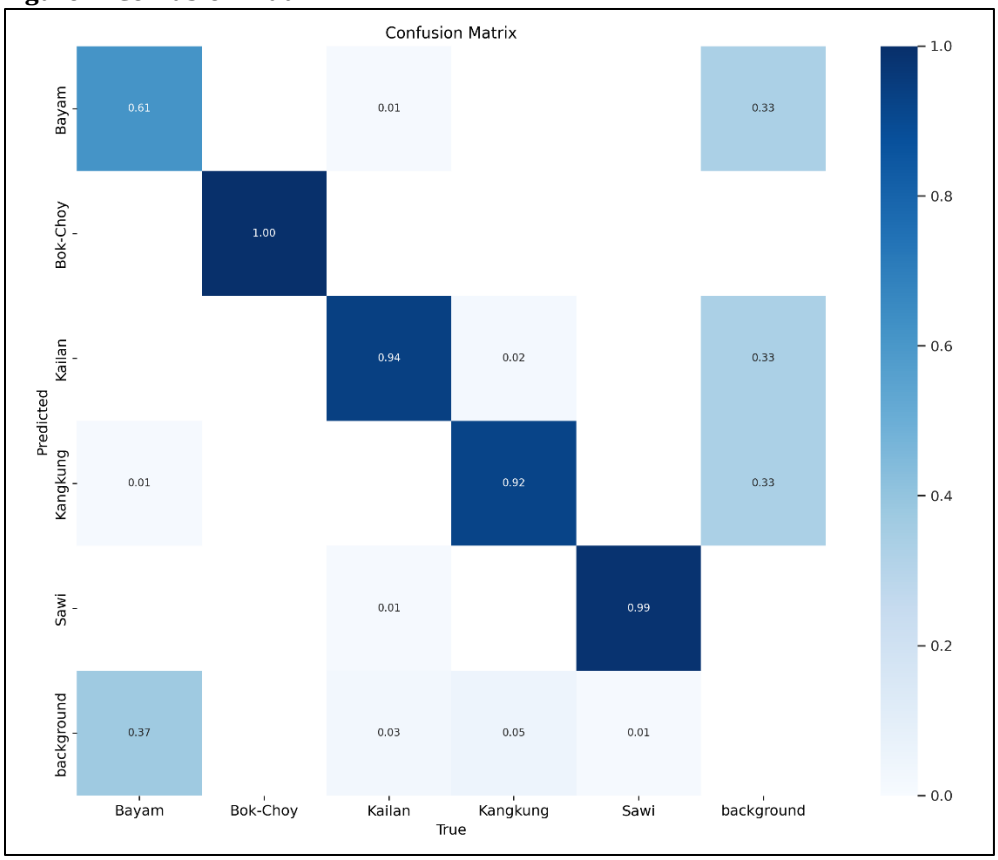
$$mAP = \frac{1}{N} \sum_{i=1}^{N} AP_i \quad (4)$$

Table 4 shows the result of the accuracy testing of the model. The following table shows some key performance metrics describing the performance of the YOLOv5 classification model on a given dataset, showing very strong performance in almost all measures. Given the precision is 96.9%, this means that the positive predictions of the model are highly correct; with a recall of 94.8%, it is also good at identifying nearly all the actual positive instances. A balanced measure between the two measures mentioned above is the F1-Score, which is at 95.8%, thus confirming the model for reliability and robustness in practical applications. Additionally, the mAP of 95.7% is indicative of very high accuracy, both across classes and recall levels, hence further verifying overall performance. These results collectively suggest that the model is well-optimized and effective for the given dataset, making it suitable for tasks requiring precise and comprehensive classification.

Table 4: The result of the accuracy testing

Metric	Result
Precision	96.9%
Recall	94.8%
F1-Score	95.8%
Mean Average Precision	95.7%

Figure 7: Confusion matrix



According to Figure 7, the confusion matrix represents the performance of the project YOLOv5 classification model implemented on a custom dataset containing six classes: Bayam, Bok-Choy, Kailan, Kangkung, Sawi, and Background. Each cell in the matrix refers to the proportion of correct actual class instances (True) predicted as a specific class (Predicted). Cells in the main diagonal indicate correct classifications, whereas the cells outside of the main diagonal represent misclassifications.

The model shows perfect classification for Bok-Choy and near-perfect classification for Sawi. It also performs well for Kangkung and Kailan, with high accuracy rates. However, there are notable misclassifications for Bayam, with 33% being misclassified as Background and 1% as Bok-Choy. Similarly, 37% of Background instances were misclassified as Bayam. Other minor misclassifications include some confusion between Kailan and Kangkung. These results suggest that while the model is effective for certain classes, improvements are needed for Bayam and Background, possibly through increased training data diversity and enhanced feature extraction. Overall, the confusion matrix highlights the model's strengths and weaknesses, guiding future improvements to improve its reliability.

5. Conclusion and Recommendations

The developed mobile application utilizing the YOLO algorithm effectively identifies and recognizes vegetable types in real-time input with high performance. It accurately displays the five vegetable types: Bayam, Bok Choy, Kailan, Kangkung, and Sawi simultaneously, achieving a high mean average precision (mAP) of 95.7%. This application has met the three objectives outlined in Chapter 1 by leveraging the YOLO algorithm. The dataset used for this project was obtained by taking a picture of the vegetables using a smartphone camera. The development of the YOLOv5 model was conducted on Google Colab while the mobile application was developed by using Android Studio.

Recommendations

Based on the functionality and limitations of the mobile application, several ideas and potential enhancements can be proposed to expand the utility of the project in the future. The recommendations for further enhancements include:

- Collect more vegetable images to increase the dataset size for the training process to improve the performance of the model.
- Expand the capabilities of the mobile application to recognize a wider variety of vegetables beyond the current five types.
- Explore and compare different model architectures to potentially enhance performance and gain insights into the most effective models for the dataset.

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Community Leaders' Financial Literacy Towards Sustainable Community in Malaysia

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Abstract: In the fast-paced world of the 21st century economic landscapes evolve rapidly and financial literacy has become vital for leaders across all sectors. It equips them to navigate complex financial environments, make informed decisions and adapt to economic shifts. In Malaysia, the government has formed the Community Leaders under the rural development program for village development. As a result of that, the Ministry of Rural and Regional Development has allocated resources to assist community programs. Therefore, these community leaders should be equipped with financial literacy to ensure that the financial resources are managed efficiently and effectively. Financial literacy is one of the most important requisites to financial well-being. It is also described as the measurement of how well an individual can understand and use information related to finance to make decisions. The objective of this study is to examine the needs of the Financial Literacy Model for community leaders. Further, it will also determine the components to be included in developing the Financial Literacy Model to enhance the public financial management system among community leaders. A mixed method research design, which combined qualitative (focused group interviews on selected community leaders) and quantitative (questionnaires) data will be employed in this research. Data analysis in qualitative research focuses on the process of systematically searching and arranging the interview transcripts. Interview sessions are crucial for gaining a thorough understanding of financial knowledge and skills among leaders. The research is anticipated to assist policymakers, community leaders and the government in improving sustainable community development.

Keywords: *Community Leaders, Financial Literacy, Sustainable Community*

1. Introduction

Community leaders play a crucial role in Malaysia's social and cultural fabric, especially in a diverse country with multiple ethnic, religious and linguistic groups. The Ministry of Rural and Regional Development (KPLB) has developed and launched the Rural Development Policy (DPLB) 2030 with 10 thrust objectives, 33 policy statements and 88 strategies that will benefit 7.8 million rural residents, including 96,752 persons who have been appointed as Village Community Leaders. In Malaysia, the formation of Community Leaders under the rural development program is a key strategy in ensuring that local voices are represented and that development projects are more effectively managed. These leaders act as a bridge between the government and the village communities, helping to implement policies and projects and also advocating for the needs of their people. This decentralized approach to development allows for more sustainable growth enhances community ownership fosters long-term political and economic stability in rural areas.

In line with this approach, the Ministry of Rural Development (KPLB) receives an allocation of RM10.93 billion in Budget 2023. Its minister, Datuk Seri Mahdzir Khalid said, the increase in allocations by four percent or almost RM424.9 million compared to 2022 shows the government's commitment to implementing the agenda of people's well-being in rural areas. The grants are for programs that generate income and promote economic activities in villages as well as the happiness and well-being of villages. This participatory approach to development planning at a village level seems to provide a new tool to encourage and empower community leaders in the planning and management of the village economic activities and projects at the grassroots level to be carried out towards achieving sustainable community economic well-being.

Based on the OECD International Survey of adult financial literacy in 2020, Malaysia's financial literacy scored 59.7%. Based on this survey, although Malaysians are showing healthy money management for instance budgeting and living within means, we are still lagging in terms of product knowledge, financial numeracy and

planning for long-term goals. In Malaysia, there is no specific survey conducted on the financial literacy of leaders. This is very crucial since good financial literacy empowers leaders to make informed decisions. Therefore, financial literacy is a critical leadership competency that drives informed decision-making, effective stakeholder communication, and ethical governance.

A robust system of public financial management is needed to successfully achieve goals through policy implementation and reach desired results. If a leader lacks financial expertise, it can lead to making bad financial choices, which could result in a significant decrease in economic growth. Hence, to boost economic development in rural areas, we suggested a financial literacy model as a means to improve financial understanding and planning for community leaders.

Financial literacy has become one of the significant elements in the twenty-first century. Fernando (2020) defines financial literacy as an understanding and application of a variety of financial abilities, such as personal financial management, budgeting, and investing. The absence of these abilities is called financial illiteracy. Financial literacy is also described as the measurement of how well an individual can understand and use information related to finance to make decisions.

However, financial literacy is not widely practiced by community leaders for village economic performance in Malaysia (Rashid et al., 2019). Financial literacy is considered a critical factor in an individual's or leader's capacity to effectively handle finances (Ali et al., 2013; Rashid et al., 2019). A good understanding of finances can assist the leader in properly using financial resources, which will boost the government's potential to provide more services to the community. As a result, a holistic financial literacy model is likely to be one of the solutions for strategizing and implementing the village's development transformation strategy, as there is no precise model for how financial literacy might contribute to long-term community economic wellbeing.

Research Questions

- Why Financial Literacy Model is important for community leaders in public finance?
- What are the components to be included in the development of the Financial Literacy Model for community leaders in Malaysia?

Research Objectives

- To examine the needs of the Financial Literacy Model for community leaders.
- To determine the components to be included in the development of the Financial Literacy Model for enhancing the public financial management system among community leaders.

2. Literature Review

Sustainable Community Economic Well Being

Rural areas and their populations play a crucial role in maintaining a nation's political and economic security. In nations like Malaysia that have growing economies, the rural populace makes up most of the people (Rashid et al., 2019). The Ministry of Rural and Regional Development and other government agencies have increased funding for projects in villages, especially for economic activities (Ministry of Rural Development, 2019). The government's initiatives in village-level development planning empower and motivate villagers to plan and execute projects based on their requirements and goals. Therefore, the government had formed the Community Leaders under the rural development program.

Community Leaders appointed by the State Government consisted of the Chairman, Secretary and committee leaders who work voluntarily for the village development. The selection and exchange of Community Leaders would remain the responsibility of state governments, while the ministry would monitor management procedures and regulations. Community Leaders as agents of development at the grassroots level, act as liaisons between the village community and government agencies. Community Leader's main functions (Ministry of Rural Development, 2019); (1) to strategize and implement a development transformation plan for the village with the involvement of the local community, (2) to implement a comprehensive human capital transformation to produce a united and progressive community as well as to support government's policies. The village's development, poverty reduction, and economic growth require community leaders who are committed,

dedicated, knowledgeable, skillful, and optimistic (Rashid et al., 2019). Coordinating community development initiatives that support sustainable economic well-being is vital and offers significant benefits.

Definition and Characteristics of Financial Literacy

Financial literacy is crucial for promoting the long-term growth of both individuals and society. According to Bryant (2013), individuals with strong financial skills are better equipped to make informed decisions, leading to a more stable financial system. Furthermore, Rahmandoust et al. (2011) emphasize the importance of financial literacy for leaders, noting that financially literate leaders are better positioned to make sustainable decisions that can benefit society in the long run.

Improving financial literacy can lead to more prudent financial behaviors, increased savings, and reduced debt levels, ultimately contributing to a more resilient economy. Empowering individuals with financial knowledge encourages responsibility and fosters sustainable economic practices that align with long-term societal goals. Financial literacy is a broad term that refers to the capacity to use knowledge and skills to properly manage financial resources (Hastings, Madrian & Skimmyhorn, 2012). Financial literacy is defined by the Organization for Economic Cooperation and Development's International Network on Financial Education (OECD/INFE) as the combination of awareness, knowledge, skill, attitude, and behavior required to make sound financial decisions and ultimately achieve individual financial well-being (OECD/INFE, 2011; OECD, 2013).

According to Delavende, Rohwedder and Willis (2008), the dimension of financial literacy is a type of human capital that influences the ability to efficiently manage revenue, expenses, and savings. Meanwhile, Orton (2007) defined financial literacy as three dimensions: (i) financial knowledge and understanding, (ii) financial skills and competence, and (iii) financial accountability. Financial literacy has been defined variously in several research, with different methods and frameworks used to study it.

Holistic Financial Literacy Model and Community Leaders in Public Finance

Financial literacy can aid with complexity and have a favorable effect on economic capability (Taft, Hosein & Mehrizi, 2013). According to Houston (2010), financial literacy has an additional application dimension, which means that an individual must be able and confident in using his or her financial knowledge to make wise financial decisions (Ali, Rahman & Bakar, 2013). Financial literacy is an important factor in understanding finances and making sound financial decisions. It has an impact on the quality of one's financial life as well as the ability to make sound decisions.

Notably, those with high financial literacy are more likely to engage in financial planning (Tan, Hoe & Hung, 2011). As a result, improving financial literacy in public finance is critical for improving community economic well-being through better financial decision-making by community leaders. Having adequate financial knowledge and abilities resulted in suitable and informed judgments (Hilgert, Hogarth & Beverley, 2003), which are critical not only for individuals but also for community management. As a result, increased dependence on community leaders' financial literacy in public finance can free up resources, allowing the Ministry of Rural Growth (KPLB) to provide more financial assistance to achieve long-term economic growth in village areas.

As a result, financial literacy is crucial since it affects both individuals and society. This is because financial literacy has an impact on everything from day-to-day to long-term financial decisions, with far-reaching consequences for individuals and society alike. Low levels of financial literacy across countries are linked to inefficient spending, poor financial planning, and expensive borrowing and debt management (Lusardi et al, 2017). Furthermore, it has been noted that financial literacy can improve people's skills and ability to make better-informed decisions, resulting in beneficial financial behaviors. As a result, it may be stated that increasing financial literacy promotes prudent economic behavior.

Though many community leaders possess good skills and knowledge in their respective fields, a lack of financial literacy can pose significant challenges. Thus, current education and skill development in financial literacy must be a priority for someone aspiring to lead successfully in the current competitive business landscape. Hence, financial literacy is vital for community leaders since they carry the accountability of making financial decisions that meaningfully affect the entire public finances. Community leaders must have a comprehensive knowledge and understanding of financial literacy to direct the community strategically, set realistic visions and goals,

allocate sufficient resources efficiently and make sound decisions in tandem with the financial well-being and long-term objectives.

3. Research Methodology

This study focuses on selected community leaders from Melaka's rural districts. The rationale for selecting rural areas as a sample location in this study was that the Rural Development Ministry approved an RM1.5 million grant to the Community Management Councils to allow community programs at the grassroots level to be carried out in their areas. Community leaders in local communities frequently organize welfare programs, such as food distributions, educational support, and healthcare initiatives. They also mobilize resources during times of need, like natural disasters, ensuring that help reaches the most vulnerable populations quickly and efficiently. As a result, community leaders should be financially literate because they have a significant influence over their communities' well-being. Financial literacy will provide them with the knowledge and skills necessary to manage, guide, and support community members as well as the development of local initiatives.
This study will use an exploratory sequential mixed-method research design with both qualitative (interviews) and quantitative (questionnaires) data. The data collection method then continues with targeted group interviews with selected community leaders, including MPKK leaders and Community Representatives in rural regions, to explore related concerns.

The interviews will be recorded and transcribed, with theme analysis employed to compare current practices with expected outcomes. This analysis will help identify gaps and opportunities in the financial literacy model. Upon completing this phase, the research will move forward to data analysis, where the collected data will be evaluated using Structural Equation Modelling (SEM) with AMOS.

The results from this analysis will be examined to determine their broader implications and suggestions for improvement will be outlined. Finally, the study will conclude with recommendations for improving the financial literacy model based on the research findings. These proposals are designed to give useful insights to policymakers, government officials, and community leaders interested in achieving financial sustainability.

4. Contribution and Conclusion

This paper will contribute theoretical and practical contributions to the topic of financial literacy in Malaysia. Firstly, the community leaders' financial literacy model will improve the public financial management system among them. Community leaders lacking adequate financial literacy skills and knowledge may face significant difficulties and challenges in efficiently handling the public finances. It will result in poor financial decision-making, poor resource distribution, high financial risk and complications with stakeholders, thus affecting the stability and reputation of the public financial management system. Therefore, by applying sound financial practices, they can improve governance, empower communities, and foster trust in public institutions, leading to better outcomes for all.

Secondly, the proposed financial literacy model will assist the government in implementing proper initiatives aimed at fostering growth through targeted financial policies and schemes. By enhancing the financial knowledge and skills of community leaders, this model allows the government to tailor its programs more effectively, ensuring that financial aid and policies directly support sustainable economic development and poverty alleviation.

Conclusion

A Financial Literacy Model is crucial for community leaders in public finance due to the significant role they play in managing public resources and making financial decisions that directly impact their communities. Strong financial literacy will assist the leader in establishing a vision, communicating effectively, making educated judgments, and increasing their reliability.

Therefore, it is encouraging all community leaders to invest in enhancing their financial literacy skills and knowledge in achieving sustainable economic development in society. This is because community leaders often serve as a vital link between the government and the public.

Furthermore, financial literacy promotes sustainability by equipping leaders with the knowledge to plan long-term budgets, avoid debt traps and ensure that community projects are financially viable in the long run. It also enables leaders to drive economic growth by making informed financial decisions that boost local economies, support entrepreneurship and encourage investments in community development. Thus, community leaders with financial literacy will contribute significantly to building sustainable communities by promoting responsible resource management, economic resilience and long-term planning.

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Laws Related to Leaving Islam in Malaysia: Issues and Challenges in Legislation and Enforcement

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Abstract: Schedule Nine of the Federal Constitution allows state governments to enact laws related to Islam within the scope of the schedule, including those relating to renouncing Islam and associated matters. Currently, states like Negeri Sembilan and Sarawak have enacted laws or procedures governing the process of leaving Islam. Through doctrinal study and existing legal texts, three main approaches are identified: criminalizing apostasy under Syariah law, addressing it through a *mal* application, and combining punitive and rehabilitative elements, such as *istitabah* (repentance) through the criminal process. Agencies directly involved include the State Religious Department, the State Religious Council, the Mufti's Office, and the Syariah Court. However, some applicants file Civil court cases to avoid the lengthy Syariah Court process. Furthermore, there are almost no reported cases of Syariah prosecution resulting from applications to leave Islam, which may relate to society's varying views of apostasy, whether it is a criminal act (*riddah*) or a matter of religious freedom.

Keywords: *Application to Leave Islam, istitabah, Syariah Court, Article 121(1), riddah.*

1. Introduction

A 2008 study by SUHAKAM found that there is no specific, universally agreed-upon law among states in Malaysia regarding applications to leave Islam. According to Article 76(1)(b) of the Federal Constitution, the Federal Government can enact laws on matters in the State List (Ninth Schedule) for uniformity across states. The enforcement of such laws, as noted by Shiddeq (2015), would enable cases related to applications to leave Islam to be handled under a clear and uniform procedure.

Efforts and ideas to create such laws have existed since the late 1990s, but as of today, the draft of the Faith Rehabilitation Bill or *Rang Undang-Undang Pemulihan Akidah* at the federal level remains under review (Buang, 2007). The challenge in enacting such laws lies in the sensitivity of the issue among both Muslims and non-Muslims. Human rights advocates believe that such laws could infringe on the right to religious freedom in Malaysia and elevate the status of Shariah Courts to be on par with Civil Courts in deciding constitutional matters (Faruqi, 2008).

At the state level, the process of legislating faith rehabilitation laws has also faced resistance. In Selangor, for example, the 2000 Faith Rehabilitation Bill was opposed by representatives from the Gerakan and Malaysian Chinese Association (MCA) parties. Similarly, the Perlis Faith Protection Enactment faced opposition from three assemblymen from the *Parti Islam Se Malaysia* (PAS), who argued that the enactment did not fulfill the requirements of Shariah law, calling it merely "lip service" (Buang, 2007). This highlights the difficulty of drafting a specific and uniform law on applications to leave Islam.

Although there is no specific, uniform law to address cases of leaving Islam, several states have provisions in their various Shariah enactments. This article will analyze existing laws and provide recommendations for improving these laws or procedures to address this issue more holistically.

2. A Glimpse into Cases and Laws Regarding Applications to Leave Islam in Malaysia

Legal issues related to applications to leave Islam have developed alongside court cases dealing with the matter, particularly in civil courts. Beginning with the case of *Kementerian Hal Ehwal Dalam Negeri v. Jamaluddin bin Othman* [1989] 1 MLJ 418, leaving Islam was seen as a constitutional freedom. This was followed by cases like *Roslizah Ibrahim v. Kerajaan Negeri Selangor & Others* [2021] 2 MLRA 70, which ruled that leaving Islam falls under the jurisdiction of the Shariah Court if the applicant is legally considered a Muslim. In *Roslizah*, the

Federal Court allowed the appellant's declaration of being a non-Muslim because no evidence or record was proving the appellant was a Muslim.

The legal discussion around leaving Islam began after the Federal Constitution's Article 121 was amended with the inclusion of clause (1A) on June 10, 1988 (Act A704). The purpose of this amendment was to ensure that matters under the Shariah Court's jurisdiction could not be decided by the Civil Court, as affirmed in *Mohamed Habibullah bin Mahmood v. Faridah binti Dato Talib* [1992] 2 MLJ 793. This case determined that the Married Women Act 1957 did not apply to Muslims. Similarly, in *Ng Wan Chan v. MAIWP & Others* [1991] 3 MLJ 487, the court ruled that the Civil Court had no jurisdiction over matters under the Shariah Court's purview. This approach was reinforced in *Abdul Shaik bin Md Ibrahim & Anor v. Hussein bin Ibrahim & Ors* (1999) 5 MLJ 618.

Despite this, the Federal Court's decision in *Indira Gandhi a/p Mutho v. Director of the Islamic Religious Department of Perak & Others* [2018] 1 must also be considered. The court clarified that the authority to review actions by public authorities and interpret state or federal laws, including the Constitution, lies with the Civil Court, and this power cannot be transferred to the Shariah Court under Article 121(1A). This ruling shows a shift in the interpretation of Article 121(1A) compared to earlier cases, where the Civil Court's jurisdiction was limited in matters under Shariah Court authority, as in *Subashini a/p Rajasingam v. Saravanan a/l Thangathoray and Other Appeals* [2008] 2 MLJ 147.

In the Syariah Court, developments occurred following the case of *Majlis Agama Islam Pulau Pinang v. Siti Fatimah Tan binti Abdullah* [1404H] JH 27/2, which was decided by the Syariah High Court of Penang. In this case, the Syariah Court appeared to show a tendency to approve the application when it was found that the process of conversion to Islam did not meet the legal requirements that had been established. This is particularly interesting, as the decision demonstrates that the Syariah Court can approve such an application based on the premise that the applicant is not, in fact, a Muslim.

3. Legislative Considerations in Drafting Laws Related to Applications to Leave

Based on the research conducted, several important aspects need to be considered before drafting any law or regulation to handle cases related to applications to leave Islam in Malaysia. This is crucial because it involves various issues, particularly regarding *aqidah* (faith) within the framework of Islamic law.

Islamic Law (Shariah): The debate surrounding leaving Islam as a right to religious freedom is not only viewed through the lens of international law but also from the perspective of religious freedom within Islam itself. Religious freedom in Islam is often referred to in Surah Al-Baqarah, verse 256, and Surah Al-Kafirun, verse 6. The meaning of these verses has been used by scholars who argue that leaving Islam is part of religious freedom. This argument is further supported by the fact that there is no direct Quranic verse prescribing punishment in this world for those who leave Islam (apostasy). The Quran mentions severe reprimands and promises of harsh punishment from Allah for apostates in the afterlife, but no worldly penalties are explicitly detailed. Similarly, in the Quran, there are condemnations of those who engage in *riba* (usury), but no worldly punishment is prescribed for those who practice usury. Faruqi (2008) interpreted the Malaysian government's efforts to criminalize the right to religious freedom as *Talibanism* because these actions lack justification in Shariah law.

However, this literal interpretation is not supported by Bari (2008), Mohd Kamal and Aziz (2009), and Yaakob (2012). They argue that verse 256 of Surah Al-Baqarah refers to non-Muslims, and specifically to the method of preaching (dakwah) to them. It does not allow Muslims to leave Islam. This interpretation is strengthened by the *asbabun nuzul* (context of revelation) of the verse, which refers to non-Muslims being forced to convert to Islam, rather than addressing apostasy among Muslims.

For instance, in the *Tafsir Al-Misbah* by Shihab (2010), the phrase "there is no compulsion in religion" is explained as a prohibition against forcing non-Muslims to embrace Islam. For those who have already embraced Islam, they are bound by Islamic law and must follow it. Similarly, in *Tafsir Al-Aisar* by Abu Bakar Jabir Al Jazairi, the verse's context relates to the Ansar tribe in Madinah, who were forcing their Christian and Jewish children to convert to Islam. Al Jazairi also explains that this verse applies only to *ahlul kitab* (People of the Book), not

to those with no religious affiliation (pagans). Al-Qarni (2008) in *Tafsir Muyassar* similarly states that the verse prohibits coercion in converting non-Muslims to Islam but does not permit Muslims to leave the faith.

Based on these interpretations, it is clear that the verse refers to the methodology of preaching Islam to non-Muslims, not as a justification for Muslims to leave the faith. Therefore, it should not be interpreted broadly to mean that apostasy is part of the religious freedom guaranteed by Islam. A SUHAKAM report by Najibah Mohd Zain on apostasy and human rights concluded that there is no Quranic verse prescribing punishment for apostasy in this world, though many verses condemn the act.

Muda (2009) categorizes apostasy into two types: *riddah mujarradah* (simple apostasy) and *riddah mughallazah* (serious apostasy), based on the views of Ibn Taymiyyah. This distinction is highly significant because the *istitabah* process is only applicable to individuals who have committed *riddah mujarradah* (simple apostasy) according to Islamic law. According to Muda (2009), *riddah mujarradah* refers to the act of leaving Islam without engaging in activities that threaten Islam or the Muslim community, while *riddah mughallazah* (serious apostasy) refers to apostasy that poses a threat to Islam and Muslims. This includes the likelihood that the apostate may engage in activities or proselytism that could harm Islam and its followers. The study further found that, according to Islamic law, Muslims are not permitted to leave Islam, even though scholars (*fuqaha*) differ in their opinions regarding worldly punishment for apostasy. In this situation, it is up to the government to enact laws to address this issue. However, as of now, only Negeri Sembilan is seen as the state with the most comprehensive laws regarding the procedures for leaving Islam in Malaysia. Therefore, the report also concludes that this legal conflict will continue if other states do not enact specific laws regarding the administration of apostasy.

Human Rights Perspective: Faruqi (2008) notes that Article 11 of the Federal Constitution guarantees three elements of religious freedom: the right to profess a religion, the right to practice it, and the right to propagate it. However, the right to practice and propagate religion is subject to laws on public order, health, and morality, as well as state laws controlling the propagation of non-Islamic religions among Muslims.

Tapah (2005) categorizes restrictions on religious freedom in Malaysia into two types: Federal law restrictions, such as the Penal Code, and state law restrictions, such as controls on the propagation of non-Islamic religions to Muslims and Shariah criminal laws on apostasy. He concludes that religious freedom in Malaysia is not absolute, particularly in the practice and propagation of religion.

While the right to profess religion is absolute, as it is considered a private matter between the individual and God, this right is also protected under international treaties like the Universal Declaration of Human Rights (UDHR) 1948 and the International Covenant on Civil and Political Rights (ICCPR) 1966. These treaties consider religious freedom a fundamental right, though states can adapt these principles according to their national ideologies and needs.

Based on Article 18 of the UDHR 1948, Bon (2005) and Choon (1991) stated that religious freedom has been regarded by the international community as a jus cogens right, and thus should be adhered to by all member states of the United Nations (UN). Although, according to the principles of International Law, these treaties can be modified in the Constitution of UN member states according to the needs and ideologies of the respective countries, Bon (2005) argued that such modifications must be kept to a minimum and must not infringe upon a person's fundamental rights necessary for living a complete life. The UDHR 1948 and ICCPR 1966 established the basic rights required by humans to sustain their lives, including religious freedom, which UN member states are expected to follow.

For this reason, scholars who hold this viewpoint believe that the right to leave Islam is an absolute right that cannot be restricted by any law or executive policy, even though the Federal Constitution does not explicitly provide the right to leave Islam. Any law or government policy that hinders or controls the right to leave Islam is considered ultra vires. Among the government actions seen as violating these treaties is enacting laws to control religion for Muslims and making the right to choose a religion among Muslims a criminal offense.

However, Malaysia is not a signatory to either of these treaties and according to Bari (2008), Malaysia is not obligated to adopt the UDHR. Additionally, it should be understood that these international treaties are generally not binding unless incorporated into local statutes (*AirAsia Berhad v Rafizah Shima bt Mohamed Aris* [2014] MLJU 606). Nevertheless, the Human Rights Commission Act 1999, through section 4(4), allows SUHAKAM to refer to the UDHR 1948 as long as it is consistent with the Federal Constitution. Therefore, the framework for human rights provided in the Federal Constitution serves as the appropriate reference in determining the limitations and scope of fundamental freedoms in Malaysia.

Types of Laws Regarding Applications to Leave Islam in Malaysia

According to Pg Musa (2015), there are three main categories of laws regarding applications to leave Islam in Malaysia:

First Category - Provisions that Classify Leaving Islam as a Syariah Criminal Offense: These offenses include attempted apostasy, insulting religion, apostasy intended to mock the actions of religious authorities, or committing apostate acts or uttering apostate statements. Such acts can be prosecuted in the Syariah Court. The punishment provided includes imprisonment, a fine, or both. However, apostasy in connection with a desire to dissolve a marriage is punishable by mandatory imprisonment for a period not exceeding three years.

Declaring apostasy is also considered an offense of insulting Islam and is provided for only in Sabah under Section 55(2) EKJS 1995 and in Malacca under Section 63(2) of the Malacca Syariah Criminal Offenses Enactment 1991. Section 55 of EKJS 1995 provides, among other things:

(1) Anyone who, by verbal or written means, actual conduct, or any means that leads to insulting or is deemed to insult or attempts to insult the religion of Islam, the course of any authoritative school, religious officials, religious teachers, and Imams appointed according to law, or any fatwa issued by the Majlis or Mufti under this Enactment or other laws, is guilty of an offense and, upon conviction, may be fined not more than RM2,000 or imprisoned for a period not exceeding one year, or both.

(2) A Muslim who claims to be a non-Muslim is guilty of an offense under subsection (1) and, upon conviction, is subject to the same punishment.

Or the offense of insulting Islam, as provided under Section 55(2) EKJS 1995, any act that makes a statement declaring someone is not a Muslim is considered an offense. If convicted, the person may be punished with a fine not exceeding RM2,000 imprisonment not exceeding one year, or both. Meanwhile, Section 63(2) of the Malacca Syariah Criminal Offenses Enactment provides for a fine not exceeding RM5,000 or imprisonment not exceeding three years, or both. Due to the difference in penalties, cases of insulting Islam in Sabah will be heard in the Syariah Lower Court, while in Malacca they will be heard in the Syariah High Court, even though the provisions are the same**.**

Second Category - This Application is Categorized as a Mal Application Case: The Syariah High Court is given jurisdiction, either explicitly or implicitly, to hear and decide cases involving applications to leave Islam, under the premise of confirming the religious status of individuals who are still alive. States that have this provision include Selangor, Perak, Penang, Kedah, and Johor. However, in states without this explicit authority, cases related to applications to leave Islam or the confirmation of religious status are heard in the Syariah High Court based on implied jurisdiction. States with such provisions include Sabah and the Federal Territory. Additionally, some states have regulations for handling these cases, such as Sarawak with the Syariah Court Property Law Regulations (Declaration of Religious Status) 2018. In Negeri Sembilan, Section 119 of the Islamic Law Administration Enactment 2003 provides for an application process to negotiate religious beliefs. In both Negeri Sembilan and Sarawak, these provisions include rehabilitation elements such as *istibah* (repentance) and religious counseling.

Although there is no specific law or method, Selangor has implemented an *istibah* model that incorporates elements of recovery, treatment, and post-*istibah* support. The treatment component includes both physical medical care and Islamic treatment. Physical treatment is provided by public medical officers and psychologists, while Islamic treatment is conducted using rituals and methods permitted under Islam. Notably, the module

also assists applicants who fall under the *asnaf* (eligible recipients of Zakat) category, with support from the Selangor Zakat Centre. The involvement of various agencies has made this module the best in Malaysia and it should serve as a guide for other states (Md Nasir and Ismail, 2016).

Third Category - Provisions that Combine Both Punitive and Rehabilitative Elements: These provisions are only available in Sabah and Malacca under Syariah criminal law. The process begins with prosecution and is followed by the *istibah* process if the individual is convicted of attempting to leave Islam. Section 63 of Sabah Shariah Offences Enactment 1995 provides the following:

(1) When a Muslim, either by act or word, admits to leaving the religion of Islam or declares themselves a non-Muslim, the Court, if satisfied that the person has attempted to change their faith or belief in Islam, either by confession or by their actions, may order the individual to be detained at an Islamic Guidance Centre for a period not exceeding thirty-six months for education, and the person will be asked to repent according to Syariah Law.

(2) If the person who has been ordered to be detained under subsection (1):

(a) Repents immediately, the Court shall, after confirming the repentance, release the person; or
(b) If the person repents at any time during the detention period, the Custodian must report this to the Court, and the Court shall summon the individual and, after confirming the repentance, order their release.
(3) The Custodian Officer must submit a weekly progress report on the detained person to the Court.

(4) The Islamic Guidance Centre must be gazetted as a detention center in the Gazette.

As of the time of this research, no case has been prosecuted under this offense, even though Sabah has reported many applications to leave Islam (Pg Musa, 2015). Therefore, the effectiveness of this provision in addressing apostasy among Muslims remains unknown.

4. An Analysis of the Existing Laws Related to Leaving Islam in Malaysia

According to Abd Aziz Bari (2008), the action of the State Legislature to make any provision regarding leaving Islam is intra vires (within legal authority) because it was enacted within the framework of the Federal Constitution, as provided for in the Ninth Schedule, List Two, Item One:

"Except for the Federal Territories of Kuala Lumpur, Labuan, and Putrajaya, Sharia Law and personal and family law for people who follow Islam, including Sharia Law ... Islamic pillars except for matters included in the Federal List; membership; organization and proceedings for the Syariah courts, which will have jurisdiction only over people who follow the religion of Islam and only over any matter included in this article, but will not have jurisdiction over offenses except to the extent provided by law -federal law; control the development of faith and belief among people who follow Islam; determine matters of Sharia Law and Malay beliefs and customs."

Although this power is under the jurisdiction of the state, the Federal Government can enact laws for standardization purposes under Article 76 of the Federal Constitution (Shiddeq, 2015). Examples of such laws include property law, criminal Syariah law, the law of evidence, and Islamic family law. The state governments that adopt these laws can make amendments according to local needs. The question is whether the laws regarding applications to leave Islam in the Syariah Court can be standardized. Based on Pg Musa's study (2015, 2020), the profile of applications to leave Islam in Sabah is unique and cannot be referred to through records alone. Therefore, it is appropriate for laws regarding applications to leave Islam to be enacted by the state government on the local case profile.

As discussed, most existing laws are more punitive. Some states, such as Negeri Sembilan and Sarawak, have adopted a rehabilitative approach in their laws, but these laws do not place sufficient emphasis on other interventions, such as treatment, advocacy, and support for individuals going through the *istibah* process. In this regard, the module provided by the state of Selangor can be used as a benchmark for other states that intend to enact laws regarding cases of Muslims applying to leave Islam. The Selangor module has also

demonstrated that many government and semi-government agencies, such as the Zakat Centre, hospitals, and the Mufti's Office, can be involved in dealing with this issue.

5. Conclusion and Recommendations

Based on the discussion above, it can be concluded that enacting and enforcing a law related to applications to leave Islam is not a straightforward task, as the law must take into account all the aspects described in this article. Although state governments can enact relevant laws, elements of advocacy and rehabilitation, in line with Part Two of the Federal Constitution, must also be emphasized, and the punitive elements provided in existing legal provisions should be re-evaluated. In this regard, the State Government can make laws by the local case profile because, as the study conducted by Pg Musa (2015) shows, the case profile differs from one state to another and requires appropriate interventions. The *istitabah* approach implemented in Selangor can be used as a benchmark for other states because the module covers relevant interventions in dealing with this issue such as elements of treatment, rehabilitation and support after the recovery process. The involvement of both government and non-government agencies is necessary to initiate the *istitabah* process and guide the trainees after the process is completed.

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Factors that Influence Customer Satisfaction in Mobile Payment of Online Food Delivery Mobile Applications

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Abstract: This study was conducted to determine factors influencing customer satisfaction in mobile payment of online food delivery mobile applications. It uses Technology Acceptance Management, Unified Theory of Acceptance and use of technology, and up-to-date quality of online food delivery. The factors suggested by the theories were perceived ease of use, privacy and security, and e-service quality. A questionnaire was utilized to collect respondents' answers, and the data collected were analyzed using SPSS. The sample comprised of 269 respondents. It also advantages the researchers in these studies in online food delivery mobile applications to acquire understanding and experience.

Keywords: *Mobile Payment, Food Delivery Mobile Application, Customer Satisfaction*

1. Introduction

The food delivery industry is currently trendy in Malaysia. Every individual has their approach to securing the daily necessity of food (Prasetyo, et al., 2021). Currently, one of the methods to purchase daily meals is to make online food delivery transactions. Delivery is primarily carried out by individuals who lack the time to prepare meals. (Aprilia, 2017). The rapid progress in internet and mobile phone technology has played a major role in the surge of online commerce (Salameh, et al., 2020). The swift expansion of this emerging online food-ordering business model can be attributed to various factors, such as reduced smartphone prices, increased accessibility to networks, heightened purchasing capacity, time constraints, and a growing preference for convenience (Lu, et al., 2020).

The swift advancement of mobile internet technology and smart devices has led to the widespread integration of mobile payment into various aspects of people's daily lives. Diverse mobile payment platforms enable individuals to make payments, transfer funds, and manage their finances conveniently and remotely. Mobile payments' significant business opportunities have captured the attention of various enterprises (Zhou, 2015). For example, Alipay.com introduced its mobile payment solution called Alipay Wallet. Similarly, Tencent, a leading social networking service provider, introduced WeChat Payment. Nevertheless, current research predominantly investigates the initial adoption of mobile payment users and its precursors. (Qasim & Abu-Shanab, 2016), while research on mobile payment continuation usage is limited. Since mobile payment services heavily depend on ongoing interactions with consumers, the enduring utilization of mobile payment becomes crucial for the future success of mobile payment providers (Zhou, 2014).

The paramount factor for service organizations is service quality, which signifies the company's ability to meet customer expectations through the lens of customer satisfaction (Indrayani, 2021). With the accessibility of services through e-commerce, customers can promptly access all the services they desire. The increasing working population and fast-paced work-life culture have led to the rapid popularity of meal delivery services in metropolitan areas (Ghelani & Hua, 2022). Home food delivery services have gained significant popularity in recent years, partly due to the spread of the Corona pandemic. Nevertheless, this surge in popularity does not imply a seamless experience for consumers, as a recent study disclosed that they encountered various issues each time they ordered food (Jawabreh, et al., 2020; Masa'deh, et al., 2019). Despite the engagement of a third party in the delivery process, it is a highly intricate procedure that is more susceptible to errors than alternative solutions. Nonetheless, service providers addressing these challenges effectively stand to capitalize on substantial growth opportunities within the food delivery market, providing optimal solutions for their customers. Consumers appreciate online shopping for the convenience, ease, and pleasure it offers, allowing them to enjoy these benefits at their leisure (Salameh, et al., 2020; Ali & Omar, 2016). The changing nature of urban customers has resulted in the growth of online food delivery firms (Jawabreh, et al., 2022).

Although the online food delivery industry has witnessed tremendous growth, the payment process within these applications often presents various issues that hinder a seamless and convenient user experience. Mobile payment transactions involve the exchange of sensitive personal and financial information. Users may have concerns regarding the security of their payment details and the potential risks of data breaches or unauthorized access (Shukla & Singh, 2021).

Other than that, it is essential to address these security concerns to build trust and promote broader acceptance of mobile payments in online food delivery applications. The problem found in this research is the complex checkout process. Another aspect of poor user experience is mobile payment within online food delivery applications. It refers to a lengthy, confusing, or convoluted series of steps users must navigate to complete their payment. Some mobile applications need users to visit many screens and submit various data throughout the checkout process. The intricacy involved in this process can lead to customer bewilderment, increased rates of abandoned checkouts, and a decline in user satisfaction (Mas'ud & Iskandar, 2022).

In addition, another difficulty in mobile payment related to online food delivery services is poor user experience. Within mobile applications, users anticipate a smooth, user-friendly, and straightforward payment experience. Delayed loading times, sluggish interfaces, and insufficient guidance or error management, conversely, could result in an unfavorable user experience, deterring consumers from utilizing mobile payment methods (Hussain, 2020).

The main objective of this research is to examine the factors that influence customer satisfaction in mobile payment of online food delivery mobile applications. It further investigates whether these factors are significantly affecting customer satisfaction in mobile payment of online food delivery applications. This research study provides valuable insights and statistical evidence on the factors influencing customer satisfaction in mobile payment of online food delivery mobile applications.

2. Literature Review

The advent of the Internet has transformed people's lives, giving rise to the evolution of online jobs and e-commerce. E-commerce, involving the exchange of goods and services over the Internet, has expanded beyond national borders to encompass international transactions. (Tsiotsou, 2022). Facilitated by electronic funds transfers, timely payments for online commercial transactions have become seamless. E-commerce companies utilize various applications, including examples like vehicle sharing and mobile application-based vehicle access within business concepts. (Mukhopadhyay & Upadhyay, 2022). Digital mobile technology is extensively utilized not only for financial services but also in marketing, particularly within the realm of online shopping. The adoption of mobile financial services contributes to the achievement of corporate objectives, and it is acknowledged that a reduction in technology usage among individuals would lead to increased poverty and inequality (Afroze & Rista, 2022).

Mobile phones have become ubiquitous in today's world, with numerous applications directly linked to distribution networks, offering benefits to consumers. In the context of banking and financial services, the fundamental challenges lie in managing risk and ensuring service quality. Financial inclusion, facilitated by digital technologies, emphasizes the accessibility of financial services (Chan, et al. 2022). However, issues such as limited communication by incumbent suppliers of financial data impede competition and hinder customers from accessing the most competitive goods and services. The agricultural sector serves as an exemplary model in keeping pace with mobile phone services, setting a benchmark for other industries to follow (Bigne, et al., 2020). The implementation of mobile banking services has positively impacted entrepreneur satisfaction and benefited equity-based firms. Financial literacy and digital financial services are pivotal components, with the information and communication infrastructure needing to be user-friendly. The widespread adoption of mobile services by two-thirds of the population serves as an effective means of quick communication and contributes to financial inclusion, which is crucial for the economy (Vergura, Zerbini, & Luceri, 2020).

The online food delivery (OFD) platform empowers consumers to utilize the internet for ordering food from diverse restaurants, delivering it to their doorstep conveniently with just a few clicks (Wang, et al., 2021). This availability of online food delivery allows customers to order pre-prepared meals from restaurants, with direct

delivery facilitated through the logistics network (Belanche et al., 2020). Tong, et al. (2020) characterize the online food delivery platform as a "dyadic two-sided market structure," fostering connections not only between merchants and drivers but also between customers and merchants. In the context of the growing dominance of e-commerce, online food delivery services have attracted renewed attention (Gunden et al., 2020; Cheng et al., 2021). Particularly, with the advent of the coronavirus disease 2019 (COVID-19) and the implementation of social distancing measures and extensive lockdowns, online food delivery via the internet has emerged as a preferred choice for individuals who previously frequented dining out (Gursoy and Chi, 2020; Tuzovic et al., 2021; Wei et al., 2021; Yost and Cheng, 2021). To address safety concerns and comply with business regulations, numerous restaurants have extended their delivery systems beyond the conventional approach (Al Amin et al., 2021; Pal et al., 2022). The global lockdowns imposed due to COVID-19 have prompted a significant shift among most restaurants and catering businesses towards adopting online systems for food ordering and delivery.

Customer satisfaction is a thorough assessment of the overall purchasing and consumption experience, reflecting a balance between the effort invested and the perceived benefits. Existing literature supports this perspective (see, e.g. Gee et al., 2008; Grönroos, 2008). It is affirmed in existing literature that customer satisfaction is influenced by both perceived quality and disconfirmation. Simultaneously, service quality is neither a separate nor an ambiguous concept (Zineldin, 2006). However, as per Grönroos's (2008) definition, quality is determined by what customers perceive, and the quality of service is contingent upon the customer's perception of it.

Mobile payment adoption is on the rise, but it has not yet reached the anticipated level of acceptance (Camilleri, 2021). Consumer perception of value and businesses' desire to provide dependable mobile payment services are significant drivers of progress. Mobile payment firms strive to comprehend the psychological states of their consumers to grasp their buying patterns and respond effectively to the market (Faria et al., 2022). This study attempts to utilize a stimulus-response model to investigate how environmental stimulation and psychological state impact customers' tendencies to use mobile payments (Arora et al., 2022).

Perceived ease of use is defined as the extent to which an innovation is perceived to be easy to comprehend, learn, or implement. Likewise, perceived ease of use represents the simplicity with which an innovation can be understood and applied, gauging the respondents' belief in their ability to utilize a specific technology with minimal effort; this can be considered as perceived ease of use. The perceived ease of use indicates the respondents' capability to experiment with new technology and swiftly assess its benefits. The substantial positive influence of perceived ease of use on customer satisfaction in the online realm significantly impacts purchase intentions. (Cho & Sagynov, 2015). Moreover, perceived ease of use significantly affects customer adoption intentions. This factor has been acknowledged as crucial in influencing customers' attitudes and behavioral intentions, establishing the acceptability of technology usage among consumers (Cho & Sagynov, 2015).

Customer adoption intentions are significantly influenced by the ease of use. It is recommended that companies develop user-friendly systems, facilitating broader utilization of new technologies by a larger audience (Jahangir & Begum, 2008). In line with a study by Chiu and Wang (2008), perceived ease of use positively impacts customer retention in the context of Web-based learning. The behavioral intention to use any online service is determined by the outlook of potential adopters, which can be either positive or negative. Ramayah and Ignatius (2005) suggest that customers tend to hesitate to engage in online transactions when perceived ease of use is hindered by challenges such as prolonged download times on e-commerce websites and poorly designed interfaces. Therefore, it is imperative that the design of online food delivery websites be straightforward and comprehensible to streamline the ordering process for clients. Furthermore, the level of consumers' perceived ease of use of technology will influence behavioral intention.

Privacy is defined as the ability to access, copy, utilize, and control one's personal information, encompassing details such as name, phone number, mailing address, bank account, email address, password, and more. The compromise of personal data by well-known corporations, as highlighted in various publicized cases, has led to a growing unease among consumers regarding the management and utilization of their personal information in online transactions (Flavian & Guinaliu, 2006). Security poses a potential threat, particularly concerning

payment security and information storage in online transactions. Concerning privacy, non-delivery service, credit card theft, post-purchase service, and related issues lead many customers to avoid online purchases.

Kedah, et al., (2015) emphasize the significant impact of trust on customer satisfaction in online transactions, noting that individuals making online purchases are primarily concerned with ensuring privacy and security. The level of trust customers place in online transactions is directly linked to the effectiveness of implemented privacy and security measures (Bashir et al., 2015). To address concerns about privacy and security, numerous websites have instituted policies allowing consumers to check, review, and certify privacy policies for online transactions.

Online purchasing behavior is positively correlated with privacy and security, indicating a favorable relationship between these factors and the behavioral intent to engage in online buying. The authors also found that most respondents consider trustworthiness crucial when making online purchases. In the European Union, a significant number of customers refrained from online transactions due to a lack of trust in organizations handling their personal information and ensuring security (Flavian & Guinaliu, 2006). More than 70% of customers avoided disclosing information or making online purchases due to privacy and security concerns, expressing apprehension about the absence of privacy protection for their personal information. Consumers tend to feel more at ease if companies provide a verification procedure on their websites.

In the service industry, service quality holds immense importance for enhancing client satisfaction. Previous research has investigated online food delivery systems and the quality of e-services on websites as a unified construct, revealing a positive correlation between the quality of e-services and consumer satisfaction (Suhartanto, et al., 2019). The components of online service quality encompass perceived control, customer service, service convenience, and service fulfillment (Frederick & Parappagoudar, 2022). Exceptional customer service stands out as a crucial tool for long-term business success. Therefore, addressing customer complaints promptly, covering issues such as bad food quality, improper packing, delayed delivery, and incorrect delivery, is essential for customer care representatives.

Swift resolution of such issues in online food delivery can significantly enhance consumer loyalty and satisfaction. Beyond grievance resolution, internet food delivery aggregators must ensure the accurate delivery of orders to consumers' doorsteps. While service quality research has been prevalent for an extended period, recent studies have started to focus on the e-commerce domain (Zehir et al., 2014). According to a study by Setiawan and Septiani (2018), users of mobile applications for online food delivery experience satisfaction influenced partially by the quality of electronic services, and trust in electronics also plays a partial but significant role in customer satisfaction (Saad, 2020). Meanwhile, as per the findings of Hanifa, Trianto, and Hendrich (2019), customer happiness is concurrently influenced by price, service quality, and customer value, with consumer price and value having only a partial impact on customer satisfaction.

The Technology Acceptance Model (TAM) offers comprehensive explanations, as highlighted by Tsourela and Nerantzaki (2020) in assessing customer satisfaction. However, TAM has drawbacks such as the model's failure to consider the impact of individual differences and contextual factors on technology acceptance (Marangunić & Granić, 2015). Furthermore, most TAM research has focused on cognition-comprehension through intellect, experience, and logic rather than on affect understanding through emotions and moods. Scholars argue that emphasizing cognition may be suitable for consumer-mandated technology adoption, where customers have limited choices. However, it falls short as a rationale for customers with the freedom to adopt or reject new technologies based on their emotions and cognitive assessments.

To address the inherent ambiguity in TAM, studies have supplemented the model, giving rise to updated models aimed at achieving improved consumer technology acceptability (Momani, 2020). TAM modification models were considered incomplete in explaining technology acceptance, and claims were made that intrinsic motivation, such as fun, when integrated with TAM, had a more significant impact on clarifying technology acceptance. This emphasizes the importance of emotions as crucial aspects of technology adoption.

The research hypotheses were as follows.
H_1: There is a significant relationship between perceived ease of use and customer satisfaction in mobile payment.

H_2: There is a significant relationship between privacy and security and customer satisfaction in mobile payment.
H_3: There is a significant relationship between e-service quality and customer satisfaction in mobile payment.

3. Research Method

This study employed a descriptive technique to discover characteristics that influence consumer satisfaction in mobile payment for online meal delivery mobile applications, as well as to analyze the key findings of the survey's respondents. In descriptive research, quantitative data can be used to assess information and characteristics about a population or phenomenon under examination. Furthermore, this study used a quantitative method to investigate the relationships between influencing factors and consumer satisfaction in mobile payment of online food delivery mobile applications. Surveys were used to acquire data from target respondents. Each survey topic was assessed using a Likert scale ranging from 1 to 5.

Young adults and middle-aged people in Melaka, Malaysia make up the target study sample. Young adults and middle-aged should be defined as those between the ages of 21 and 51. 269 users of smartphone applications for online meal delivery received the surveys using Google Forms. Since non-random sampling was more practical and time-efficient, it was employed. 269 respondents were found to be the appropriate sample size, which was computed with a 5% margin of error and a 50% response distribution. Data analysis was the procedure by which the researcher employed statistical techniques to analyze the information gathered from respondents. The Statistical Package for Social Sciences (SPSS) software version 27.0 was used to analyze the data. Statistical approaches used included descriptive analysis, Pearson's Correlation Coefficient, and Multiple Regression Analysis. The data's reliability and validity were evaluated, and they met the criteria for conducting the inferential analysis.

4. Results and Findings

Demographic Results

Males account for 59.1% (159 respondents), while females account for around 40.9% (110 respondents). It shows that male respondents outnumber female respondents. Respondents' age ranges from 21 to 30 years old (68.0%, 183 respondents), 31 to 40 years old (20.8%, 56 respondents), 41 to 50 years old (5.9%, 16 respondents), and 51 and up (5.2%, 14 respondents). The occupation of respondents who have already participated in the survey is 54.3% (146 respondents), the government sector is 10.4% (28 respondents), the private sector is 28.6% (77 respondents), and the unemployed is 6.7% (18 respondents). The participants' monthly income ranges are as follows: 57.2% of respondents earn between RM0 and RM1,000, 15.6% of respondents earn between RM1,001 and RM 2,000, 14.5% of respondents earn between RM 2,001 and RM 3,000, and 12.6% of respondents earn between RM 3,001 and RM 4,000. Respondents who participated reported using Apple Pay 9.7% (26 respondents), FPX online banking 78.4% (211 respondents), Google Pay 2.6% (7 respondents), and TNG e-wallet 9.3% (25 respondents).

Table 1: Descriptive Statistics for All Variable

	Descriptive Statistics				
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Perceived Ease of Use	269	2.20	5.00	4.3918	.50675
Privacy and Security	269	2.20	5.00	4.3257	.54538
E-Service Quality	269	1.60	5.00	4.3755	.52418
Customer Satisfaction	269	1.80	5.00	4.4454	.58605
Valid N (listwise)	269				

Table 1 shows that the highest mean among all the variables was customer satisfaction which is 4.4454. The perceived ease of use was rated highest among the independent variables, 4.3918, followed by the e-service quality, which was 4.3755, and the privacy and security which was 4.3257.

Pearson Correlation Coefficients

Table 2: The Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.924	20

Table 2 indicates that the result of Cronbach's Alpha for the survey items The Cronbach's Alpha value for the combination of all variables is 0.924, which is in the range of 0.9. Therefore, it can be considered excellent since the value was nearer to 1.

Table 3: The Results of Correlation Analysis For All Variables

Correlations					
		Perceived Ease of Use	**Privacy and Security**	**E-Service Quality**	**Customer Satisfaction**
Perceived Ease of Use	Pearson Correlation	1	.733**	.738**	.702**
	Sig. (2-tailed)		.000	.000	.000
	N	269	269	269	269
Privacy and Security	Pearson Correlation	.733**	1	.741**	.703**
	Sig. (2-tailed)	.000		.000	.000
	N	269	269	269	269
E-Service Quality	Pearson Correlation	.738**	.741**	1	.814**
	Sig. (2-tailed)	.000	.000		.000
	N	269	269	269	269
Customer Satisfaction	Pearson Correlation	.702**	.703**	.814**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	269	269	269	269

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

Table 3 summarizes the results of Pearson's Correlation between perceived ease of use, privacy and security, and e-service quality represented as independent variables and customer satisfaction as a dependent variable. This shows the probability of the correlation coefficient in less than 0.001 which has the significant level at 0.000. Based on the all the variables are positive and significant.

There was a positive high relationship between e-service quality and customer satisfaction where the value of coefficient correlation is 0.814 as the highest positive correlation relationship, which fell under the coefficient range of ±0.41 to ± 0.70. It also showed that perceived ease of use is the third most important element influencing consumer happiness.

Table 4: Multiple Regression Results

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	T	Sig.
1	(Constant)	.071	.185		.385	.701
	Perceived Ease of Use	.184	.064	.159	2.876	.004
	Privacy and Security	.169	.060	.157	2.824	.005
	E-Service Quality	.649	.063	.580	10.377	.000

a. Dependent Variable: Customer Satisfaction

Based on Table 4, the p-value of the t-test for each regression coefficient (perceived ease of use, privacy and security, and e-service quality) are 0.004, 0.005, and 0.000 correspondingly, which are all less than 0.05. Therefore, all three independent variables were statistically significant. The e-Service Quality is the strongest independent variable, with a coefficient value of 0.649. Moreover, there was a positive moderate relationship between privacy and security and customer satisfaction in this study. The value of the coefficient correlation is 0.703 and falls under the range of ± 0.41 to ± 0.70. In addition, rate of the customer satisfaction level is significant at the 0.01 level. It also showed that privacy and security are the second most important factor that influences customer satisfaction. There was a positive moderate relationship between perceived ease of use and customer satisfaction in this study. The value of the coefficient correlation is 0.702 and falls under the range of ± 0.41 to ± 0.70. In addition, rate of the customer satisfaction level is significant at the 0.01 level. It also showed that perceived ease of use is the third most important element that influences consumer happiness.

5. Conclusion, Limitations and Future Research

Based on the analysis, three independent variables which are perceived ease of use, privacy and security, and e-service quality can explain 69.4 percent of the variation in customer satisfaction. These three factors are statistically significant factors for customer satisfaction in using mobile payment. First, when it comes to mobile payment for online meal delivery applications, the majority of respondents ranked e-service quality as the most crucial element influencing consumer satisfaction. This is because a favorable customer mindset associates quality and reliability with an easy-to-use and well-designed e-service. Understanding how e-service quality affects customer satisfaction highlights the significance of ongoing evaluation and enhancement of the complete service delivery process. According to a study conducted by Setiawan & Septiani (2018), for individuals utilizing a mobile application for online food delivery, the impact of electronic service quality on consumer satisfaction is partial, and there is also a partial but significant effect of trusting electronic services on customer satisfaction (Saad, 2020). With this, mobile payment providers should invest in training and technology to enhance responsiveness, reliability, and efficiency, ensuring a positive overall customer experience.

Second, privacy and security have a significant positive impact on customer satisfaction. Due to numerous widely reported incidents of prominent companies breaching personal data, consumers are becoming more apprehensive about the utilization and handling of their personal information during online transactions. (Flavian & Guinaliu, 2006). They must understand the needs of customers to trust in mobile payments such as the implementation of advanced encryption technology, multi-factor authentication, and transparent

communication regarding data protection to build trust among users. In the end, this strategy might improve customer satisfaction in mobile payment of online food delivery mobile applications.

Third, perceived ease of use is also a variable that proves to have a significant positive influence and impact on customer satisfaction. Similarly, perceived ease of use is the ease with which an invention may be understood and implemented and the degree to which respondents feel they can utilize a certain technology with minimal effort may be viewed as perceived ease of use. Perceived ease of use also significantly affects the adaptation intentions of customers. This element has been recognized as pivotal in influencing shifts in customer attitudes and behavioral intentions, and in establishing the acceptability of technology usage among consumers. (Cho & Sagynov, 2015). Understanding the importance of perceived ease of use suggests that mobile application developers should focus on creating user-friendly interfaces and streamlined payment processes. So, implement design improvements based on user feedback to simplify the navigation and payment steps, ultimately increasing customer satisfaction.

Despite the significant factors, they must be cautiously interpreted as this study has a few limitations, namely respondents were from limited geographical coverage. Next, this research was aimed at young adults and middle-aged people between the ages of 21 and 51 years old. The statistical analysis shows that more than half of the total respondents are aged between the ages of 21-30 years old (68%) while 20.8% are aged 31 and above. The result can therefore only represent certain age groups as target users of online food delivery mobile applications. Based on model summary table 4.16 from earlier chapters, there are still 30.6% of additional factors that will not be explained in this study.

After the study, a few recommendations for further research on this issue might be offered. First, the prospective researcher can conduct research for the entire Malaysia if time is allowed since this research only covers the Melaka area. The larger the geographical coverage, the more reliable the findings result. Another reason is that people with different demographics will have different opinions about customer satisfaction with mobile payment of online food delivery mobile applications in the same country.

Other than that, to relate to this research, the future researcher may include other independent variables. It can be used to determine influence factors that affect customer satisfaction in mobile payment of online food delivery mobile applications in Melaka. This was because an acceptable independent variable in the model summary table in the previous chapter can improve the R Square value. These three factors can explain 69.4% of the variation in customer satisfaction for this research, and the remaining could be critical factors such as time-saving orientation, price, and convenience motivation.

In addition, the future researcher will also advise on carrying out a longitudinal study if time is permitted to overcome research limitations. For further research, future researchers may increase the sampling size. However, he or she must be careful to overcome issues such as unreported questionnaires, unacceptable data, and the possibility of data being valid and reliable. In further studies, future researchers can broaden the target respondents by conducting studies in different segment groups such as pre-teens and teens, senior citizens, or others.

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Save Our Sea: Game-Based Learning on Sea Environment Care

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Abstract: This study introduces the development and evaluation of a 2D marine pollution awareness game to address the pressing issue of marine pollution. The study addresses the challenges associated with raising awareness about marine pollution, including the lack of knowledge and awareness among the general public regarding the impact of marine pollution on the environment. The lack of effective educational tools and resources to communicate the complexities of marine pollution poses a significant problem. To tackle these issues, the study aims to develop a 2D marine pollution awareness game that not only educates but also engages players in a meaningful way. The game's objective is to educate players about the environmental impact of marine pollution while engaging them through interactive gameplay. The Rapid Application Development (RAD) methodology involved designing the game's mechanics, graphics, and audio elements using tools like Construct, Aseprite, and Canva, followed by usability testing using the Game Experience Questionnaire (GEQ). The findings indicate positive feedback from participants, highlighting high levels of immersion and positive affect, but also suggest areas for improvement in terms of the challenge level and flow. Future work includes enhancing the game's challenges, adding multiple languages for broader accessibility, and exploring the integration of VR/AR technologies to enhance educational impact. This study underscores the potential of the game as a tool for environmental education and conservation, with opportunities for further development and impact in raising awareness about marine pollution.

Keywords: *Marine pollution, Awareness game, Game-based learning, Environmental education.*

1. Introduction

Annually, humanity generates over 430 million tons of plastic, with approximately two-thirds consisting of short-lived products that quickly turn into waste, leading to the contamination of oceans and potentially entering the human food chain. (UNEP, 2023). According to WWF, about 60% of global marine plastic enters the ocean from China, Indonesia, Malaysia, the Philippines, Thailand and Vietnam (WWF, 2020). Based on a study conducted by the Centre for Marine and Coastal Studies (CEMACS) at University Sains Malaysia, Malaysia holds the highest rate of plastic consumption in Asia, with a rate of 62 kg per capita per year, and ranks eighth globally in terms of plastic pollution (Hamid & Che Din, 2022). Fauziah et al. (2021) also suggest that the quantity of waste that effectively reaches the ocean could be high. However, further efforts are necessary to fully investigate and document the extent of this issue.

Although society has been making efforts to decrease the use of single-use plastics in recent years, the COVID-19 pandemic has caused a setback in plastic management. The issue has been worsening by the exponential increase in the consumption of single-use plastics, including personal protective equipment like masks and gloves (Patrício Silva et al., 2021). Plastic waste will continue to pose a significant and persistent problem for the marine environment. According to projections, plastic pollution in the oceans is expected to triple by 2040 if current trends continue (Harvey, 2020).

Abalansa et al., (2020) report acknowledges the issue of marine plastics pollution as a global environmental problem and recommends a trans-disciplinary approach, involving all types of stakeholders. The availability of waste collection bins can affect people's behavior towards water pollution. To address this issue, policymakers should increase awareness of water pollution and consider situational factors when designing and implementing policies (Okumah & Ankomah-Hackman, 2020). Increased public awareness of microplastic pollution caused by inappropriate disposal of sanitary products down the toilet is necessary due to the global distribution and projected growth of the non-woven textile industry (Ó Briain et al., 2020).

The study reported an average score of 9.69 out of 20 points among Hong Kong University students on a multiple-choice ocean science quiz about general marine environmental knowledge, with 50% of students scoring 9.5 or higher. In comparison, 27.12% and 22.87% of students scored the highest and lowest average scores of 16.33 and 5 points, respectively, indicating a good overall understanding of general ocean science topics but lacking knowledge in specific areas such as ocean-carbon relationships, primary oil pollution sources, plastic pollution, and ocean-technology relationships (Mallick D et al., 2023). Malaysia is the 8th largest producer of mismanaged plastic waste globally and has an estimated annual input of 140-370 million kilograms of plastic waste into the ocean, while also lacking information on the levels of microplastic pollution in the environment (Chen et al., 2021). The newspaper report suggests that the ban on single-use plastic straws by several state governments in 2019 was ineffective due to a lack of awareness of the plastic problem, suitable alternatives, and citizen participation in interventions, while highlighting the lack of knowledge of plastic pollution among most respondents, leading to poor practices despite a relatively higher attitude (Chin, Mahanta, & Nath, 2023).

To increase engagement and knowledge, additional measures may be necessary. Research on game-based learning (GBL) methods indicates that they can enhance students' motivation and learning outcomes in higher education settings (Jääskä et al., 2022). The use of games that incorporate environmental education has shown an effective solution to addressing the issue (De Oliveira Pantoja et al., 2019). The research aimed to assess the effectiveness of the educational game quiz Assistance in enhancing cognitive abilities and critical thinking among higher education students, with results indicating that game-based learning proved highly effective in improving learning outcomes (Wardoyo et al., 2020). According to the results of the post-test data reported by Harsono, Sanjaya, & Harnadi (2021), the game effectively generated an environment where people were more attentive to the issue of water pollution. Game-based learning fosters collaborative and stimulating activities, creating student-centered learning environments that promote the cultivation of students' mental and psychological well-being and the development of soft skills in a dynamic, entertaining, and creative manner (Lampropoulos et al., 2019).

The significance of this game lies in its potential to contribute to the larger goal of addressing the issue of marine pollution and protecting marine ecosystems. By educating and engaging young adults about this important issue, the game can inspire them to take action and make a positive impact in their communities and beyond.

In addition, the use of multimedia elements in the game can enhance the learning experience and make it more accessible to a wider audience. By making learning about marine pollution more engaging and interactive, the game can encourage players to explore the issue in more depth and develop a deeper understanding of its causes and consequences.

Overall, the project is significant because it can help raise awareness about marine pollution, promote sustainable behaviors, foster empathy for marine organisms and their habitats, and inspire action to protect the marine environment. By doing so, the game can contribute to the larger goal of creating a more sustainable and environmentally conscious society. This project will be of great benefit to young adults, environmental organizations, educators, and communities by providing an engaging and interactive tool for learning about marine pollution and its impact on the environment.

2. Literature Review

Marine ecosystems, known for their vast size (Jha, 2004), play an important role in Malaysia, with many islands, coastal areas, and seas supporting a wide range of marine biodiversity (Ching, 1998). In Malaysia, the coastal area is a significant contributor to the country's ecotourism sector (Hassan, 2008). The increasing pollutants and global changes worldwide are causing alarming negative impacts on the biodiversity of living organisms, raising concerns among the scientific community regarding different types of pollution (biological, chemical, and physical) and the resulting changes at the species and community levels (Aless, Gallo, & Tosti, 2015).
Over time, Malaysia's marine environment has been consistently troubled by a major issue primarily caused by water pollution. Marine pollution, caused by human activities, entails altering the natural state of the ocean, damaging the marine ecosystem, and introducing harmful substances into the marine environment. The ocean

is increasingly facing serious pollution issues, with chemicals and garbage being the two main types of pollutants flooding its waters. Table 1 shows the types of marine pollution and the source of pollution (Zheng and Liu, 2021)

Table 1: Causes of marine pollution

Types of Marine pollution	Source of Pollution
Human activities produce garbage	Industrial waste Household garbage Medical waste Land source input Coastal tourism
White pollution	Ship transportation Fishing and breeding Atmospheric deposition Domestic garbage and sewage
Ship pollution	Cruise ship Solid waste Oily sewage and toxic gas Tanker Shipwreck(oil spill)
Exploration of marine oil and gas resources and mineral resources	- Development and mining of solid mineral resources
Land reclamation	- Land reclamation
Pollution in the mariculture industry	Nutrients Sulfide drug
New estrogen pollution	Industrial production Human activity

(Source: Zheng & Liu, 2021)

Traditional awareness campaigns are failing to engage a diverse audience in the face of the growing threat caused by marine pollution. These days, innovative alternatives like games and social media campaigns are becoming effective tools. Through the use of technology, art, and digital platforms, these strategies hope to engage a larger audience and promote awareness of the urgent need to address marine pollution.

In recent years, social media platforms such as Twitter and Facebook have played an important role in campaigns and initiatives that seek to engage individuals in addressing environmental issues (Alves et al., 2016). Social media has emerged as a powerful and accessible platform for raising awareness and facilitating discussions on various subjects, including social and public health issues, with the average daily usage increasing over the years. People's usage of social media and content-sharing platforms like Facebook, YouTube, Twitter, and TikTok continues to grow each year, with increasing amounts of time spent on these platforms (Madhumathi et al., 2021).

Social media usage has become widespread, with the average person spending 2 ½ hours daily on social platforms, around 4.2 billion people using social media (55% of the global population), and increased usage during the COVID-19 pandemic, particularly among teenagers. The analysis of social media's impact on opinion, knowledge, and behavior indicates that while it can raise awareness and promote environmentally friendly behavior, it can also lead to opinion silos and reinforcement, presenting both positive and negative implications for environmental issues like climate change (Mavrodieva et al., 2019). Figure 2.3 shows the banner Save the Ocean Using social media with the #CleanSeasPhoto Challenge that has been posted to social media.

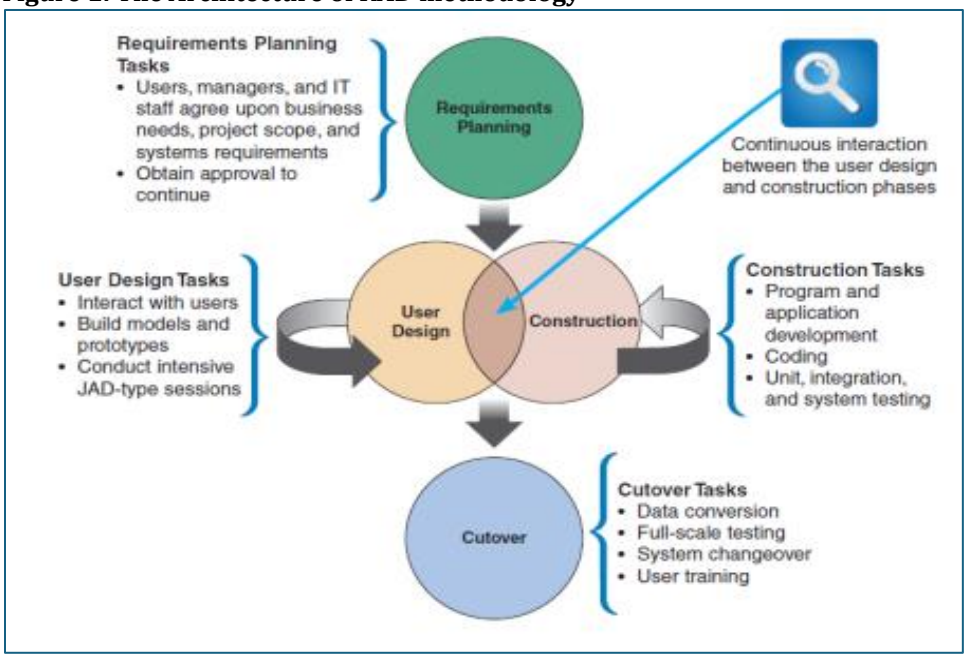
Zargham et al., (2019) conducted a user study involving 21 participants, comparing a game to two other models, an animated serious video and a humorous animated video. The study found that the game-based approach was more effective in engaging users and raising awareness of the topic. The results of the Martins et al., (2020) study suggest that individuals perceive the game as an immersive and engaging medium for interaction,

considering it a creative and entertaining way to engage in events. Youth, specifically those aged 11-15, are attracted to video game features such as visually appealing graphics, captivating sound effects and design, impressive visual effects, and engaging animations (Evans et al., 2013). In an experiment involving undergraduate students, the proposed approach to cultural study was found to be effective in enhancing players' cognitive growth and increasing awareness (Chai-Arayalert & Puttinaovarat, 2021).

3. Methodology

Rapid Application (RAD) is used in this project as the methodology for developing this game application. The RAD methodology is a software development approach that prioritizes creating prototypes rather than extensive planning. Instead of spending a lot of time on upfront planning, the RAD Model aims to develop software quickly within a short period (Martin, 2020). According to Triana, Gunawan, Prasetyo, and Pangestu (2020), while it typically takes at least 6 months to build an application, using the RAD method can allow for completion within a shorter timeframe of 1 to 3 months. The RAD methodology prioritizes a faster development cycle with higher quality results compared to other methodologies, with less focus on planning and greater emphasis on continuous development. Figure 1 shows the architecture of the Rapid Application Development methodology (Arisandy & Rudi, 2021).

Figure 1: The Architecture of RAD methodology



(Source: Arisandy & Rudi, 2021)

The RAD methodology is adapted to this project because it offers quick iterations and valuable user feedback. It enables developers to make frequent changes and improvements to the game based on feedback from users, such as educators and students. By quickly iterating and actively seeking input, the game can effectively deliver the intended learning objectives and engage the players. This iterative approach ensures that user suggestions can be incorporated, and any potential issues or concerns can be addressed throughout the development process, resulting in a more polished and impactful learning experience.

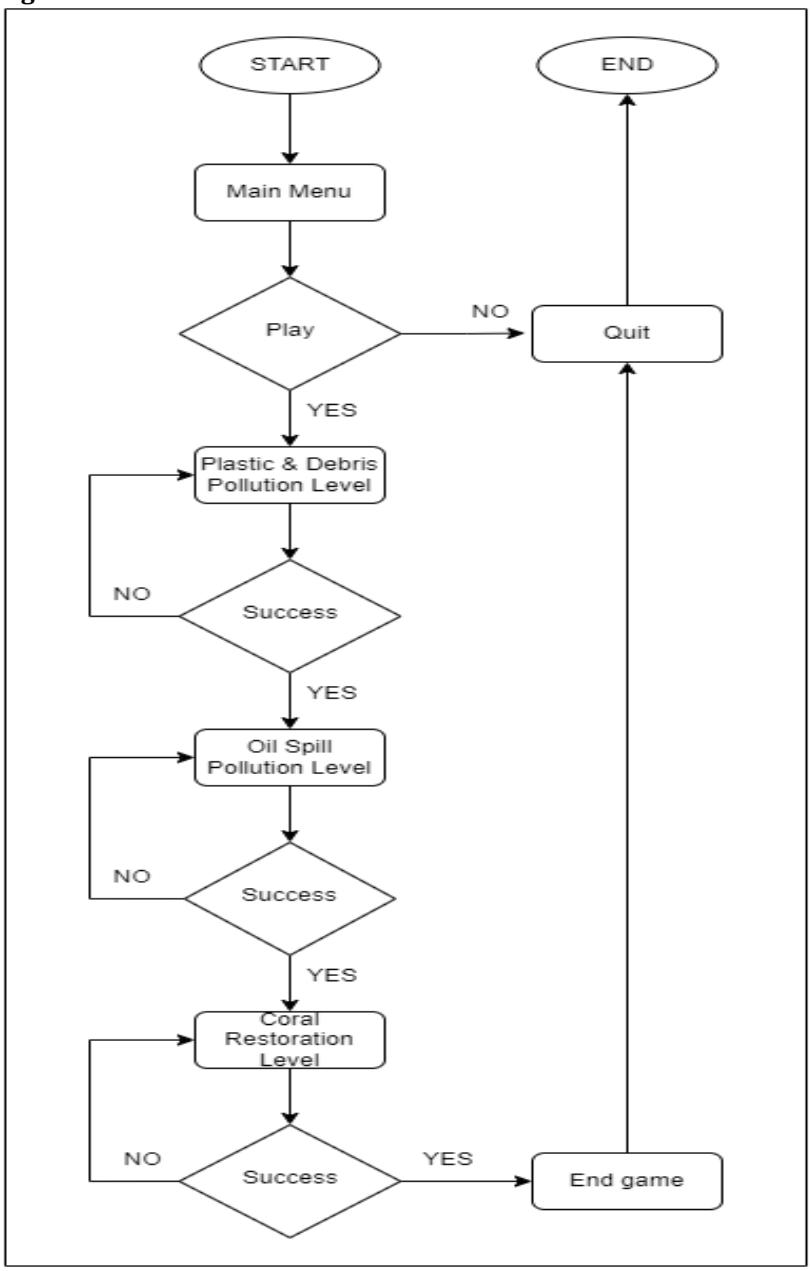
The RAD methodology is known for its ability to deliver projects in a short period of time. In the case of this small-scale game-based learning project, which is limited in scope, timely delivery is essential. With RAD, developers can quickly prototype, validate ideas and iterate on game mechanics and educational content. This iterative approach ensures projects stay on track, minimize risk and maximize efficiency. By accepting RAD, the project can be managed efficiently, leading to the delivery of high-quality games within the given timeframe.

Since the project will be developed solely by one developer, the potential negative effects of miscommunication and different project directions, which can be more common in large-scale projects with multiple team members, are significantly reduced. With a single developer, decision-making and coordination becomes more streamlined, allowing for a smoother development process.

4. Results and Discussion

In this section, the game design is shown through a flowchart. Figure 2 shows the game's overall flowchart.

Figure 2: Game Flow Chart



Next, below is the high-fidelity storyboard for the developed game. The storyboard comprises nine scenes and the description along with the multimedia elements are provided for each scene.

The game's flow, represented by three levels, guides players through diverse aspects of marine pollution. Level 1 emphasizes proper trash disposal in a cleanup mission, Level 2 involves addressing oil spills and rescuing trapped animals, and Level 3 focuses on coral restoration amidst challenges. Educational pop-ups enhance environmental awareness, ensuring a cohesive and impactful gaming experience with a structured progression.

Level 1: Plastic and debris

In the first part of the game, players take on the role of a character charged with cleaning up marine pollution and use the WASD keys to move through a dynamic marine environment. Level 1 is primarily concerned with gathering and classifying different kinds of trash, in particular plastic and debris, into orange, brown, and blue color-coded recycling bins. As players advance in the game, educational signs revealing facts about marine pollution are introduced. This adds an educational dimension to the immersive experience. In addition to involving players in a practical cleanup mission, this interactive role-playing game format instructs them on the importance of proper trash disposal and the damaging effects that marine pollution has on the ecosystem. Figure 3 shows the level 1 interface, Figure 4 shows the recycle bins interface.

Figure 3: Level 1 Interface



Figure 4: Recycle Bins Interface



Level 2: Oil Spill

In Level 2, players take on the difficult task of cleaning up pollution caused by oil spills. They do this by using the well-known WASD controls to guide their character through a dangerous aquatic environment. The main

goal is to gather oil spills that have been scattered across the water while avoiding different obstacles. One special feature of this level is that it gives players the option to save animals that are stuck in the oil spill, which gives the mission a more compassionate feel. Players have to use strategy to control the collected oil spills because a full tank requires a trip to a recycling or sell point. Throughout the game, educational pop-ups promote awareness and comprehension of this environmental issue by giving crucial information about the causes and effects of oil spills. Figure 5 shows the level 2 interface.

Figure 5: Level 2 Interface



Level 3: Coral Restoration

In Level 3, players take on the crucial task of restoring coral reefs by using drag-and-drop features to bring damaged reefs back to life. Players carefully restore the coral's health by using brushes, nutrients, and more tools. Players face obstacles like fishing boats that endanger coral and marine life, including fish and turtles that are particularly vulnerable, while on the restoration journey. Random debris surfaces add complexity and pose a direct threat to the fragile coral ecosystem. Managing these risks requires quick thinking and calculated action. At the same time, educational pop-ups enhance gameplay by providing insightful information about the wide range of threats that coral reefs face and their profound significance. In addition to involving players in a practical conservation endeavor, this immersive restoration adventure promotes increased awareness and environmental consciousness. Figure 6 shows the level 3 interface.

Figure 6: Level 3 Interface



The Game Experience Questionnaire (GEQ) is used in the assessment to determine how satisfied participants are with their overall gaming experience. Participants actively interact with the game during testing, completing tasks to identify possible usability problems and offering insightful feedback. The information acquired from the GEQ questionnaire helps to improve the functionality and design of the game, guaranteeing that it successfully raises user awareness and understanding of issues related to marine pollution.

In this study, a sample of over 30 individuals, mainly categorized as young adults with ages ranging from 18 to 26 years old, participated in the data collection process. Additionally, participants aged over 26 were also included in the study group. Every participant answered the 33 items in the core module of the Game Experience Questionnaire (GEQ) and the 17 items in the post-game module of the GEQ. After that, the collected responses were organized and exported to an Excel file, which made the questionnaire analysis that followed easier.

Analyzing the responses to the Game Experience Questionnaire (GEQ) requires a detailed look at all the different aspects of the player's experience. The entire gaming experience, emotional reactions, gameplay dynamics, presence and immersion, and the enjoyment factor in the learning environment are all evaluated in this thorough assessment. An examination of the participant-completed questionnaires might provide insightful information about the game design's advantages and disadvantages. In addition to providing an in-depth view of the effectiveness of various elements, game mechanics, immersion features, and the learning components integrated into the gameplay, this approach to analysis helps identify areas that require improvement. Through this analysis, a deeper understanding of the player's experience is achieved, providing important information that can inform future game development projects and contribute to ongoing research efforts in the field.

The process of calculating each component score from the items in a Game Experience Questionnaire (GEQ) necessitates a systematic approach. Each component, such as immersion, competence, flow, negative and positive affect, and challenge, was identified and evaluated within the questionnaire. Each component usually consists of several items designed to gauge different aspects of the player's experience. IJsselsteijn et al. (2013) have provided guidelines that contain references to all of these items. Tables 2 and 3 present the results of all calculated items, organized into their respective components for a clearer understanding of the different elements of the player's experience.

Table 2: Results Score from Calculated GEQ Core Module

Components in GEQ	Average Score
Competence	3.32
Immersion	3.72
Flow	2.65
Challenge	2.22
Negative Affect	1.45
Positive Affect	4.09

Table 3: Results Score from Calculated GEQ Post-Module

Components In GEQ	Average Score
Positive experience	2.98
Negative	2.19
Tiredness	1.36
Returning to reality	2.43

The analysis of the Game Experience Questionnaire (GEQ) Core Module results reveals valuable insights into various dimensions of the player's experience. The participants' responses are categorized into different components, each providing a distinct perspective on their engagement with the game.

The high scores in **Immersion (3.72) and Positive Affect (4.09)** indicate that participants were deeply immersed in the game and experienced predominantly positive emotions. These outcomes suggest a successful integration of immersive elements, contributing to an enjoyable gaming experience.

On the other hand, the scores for **Flow (2.65) and Challenge (2.22)** suggest that participants may have found the game less challenging or encountered disruptions in the flow of gameplay. This indicates potential areas for improvement, emphasizing the need for adjustments in-game dynamics to maintain a more balanced challenge level and a smoother flow.

The score for **Returning to Reality (2.43)** highlights a transitional challenge for participants leaving the game environment. Enhancements to the post-game experience or debriefing process may be considered to facilitate a smoother transition from the virtual to the real world.

The score for **Competence (3.32)**, while reasonable, suggests room for improvement. Evaluating specific aspects of competence within the game could enhance player skill development and satisfaction.

The low score for **Negative Affect (1.45)** is positive, indicating that participants did not experience a significant negative emotional impact. However, further exploration is needed to understand the context and reasons behind any negative effects, ensuring a comprehensive understanding of player emotions during gameplay.

Similarly, the low score for **Tiredness (1.36)** suggests that participants did not report high levels of fatigue, indicating that the game did not overly exhaust them physically or mentally.

As a whole, an analysis of the Game Experience Questionnaire (GEQ) Core Module outcomes reveals aspects of participants' interactions with the game that are both beneficial and positive. The success of immersive elements in enhancing the gaming experience is shown by the high scores in Immersion and Positive Affect. But Flow and Challenge both have room for improvement, indicating that the dynamics of the game may need to be changed. The Returning to Reality score highlights the transitional challenge and emphasizes how important it is to improve post-game experiences. Although competency scores make sense, additional assessment could improve the development of skills. While low ratings for negative affect and fatigue are encouraging signs,

obtaining qualitative data would provide a more in-depth understanding. This thorough analysis guides specific adjustments meant to maximize the game design for a more enjoyable experience.

5. Conclusion and Recommendations

Creating a two-dimensional video game is an innovative approach to address the urgent global issue of marine pollution awareness. The Rapid Application Development (RAD) methodology, which allows for quick iterations and employs informative user feedback, is an example of the dedication to a productive development cycle. The creative application of programs like Construct, Aseprite, and Canva improves the game's aesthetic appeal and creates an engaging learning environment for players.

The implementation of the Game Experience Questionnaire (GEQ) as a means of collecting data is crucial for the project has a lot of potential as an engaging and interactive way to raise awareness about marine pollution because of its unique game design. This iterative approach not only enhances the educational aspect but also ensures that the game remains relevant and effective in addressing the evolving challenges of marine pollution awareness.

Recommendations

There are several potential improvements and directions the project could go in the future. To keep players interested and promote a more engaging learning environment, adding more challenges and a variety of activities to the game is an important factor to take into account. Longer user engagement can be ensured by the project by adding new elements that make the gameplay more complex.

Moreover, adding multiple languages to the game presents an interesting opportunity to increase its accessibility. The game's educational impact could be expanded and diversity encouraged by effectively communicating safety messages to users with varying language backgrounds through the translation of the content into multiple languages.

In terms of future development, investigating modern technologies like augmented reality (AR) and virtual reality (VR) offers a fascinating path. By incorporating these technologies, the project's performance as a tool for spreading awareness may be increased by providing users with a more engaging and interactive experience. Investigating VR and AR has the potential to give awareness campaigns new dimensions by offering creative approaches to user engagement and education.

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Waqf-Based Social Business: A Financial Alternative to Private Tahfiz Institutions

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Abstract: Tahfiz institutions are now gaining popularity among Malaysians, and they have a lot of potential to be part of the mainstream education system. The growing demand for Tahfiz has resulted in a rise in the number of Tahfiz institutions in Malaysia especially private Tahfiz owned by individuals. However, most of the private Tahfiz institutions in Malaysia face financial constraints and struggle to obtain sufficient funding for their operations and infrastructure development. This may affect the operation of Tahfiz institutions in general. Therefore, the lack of funds has had many direct and indirect effects on the operation of Tahfiz institutions. Lack of resources, especially financial, hinders the institution's ability to provide a conducive learning environment for students. Tahfiz institutions in Malaysia are completely dependent on student fees as their main source of funds. Thus, this paper aims to propose the role of waqf as an alternative to help Tahfiz institutions, especially private Tahfiz in ensuring the sustainability of their operations. A review of existing literature on waqf education, development of private Tahfiz, and financial constraint. A proposed model was developed to assist the financial burden of private Tahfiz through a Waqf-based Social Business model.

Keywords: *Waqf, Tahfiz, Private Tahfiz, Financial and Social Business*

1. Introduction

The growing demand for Tahfiz education has led to an increase in the number of private Tahfiz institutions in Malaysia. To meet market demand, many Tahfiz institutions have been established mainly by individuals. The Tahfiz institution is an organization that specializes in educating students to read and memorize the al-Quran entirety (Bani, Katan, Noor & Fatah, 2014). The number of registered Tahfiz institutions in Malaysia has increased from only 58 in 1999 (Bani et al., 2014) to 1237 in 2022 (JAKIM, 2022). These institutions are either managed by the federal government through the Malaysian Islamic Development Department (JAKIM), the Ministry of Education, and the state government under the State Islamic Religious Council (SIRC) or privately owned. Privately owned Tahfiz institutions may be owned by foundations, Non-Governmental Organizations (NGOs), or individuals. This institution is registered under SIRC, the Registrar of Societies, or other agencies such as the Malaysian Companies Commission.

However, many Tahfiz institutions face financial constraints and struggle to obtain sufficient funding for their operations and infrastructure development. This can affect the quality of facilities, teacher salaries, and overall student welfare. Lack of resources hinders the institution's ability to provide a conducive learning environment and comprehensive support to students. Tahfiz institutions in Malaysia depend on various sources of funds to support their operations and provide quality education to their students. Student fees are the basic funds of each Tahfiz institution that will be used to cover their operating expenses. However, most Tahfiz institutions in Malaysia charge a minimum fee and it is not enough to cover all their monthly expenses.

Thus, waqf is seen as one of the alternatives to ensure the financial sustainability of Tahfiz institutions. Waqf is a form of Islamic philanthropy in which individuals or organizations donate property, assets, or cash to be used for a specific purpose, such as supporting educational institutions. Tahfiz institutions may benefit from waqfs that provide a sustainable source of income for their activities. Therefore, this study is necessary to highlight the role of waqf as a financial alternative to private Tahfiz institutions. By focusing on Waqf-based Social Business, this study aims to combine waqf and business as one of the best solutions for private Tahfiz

institution's sustainability. This is important to ensure the private Tahfiz can provide basic facilities and a better environment for their student which in turn will improve the quality of their education and performance.

2. Overview of Waqf Education in Malaysia

Waqf also has an important role in improving the development of religious schools. Waqf educational institutions are organizations that are developed by using waqf in the form of cash, land, or buildings for religious education (Latif, Ramli, Ismail, Sulaiman, & Daud, 2008). The history of waqf education in Malaysia began with *Sekolah Pondok* which involved the establishment of Madrasah and later changed to religious schools. Basically, in Malaysia, three types of waqf schools differ in the type of ownership and management. The first type of religious school is registered as a private school under waqf ownership, and management is under the responsibility of teachers or the community. However, this school is funded by the federal or state government and MAIN. Another type of waqf school is the State Religious School (SAN) and Community Religious School (SAR). Both schools are under the responsibility of MAIN as the sole trustee and are fully funded by the state government (Salleh & Rahman, 2014).

Despite the development of waqf in other sectors, Malaysia aims to have waqf-based universities or higher education. Thus, in line with the government's policy under the Higher Education National Strategic Plan to transform higher education that emphasizes on own income for development and management purposes (Muhammad, Rahman & Ahamd, 2016), waqf is seen as a solution for financial issues in education (Hilmiyah, Mohd Shafiai, Ahmad, Ramzi, & Che Hariff, 2013). In addition, the increase in development costs also affects the cost of education significantly.

Although Malaysia does not yet have a fully waqf-based university, some higher education institutions have started a waqf university or a waqf-based university concept that focuses on the collection of cash waqf (Ali & Wahid, 2014). There are six public universities and one private university in Malaysia that have established waqf programs in their institutions.

Initially, the International Islamic University of Malaysia (UIAM) introduced the International Islamic University of Malaysia Endowment Fund (IIUMEF) in 1999. In 2002, Universiti Putra Malaysia (UPM) introduced the "Knowledge Endowment" scheme while Universiti Kebangsaan Malaysia (UKM) with "Dana Waqf" and their UKM Infaq. Universiti Malaysia Sabah (UMS), Universiti Teknologi Malaysia (UTM), and Universiti Malaysia Pahang (UMP) respectively introduced the Scholarship Trust Fund, the UTM Endowment Fund, and the Endowment Trust Fund. While Kolej Universiti Bestari (UCB) has used the concept of selling and endowment (Che Yaacob & Muhamad Don, 2013; Salleh & Rahman, 2014). The university management has sold the entire UCB land and donated it for RM30 per 0.01 square meter. This concept has been successful and UCB managed to collect up to RM6 million from the endowment. Most of these university waqfs will donate cash waqf by purchasing the scheme or making monthly salary deductions. Most of the recipients of these waqf funds are students to finance their education and help reduce their financial burden (Ali & Wahid, 2014; Isamail, Rosele, & Anuar, 2015; Latif et al., 2008; M. Sulaiman et al., 2009). For example, IIUMEF has successfully helped 4000 students by providing scholarships at IIUM.

3. Development of Private Tahfiz Institutions in Malaysia

During the early establishment of the government-run Tahfiz institution, this institution only recruited high-level students (SPM graduates above), and they must also have excellent academic achievement. This is due to limited financial resources in offering scholarships to prospective *Huffaz* by the government. This situation has provided an opportunity for the private sector through private individuals and organizations to set up Tahfiz institutions as an alternative to those who wish to become *Hafiz* but do not achieve the qualifications required by the government. Private Tahfiz institutions have also offered the opportunity to learn Tahfiz in the early stages of education.

The historical context holds that the first private Tahfiz institution in Malaysia was Maahad Tahfiz wal Qiraat in Jeram Selangor in 1981. It was followed by the Madrasatul Quran Kubang Bujuk Terengganu in 1982 (Ismail, 2018; Nawi, Yusuff, Yaacob, & Salleh, 2014). The initial stages of the establishment and ownership of private

Tahfiz institutions are individual. Most are pioneered by individuals involved in the activities of *Jama'ah Tabligh*. This is because many of the *Jama'ah Tabligh* members have traveled abroad especially to India and Pakistan to carry out their preaching activities. They found out the model and method of memorization used by the other county were interesting and could be implemented in Malaysia as well. Thus, many of them have established private Tahfiz institutions to deliver knowledge of memorization that they have learned from other countries. (Ismail, 2018).

Based on the distribution of private Tahfiz Institutions in Malaysia (refer to Table 1), Selangor has the highest number of registered Tahfiz with 385 institutions followed by Johor and Perak. While Sarawak has the fewest registered Tahfiz institutions. The large gap between the number of registered Tahfiz is due to the different regulations imposed by each state.

Table 1: Total Number of Private Tahfiz in Malaysia

No	State	2020	2021
1.	Johor	122	152
2.	Kedah	62	91
3.	Kelantan	55	56
4.	Wilayah Persekutuan	24	32
5.	Melaka	42	61
6.	Negeri Sembilan	46	54
7.	Pahang	61	82
8.	Perak	79	111
9.	Perlis	14	17
10.	Pulau Pinang	35	46
11.	Sabah	39	48
12.	Sarawak	17	31
13.	Selangor	334	385
14.	Terengganu	50	71
	Total	980	1237

Since Tahfiz institutions in Malaysia are under the management and responsibility of SIRCs in each state, the operating procedure of this Tahfiz is different according to each state. This has caused significant differences in the aspects of school registration, control, reporting, and recruitment of teachers and students. This has also caused Tahfiz institutions, especially private Tahfiz in Malaysia, to have an inconsistent Tahfiz curriculum. Generally, there are two categories of curriculum offered which are traditional and modern. The traditional curriculum only focuses on techniques and memorization related to the Al-Quran. Whereas modern Tahfiz combines the Tahfiz syllabus with the current education curriculum. The combination of learning measures has the potential to help students memorize the Quran and excel in academic aspects and this has become a new attraction in Malaysia (Ismail, 2018). Indirectly, it also opens more opportunities for Tahfiz students to continue their studies at government institutions. However, the combined syllabus is used by Tahfiz under the state or federal government while most private institutions still use the old syllabus.

To empower Tahfiz institutions, the government has introduced the National Tahfiz Education Policy (DPTN). The main objective of DPTN is to ensure that Tahfiz institutions produce students who are involved in professional services. There are four main curriculum modules under DPTN which are Tahfiz Turath, Tahfiz Sains, Tahfiz Dini, and Tahfiz Vocational. In addition, Darul Quran collaboration and institutions of higher learning offer the Diploma of Tahfiz Al-Quran Wal Qiraat which is also a program created by the government to help Tahfiz students to continue their studies at institutions of higher learning. Currently, this program is running in 10 universities and colleges such as Universiti Tenaga Nasional (UNITEN), Universiti Teknikal Malaysia Melaka (UTeM), Johor College of Islamic Studies (MARSAH), Universiti Melaka (UniMel) and Universiti Kuala Lumpur (UNIKL). DPTN is the first step of the Malaysian government towards the uniformity of private Tahfiz institutions.

Financial Constraint of Private Tahfiz Institutions

Tahfiz institutions in Malaysia depend on various sources of funds to support their operations to provide quality education to students. First, student fees as their basic fund. Tahfiz institutions will charge fees from students to cover their operating expenses. These fees may vary depending on the institution, its facilities, and the level of support provided to the student. However, most Tahfiz institutions in Malaysia charge a minimum fee and it is not enough to cover all monthly expenses because the fees that cannot be collected are from poor and poor students (Rohayu et al, 2020).

The next source of funding is Zakat. Zakat is a form of charity that is obligatory in Islam. In Malaysia, the collection and distribution of zakat is managed by MAIN in each state. Tahfiz institutions may receive zakat funds to support their operations and provide financial assistance for qualified students. In some cases, Tahfiz institutions have been appointed as Amil to collect Zakat from people and get a certain amount as agreed as their share. For example, the Perak Negeri Al-Quran Education Foundation has been appointed as Amil by MAIN Perak and receives 50% of the total Zakat collection. Thus, this Foundation has distributed financial assistance to all Tahfiz institutions under its management. However, the amount is not enough to cover operational expenses such as their staff salaries. This is because the recipients of Zakat funds are limited to the specified categories only. Zakat funds cannot be used to finance other expenses. Hence, the issue of lack of financial funds is still happening.

In addition, donations and waqf are another source of funds for Tahfiz institutions. Tahfiz institutions often rely on donations from individuals, organizations, and the public. Generous individuals or businesses will contribute funds, assets, or scholarships to support the institution's financial needs and improve the institution's facilities and infrastructure. Waqf is a form of Islamic philanthropy in which individuals or organizations donate property, assets, or funds to be used for a specific purpose, such as supporting educational institutions. Tahfiz institutions may benefit from waqf which can provide a sustainable source of income for their operations. However, the most popular type of waqf given to Tahfiz institutions is the traditional waqf in the form of assets such as land or buildings to build the school. Therefore, no income generation can be made from the given asset as it is not used commercially.

In a nutshell, financial issues are among the main constraints that plague private Tahfiz institutions in Malaysia. Although the federal and state governments have provided various financial assistance, it cannot cover the monthly operating costs required by a Tahfiz institution. Therefore, a sustainable financial mechanism needs to be established to help Tahfiz institutions continue to operate smoothly so that the main objective of its establishment can be achieved. Therefore, as a result, waqf is viewed as beneficial in accomplishing that goal.

4. Proposed Financial Alternative: Waqf-Based Social Business

Waqf is part of Islamic philanthropy that can provide a strong financial structure in understanding the high potential social context such as business and social entrepreneurship. This activity is important to preserve the quality of life and well-being of the community (Lewis, DiGiacomo, Luckett, Davidson, & Currow, 2012). The role of waqf as a financial source in improving business and entrepreneurship needs to be implemented properly (Kahf, 2013). Previous studies have also agreed that waqf has the potential to be part of business or entrepreneurial funds among Muslims (Ahmed, 2015).

From the perspective of legal provisions, waqf property has been allowed to be invested in commercial activities to generate continuous interest. In Johor, Section 25, Islamic Administration Enactment 1978 allows the waqf committee to invest in waqf property in compliance with the conditions approved by Islamic law. Apart from that, Section 7 (2) (c) (Act 505) authorizes the Council and other agencies or individuals to carry out activities following the meaning implied by the relevant Section (Mahamood, 2007).

In Malaysia, most previous studies focus more on the preservation of business waqf and entrepreneurship, implementing social entrepreneurship through corporate waqf (Zainol et al., 2014), creating waqf entrepreneurs (R. Ali et al., 2015), suggestions for developing a waqf business model (Ali, Rahman, Ahmad, & Mahdzan, 2015) and empowering education using waqf funding (Mahamood & Ab Rahman, 2015; Harun et al., 2014). Most waqf models that have been developed in the country are mainly focused on single-factor waqf

models (that is, legal models, management models, and financing models); there is little, or no research has been developed on waqf business or comprehensive entrepreneur models (Ali et al., 2015).

Apart from Malaysia, Hariadi, (n.d.) mentioned the latest development of waqf in Indonesia. This study found that the practice of business waqf and entrepreneurship is very helpful in meeting the development needs of the community. This is considered through the implementation of various activities to mobilize waqf resources. Hasan (2011) also developed a waqf-based model to be used for Muslim small and medium enterprises (SMEs) in Singapore. This study confirms that, the need to establish a business model and entrepreneurship based on waqf funds. This model is proven by the establishment of two cooperatives under the auspices of the Singapore Climbing Foundation. However, due to the lack of experience in the operation of Islamic financial instruments, the cooperative has failed. This proves that the implementation of waqf funds in entrepreneurship and business requires deep planning.

Although it is proven that waqf funds have a high potential to be developed, Salarzahi, Armesh, & Nikbin, (2010) explained that waqf is one of the entrepreneurial patterns that require the use of business skills and entrepreneurial innovation. This is important to facilitate the use of profits to eliminate poverty and achieve social welfare strata. Apart from skills and planning, the most important thing in synthesizing the concept of waqf into business and social entrepreneurship is adherence to Sharia principles (Nawi & Daud, 2016).

Social businesses differ from traditional businesses that aim to maximize profits and non-profit organizations that rely on charitable donations. The main objective of social business is to address social problems or issues by using business strategies. This involves developing and selling products or services. Social businesses have a specific business structure that distinguishes them from other types of social initiatives. This means that the focus of social business is not to generate profits or distribute dividends to shareholders, but to achieve social objectives.

Therefore, developing a Waqf-Based Social Business is seen to be able to solve the financial problems faced by most private Tahfiz institutions in this country. A Waqf-Based Social Business model needs to be created to help Tahfiz institutions understand more clearly the implementation method of the model and further help to reduce the financial problems they face.

5. Conclusion

Tahfiz institutions are getting more and more attention among the community in this country. The development potential of this institution can be seen with the increase in the number of Tahfiz institutions, especially private Tahfiz. However, financial issues are among the main issues that plague most of these institutions. Therefore, a financial mechanism needs to be developed to help alleviate the problem. Hence, a Waqf-based Social Business model needs to be created to help Tahfiz operators understand the business concept and further help them overcome the financial problems they have encountered. Thus, this study provides specific insight into waqf education, the development of private Tahfiz in Malaysia, and the financial constraints faced by these institutions. This paper is only limited to the literature review discussion and proposed model. However, the suggested model is still new in the context of private Tahfiz in Malaysia. Future studies shall be conducted on empirical aspects of the impact of Waqf-based Social Business among private Tahfiz.

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JomRonda: Mobile Application for Security Guard Patrolling

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Abstract: Security patrolling is the process of routinely walking or driving through an area to maintain safety and follow the rules. Few studies discovered issues in security, accuracy and dependability of using non-computerized devices such as watchman clock. One of the issues is hard to monitor the tasks where the watchman tends to avoid their duties by attempting to use the duplicity and adjustment to the watchman's clock and the key. Yet, the watchman forgets to make daily reports in a logbook at each checkpoint resulting in inaccuracy for authorities to attend and managing any serious emergency. Focussing on the issues, this application is designed with patrolling techniques called geofencing whereby the watchman's location is tracked and data about patrolling is recorded to a database once crosses a virtual boundary. Stakeholders get benefit from the application by keeping track of and reading daily reports digitally. Furthermore, it contains SOS features or international standards for signalling distress allowing users to alert one another in the event of an emergency in the area via a form and an in-app notification. This project follows a methodology known as the Modified Waterfall Model, which entails four stages: requirement gathering and analysis, design, implementation and testing. Future improvements are daily and monthly reporting to authorities can be generated and sent through email. Yet, the application needs temporary storage and the database will be updated as soon as the internet connection is restored.

Keywords : *Security patrolling, watchman, geofencing, mobile application, modified waterfall model*

1. Introduction

Security guards are responsible for protecting the building and those who are in the specified area, such as information, teachers, students, staff and visitors. Apart from that, they are also in charge of enforcing all relevant rules to maintain the safety of each assigned area or checkpoint, supervising everyone at the Control Post, ensuring that everyone is following the rules and assisting in the resolution of any requests for assistance from the public or local staff in the school. Furthermore, they must keep the key of the watchman clock safe and integrity. They cannot make copies of the keys or give them to other people. The security guard patrolling procedure at school is by using a watchman clock to record the patrolling time, and they are also given a logbook every month to record the daily patrolling report. The main equipment needed and used by the security guards for patrolling are a watchman clock, walkie-talkie, whistle, torchlight, and security wood baton. A watchman clock is a mechanical clock that consists of a key and a clock, and it is used in a way by inserting the key into the clock, rotating it and a time stamp would be pressed onto a strip of paper rolled inside the clock. There are four different watchman clock keys at each checkpoint which are keys 1, 2, 3, and 4 to show the recorded patrolling time from each checkpoint.

The use of a non-computerized device, the watchman clock, brings several impacts in terms of security, accuracy and reliability. Based on the interview conducted with stakeholders, Madam Sazaridal Asslidah mentioned that when using a watchman clock, the possibility of getting unreliable information is high since a watchman clock is physical equipment where the key can be duplicated and the time on the clock can be manually adjusted. She also mentioned that there was an incident where watchmen were caught cheating while performing their duty by adjusting the time on the watchman clock and not patrolling all the checkpoints around the designated area as they had duplicate keys to lock the time using the watchman clock.

Based on the survey conducted to security guards, 75% tend to forget the incident that occurred at each checkpoint when they are required to write a daily report in a logbook after completing each patrol session. As a result, the information in the logbook may be untrustworthy because the authorities cannot verify its veracity.

The stakeholder revealed that it is difficult for security guards and authorities to alert each other in the event of a serious emergency. Watchmen are only given walkie-talkies to use among coworkers during patrol sessions. Based on the issues mentioned above, there is a necessity to introduce a mobile application to be used by security guards and related parties. This paper aims to develop an application that applies geofencing, SOS and centralized database.

2. Literature Review

According to Chen, Cheng, & Wise (2017), patrolling is defined as the act of walking or traveling around the area, at regular intervals, to protect or supervise it. The act refers to protecting people from any harm, providing a save environment for people, being alert for any emergency and many more. The categories are persons, property and information mentioned by O'Rourke (2019).

A. Mobile Application

According to Phongtraychack & Dolgaya (2018), a mobile application is a software program that runs on mobile devices such as smartphones and tablets. With the outcome of current technological advancements and because of the confluence of media, information technology, the internet, and sophisticated technologies, mobile applications have emerged. The development of society can be aided by mobile applications in terms of time savings and increased productivity since there is less computer use, so less power consumption and improvement of IT infrastructure in developing countries.

B. Geofencing

A geofence, sometimes known as a virtual fence, is used to enclose a specific geographical area. When a mobile application detects that it has been moved to a geofenced area, the app sends a signal to the device's server. To specify a precise location by providing its latitude and longitude, a radius can be added if we wish to change the site's proximity. Geofencing can be defined using latitude, longitude, and radius by constructing a circular region, or fence, around the intended location of interest (Syamimi & Amir, 2018). According to Statler (2016) in his research, geofencing is divided into two categories which an Active geofence and Passive geofence. An active geofence is a condition where the geofence is only functioning when the application is turned on. This means the application is more suitable for those who have specific users. While the passive geofence can work in all conditions such as the application is open, closed and even terminated. It means that the geofence can work in the background, but it will not achieve the same level of precision as the active method. The passive method is a suitable geofence method for businesses to use as it can target anybody, especially for advertising or promoting business by sending push notifications about the business's products. Aside from that, geofencing is used in the background where the user does not need to open it always. However, geofencing is battery consuming. Thus, this will lead the users to turn off the feature (Syamimi & Amir, 2018).

C. SOS

It's common to hear SOS referred to as an abbreviation for "Save Our Souls" or "Save Our Ships," but these are just backronyms for the words themselves. The signal is not even meant to be three separate letters. It's just a string of three dots, three dashes, and three dots that run together in Morse code without any spaces or full stops (...—-...) (Soniak, 2022). Apart from that, SOS is an internationally recognized signal of distress in radio code. In our generation, SOS has been used to give a signal if any emergency occurs. An individual is subject to a variety of events, such as being involved in an accident, being the victim of a crime, or being hijacked. People are fortunate in that they always have their mobile phones close at hand, which allows them to have a greater sense of safety. They will be able to quickly respond to dangerous situations and protect their lives by acting in this manner (Chauhan et al., 2020). Many SOS applications are available for mobile applications because mobile phones are a necessity that everyone must have. Besides, there are also different technologies used to send SOS signals such as walkie-talkies, beacons, GPS and more. In this project, there will be a function where the security guards and school authorities can notify all the application users of an emergency occurring using the SOS function.

D. Waterfall Model

The Waterfall model came first in the family of Process Models. A linear sequential life cycle model is another name for this concept. There is little complexity to its operation. There is no overlap and iteration between

stages in a Waterfall model means each stage must be completed before moving on to the next and there is no correction that can be made after one phase is done. The Waterfall model is a linear sequential life cycle model because it depicts the software development process in this way. Therefore, starting a new phase of development requires finishing the one before it (Senarath, 2021). According to Aroral, business analysis, design, implementation, testing, and maintenance are Waterfall model phases. This strategy proved successful, and numerous development firms and industrial manufacturers use it. Many scholars praise the Waterfall model for its simplicity compared to other systems development life cycle models (2021).

E. Modified Waterfall Model

In Gao and Hembroff's (2012) studies, Modified Waterfall is their chosen approach, and they have stated that even after the maintenance phase, the product will not be finished because based on the user feedback collected, they will use it to make improvements on the project and the phases might be returned to the requirement phase. The Modified Waterfall model that the author used in their project. Thus, the Waterfall model can be modified in terms of including iteration on some phases according to which will be more beneficial or include other suitable material on the Classic Waterfall model.

3. Methodology

The application is guided by the modified waterfall methodology that involves 4 phases which are requirement gathering and analysis, design, development and testing.

A. Requirement Gathering and Analysis

Many journals and articles were reviewed to get information about this topic, obtained experience from stakeholders through interviews, conducted surveys to get feedback and opinions from related respondents, implemented of mobile application for efficient patrolling and retrieved some ideas from several existing applications. All the data gathered will be used to identify the problem and determine the objectives, scope and significance of developing this project.

B. Design

The design phase is where the developer needs to design a flowchart, storyboard and use case diagram before further development. Figure 1, figure 2 and Figure 3 show the storyboard of the interface. Figure 4 shows a use case diagram.

Figure 1: Storyboard design for admin home page, login page and admin dashboard

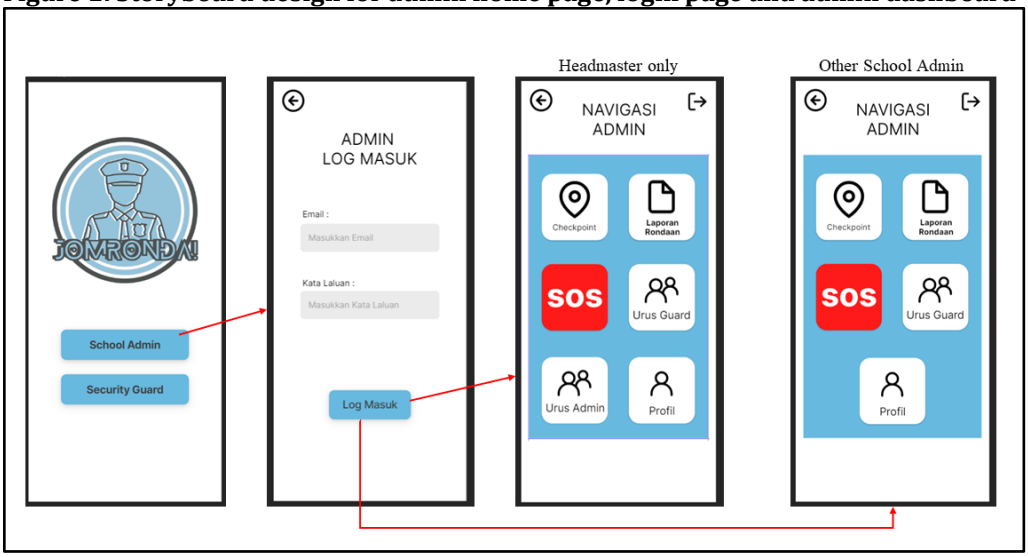


Figure 2: Storyboard design for super admin (headmaster) manage other users account

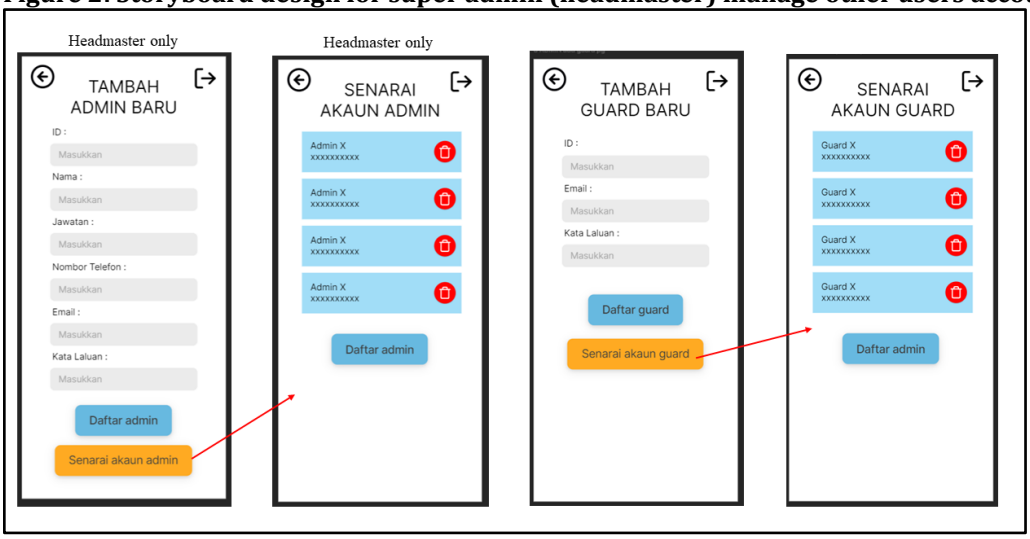


Figure 3: Storyboard design for school admin view checkpoint, add checkpoint and view patrolling report

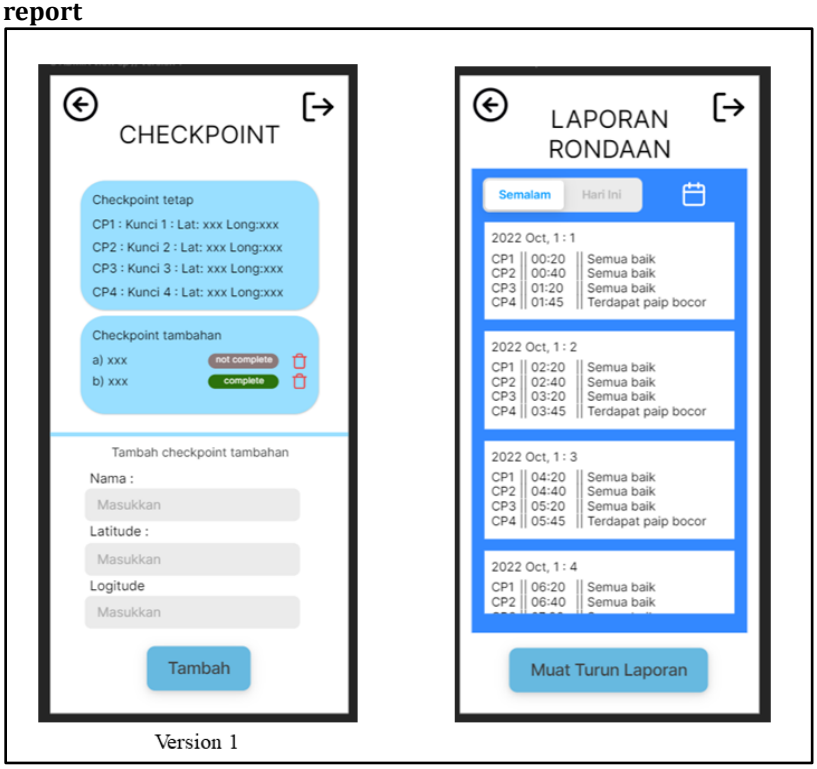
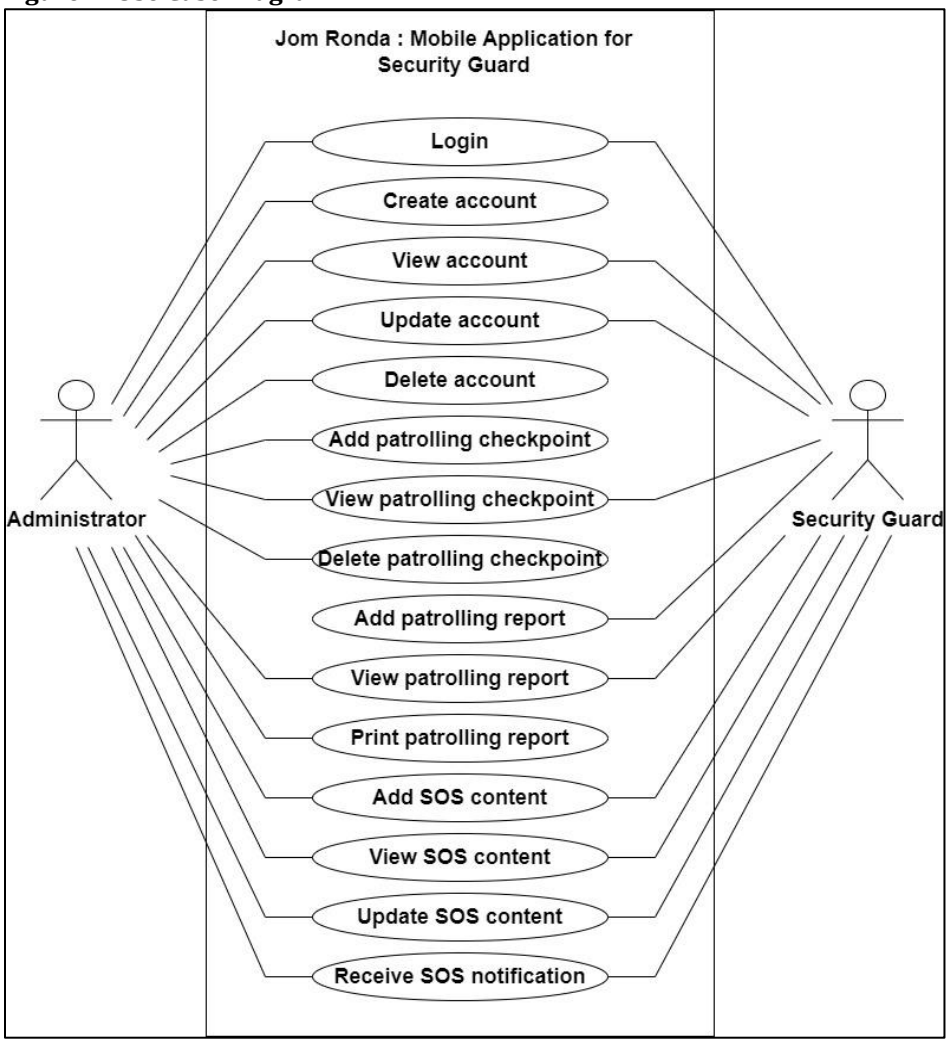


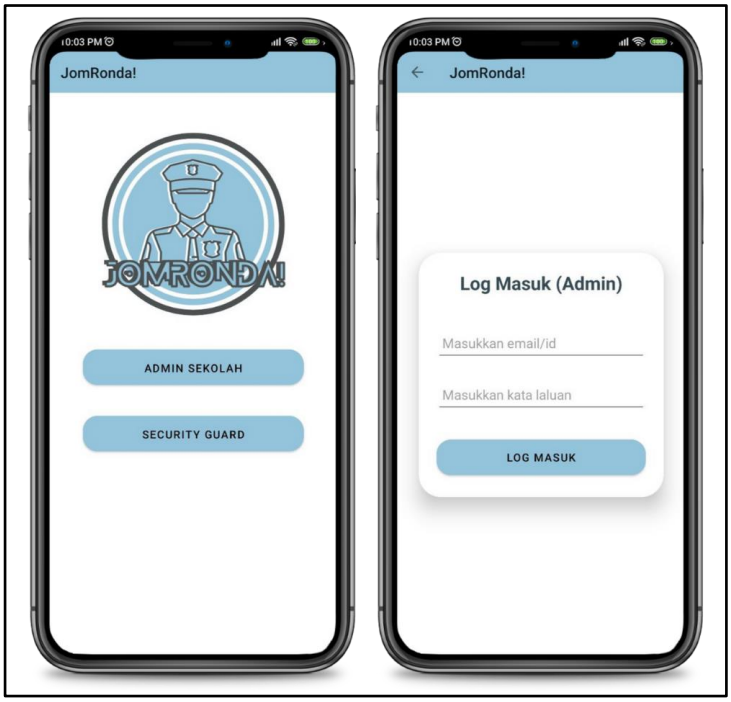
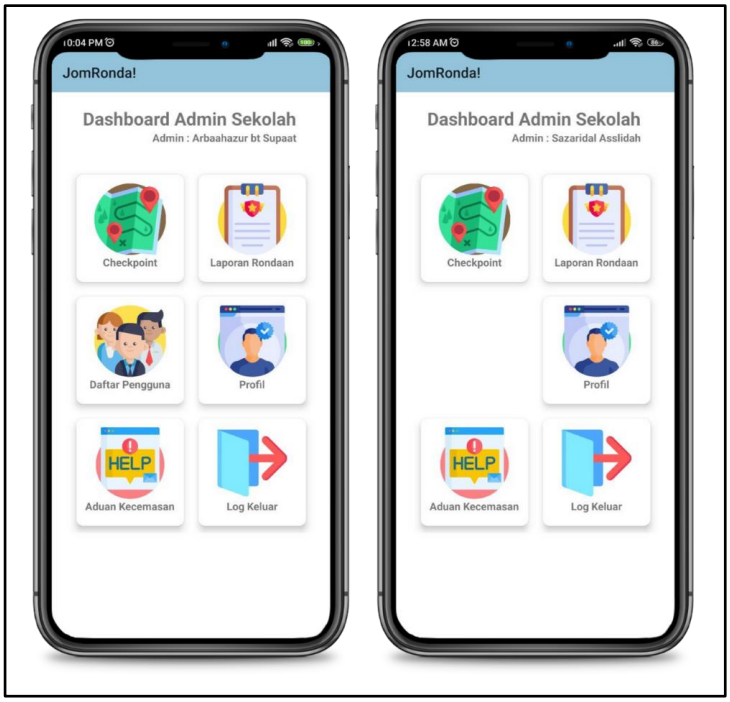
Figure 4: Use Case Diagram

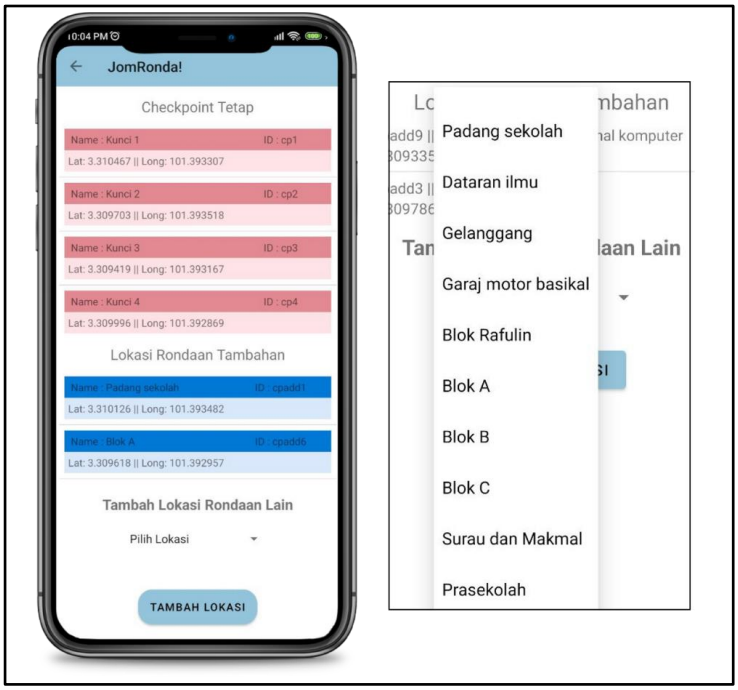
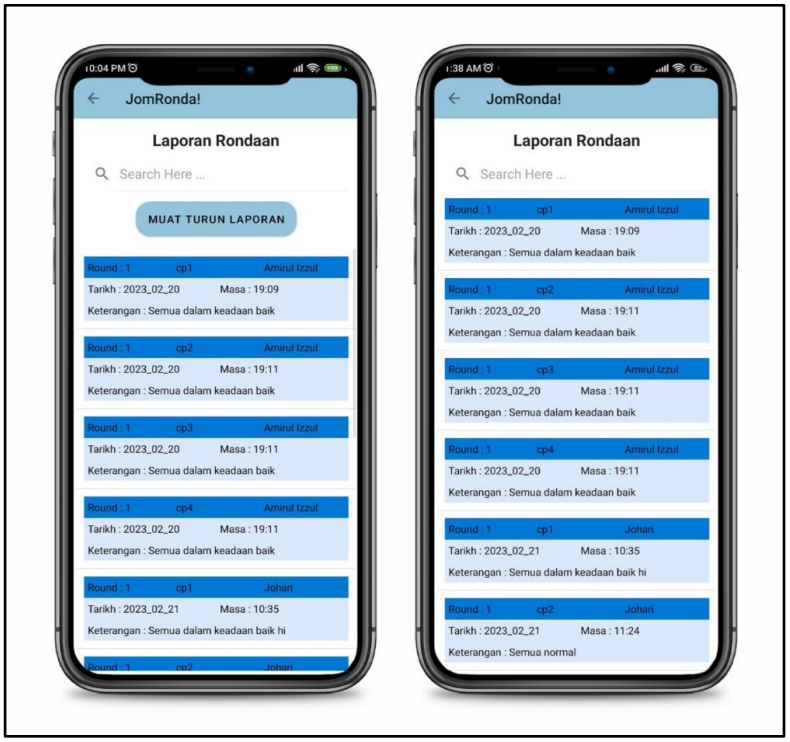


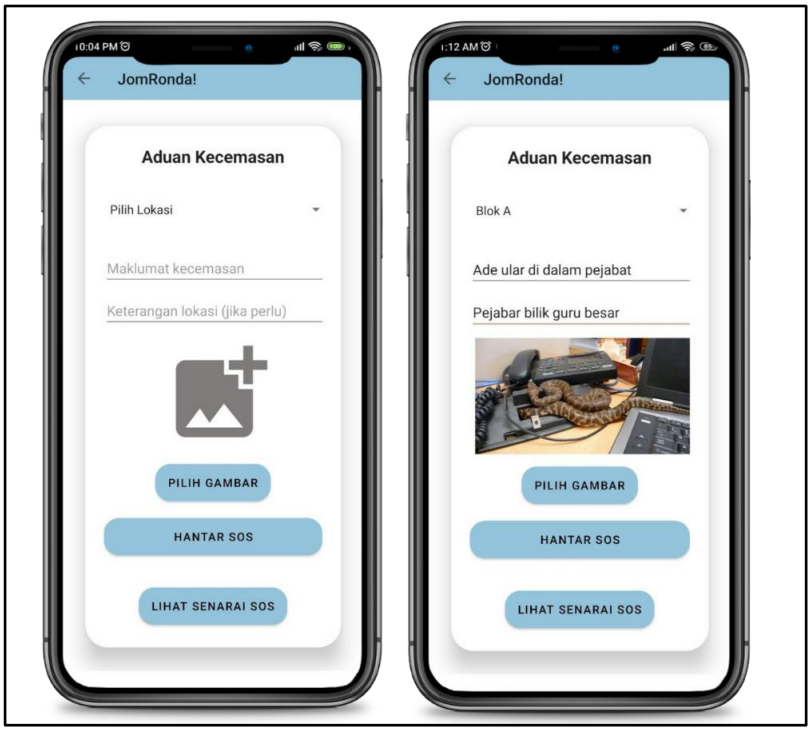
C. Implementation

The mobile application has been developed using Java language, Android Studio as the integrated development environment (IDE) and Firebase Realtime Database as the database. Android Studio uses the Extensible Markup Language (XML) which is a simple text-based format for representing structured information. Table 1 represents the main function of the application.

Table 1: List of Main Functions in JomRonda Application And Explanation

Function	Details	Interface
Login	The login function is used for the security guards and the school admin to redirect to their user interface respectively.	
Manage user account	This function allows the headmaster to manage security guards and other school admin accounts. The headmaster can create new accounts for newly hired school guards or for the school admin who she wants to assign to manage this JomRonda application and delete old accounts for those who have resigned from their positions.	

Patrolling the checkpoints	Security guards can patrol all of the checkpoints by using their mobile phones as the features is geofencing technique. The device will be triggered once entered the predetermined area, and an action, which is the date and time that the patrolling was performed, will automatically be stored in the database.	
Manage patrolling report	Security guards can fill up a form and report the current situation at each checkpoint. Once the form is submitted, the information will be automatically stored in the database, and the administration of the school will be able to access the report data at any time using the mobile application.	

Manage SOS	The SOS function is to notify any of the application users if there is an emergency. However, in major crises, such as fires or homicides in the school, they must first contact the fire department or the police. The function includes a form for entering details to send an emergency notification to security guards or school admin.	

D. Testing

Testing is conducted using functional testing that has been implemented by 3 users. The users are the developer, supervisor and examiner. All the main functions in the JomRonda application have been tested, worked well as expected and met the objectives. The testing refers to use case activities. It is proved that all the use cases function very well.

4. Results and Discussion

The functional testing is analyzed based on the activities in the Use Case Diagram. Table 2 is the summary of information from the testing.

Table 2 : User Testing

Activity	Function (Yes (Y) / No (N))		
	User 1	User 2	User 3
Login	Y	Y	Y
Create Account	Y	Y	Y
View Account	Y	Y	Y
Update Account	Y	Y	Y
Delete Account	Y	Y	Y
Add Patrolling Checkpoint	Y	Y	Y
View Patrolling Checkpoint	Y	Y	Y
Delete Patrolling Checkpoint	Y	Y	Y
Add Patrolling Report	Y	Y	Y

View Patrolling Report	Y	Y	Y
Print Patrolling Report	Y	Y	Y
Add SOS content	Y	Y	Y
View SOS content	Y	Y	Y
Update SOS content	Y	Y	Y
Receive SOS notification	Y	Y	Y

The testing was carried out to identify the errors encountered while exploring. The Jom Ronda application. It also assists the developer in obtaining any. Feedback on the application. The user interface and functionality of the application are reviewed by stakeholders and improvement has been done. They are satisfied and approve that the application is beneficial for them. Furthermore, the application's function is working very well. This indicates that the users. Appear to understand the application's purpose. The strength of this application is that it will provide security patrolling and other stakeholders to manage their work efficiently. This application provides a geofencing technique, SOS and centralized database features.

5. Conclusion

This application benefits security guard patrol by managing their profile, automatically detecting all the checkpoints, filling up and submitting the form and report easily at each checkpoint and sending emergency messages to authorities. The authorities can also rely on the application to monitor the security guard's work, receive the report, and alert with any emergency message received.

However, the project is developed for generating reports that can be viewed using mobile applications only. Sometimes the checkpoint area has intermittent internet connection that will affect the functionality of the application. As a future work, it is highly recommended that daily and monthly reports be generated and sent through email. Another enhancement is the application requires temporary storage and the database will be updated as soon as an internet connection is restored.

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Construct Validity of Adaptive Performance: A Case of Malaysian Lecturers

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Abstract: The virtual mode of the classroom that changes from the traditional education model poses challenges among the educators especially the inability to cope with the adaption of educational technologies. Online literacy is the basic skill to exercise an outstanding performance during changing environments. However, the conceptualization of adaptive performance seeks further exploration mainly because the past studies focus on the specific context. This study aims to present the validity and reliability of the adaptive performance construct related to online teaching platforms among Malaysian public university lecturers. The questionnaire was designed using Google Form and the adopted questionnaire was emailed to lecturers of Malaysian Research Universities (henceforth, RUs) via their institution's email address. The data were then analyzed using the SmartPLS software through the measurement model analysis. The analysis involved a second-order approach where the outer loading values, the convergent validity of Average Variance Extracted (henceforth, AVE), and reliability analysis of the adaptive performance construct. The findings suggest that the validity and reliability of the construct were established for the context of the study. The Cronbach Alpha and composite reliability values scored above the threshold values. This study confirmed the adaptive performance instrument among the lecturers in Malaysia and can provide insight for future research. The limitation includes the sample of the study that was rather homogenous which it only focused on lecturers from Malaysian RUs.

Keywords: *Construct validity, adaptive performance, lecturers*

1. Introduction

Volatility, uncertainty, complexity, and ambiguity (VUCA) are the situations that label change as constant and unpredictable change as a norm. In the higher education industry, the gain of the virtual mode of the classroom that changes from the traditional education model poses challenges to educators. (Jimoh & Adenekan, 2024; Shoaib et al., 2022) especially the inability to cope with the adaption of educational technologies (UNESCO, 2021). The lecturer's ability to act adaptively and exhibit flexibility is clustered under adaptive performance which would lead to better performance in fluid and changing environments thus producing a higher job performance for an individual. (Ployhart & Bliese, 2006; Solberg, 2017).

Apart from the changing structure from the traditional approach to online teaching and learning, more work requires technological literacy such as web-based seminars, online-based research and development activities, and online training courses. In particular, those who exercise an outstanding performance during the changing environments are said to have a high adaptability whereas those who fail to do so are classified as having a low adaptability. Adaptive performance is theoretically defined as the act that displays the ability to organize and adapt to changes taking place as well as transferring learning from one duty to another due to various job demands. (Allworth & Hesketh, 1999; Griffin, Parker, & Mason, 2010).

To date, scholars such as Loughlin & Priyadarshini, 2021; Pratoom, 2021) Have carried out extensive studies in evaluating the conceptualization of adaptive performance due to its significance. Furthermore, Malaysian-based scholars (to name a few: Arshad and Malik, 2015; Shahidan, Azizan, Arifin, Abumandil and Arshad, 2021) Have focused on research studies that specifically focused on adaptive performance in the domestic context that empirically yielded different results in each context. Several scholars (Bakkaloglu, 2023; Pratoom, 2021) Argued that need for a study that further explains the conceptualization of adaptive performance particularly in the Malaysian context (Shahidan et al., 2021). Therefore, the aim of this study is to further clarify the construct validity and internal consistency of adaptive performance measurement specifically in terms of the local education sector.

2. Theoretical Background

Adaptive performance is not a new concept in the area of employees' work performance dimensions. Koopmans et al., (2011) Argued that due to increased complexity and uncertainties in the work environment, adaptive performance is no longer acceptable to be grouped under task performance, contextual performance, and counterproductive behavior. Notably, adaptive performance is an extended dimension of performance (Borman & Motowidlo, 1993; Carpini, Parker, & Griffin, 2017) and the dimension has been explored and investigated empirically in many studies across various industries and contexts. The conceptualizations of adaptive performance have been associated with various elements including its relationship to adaptive expertise (Stokes, Schneider, & Lyons, 2010), as an outcome of task performance (Carbonell, Stalmeijer, Könings, Segers, & van Merriënboer, 2014), individual difference construct (Ployhart & Bliese, 2006), capability to deal with changes and to transfer learning from one duty to another (Allworth & Hesketh, 1999), employees' degree to adapt, respond and support changes by proactive, reactive, and tolerant behaviors (Griffin, Neal, & Parker, 2007) and employees exhibit adaptive performance by altering their actions based on the needs regarding situations and changes taking place at the workplace (Charbonnier-Voirin, El Akremi, & Vandenberghe, 2010). The difference in adaptive performance's conceptualization has produced many viewpoints on the concept itself which require further empirical support empirically.

Furthermore, adaptive performance has become more prominent in its field to this end, the studies conducted on adaptive performance area have increased two-fold from the year 2005 to 2015 (Carpini et al., 2017). These studies involved various contexts such as the hotel industry. (Allworth & Hesketh, 1999), manufacturing industry (Pradhan, Jena, & Singh, 2017), health industry (Green, Dishop, & Aarons, 2016; Shahidan et al., 2021) And many more. Available studies on adaptive performance are found to have a limited scope in certain contexts; thus, it is crucial to further discover the conceptualization of adaptive performance as it occurs in various cultures and work settings. Further validation demonstrates that there is a rising need to recognize the significance of adaptive performance since technological intervention in the education industry has led to the need for more agile lecturers, particularly in higher learning institutions.

In an attempt to extend the literature on adaptive performance, Pulakos et al., (2002) Introduced eight taxonomies of adaptive performance which consist of 68 items known as Job Adaptability Inventory (JAI) that is used to assess adaptive behavior. The taxonomies are: (1) handling emergencies or crises; (2) handling work stress; (3) solving problems creatively; (4) dealing with uncertain and unpredictable work situations; (5) learning work tasks, technologies, and procedures; (6) demonstrating interpersonal adaptability; (7) demonstrating cultural adaptability; and (8) demonstrating physically-oriented adaptability. Following this, Griffin & Hesketh (2005) Reduced JAI to between 18 to 20 items.

In acknowledging the increasing attention on adaptive performance conceptualization, Charbonnier-Voirin & Roussel (2012) Discussed the importance of employing a multidimensional scale to further understand the dimension of individual adaptive behavior across various settings. This has resulted in a multidimensional scale of adaptive performance, which can be used in diverse contexts and consists of a 19-item scale measuring its five dimensions, namely: (1) creativity, (2) reactivity in the face of emergencies, (3) interpersonal adaptability, (4) training effort, and (5) handling work stress (Charbonnier-Voirin & Roussel, 2012). Although many scholars have noted the importance of understanding how employees behave adaptively through multidimensional constructs proposed, the clarity and consistencies of adaptive performance remain lacking (Park & Park, 2019; Pratoom, 2021).

Despite the diverse manners employed in adaptive performance, the current study will hold onto the definition that employees should adjust their actions in response to new or shifting environments and situations. Hence, the current study will utilize the measurement of the adaptive performance construct that has been proposed by Charbonnier-Voirin and Roussel (2012) with a specific focus on the Malaysian lecturers' context. Additionally, there have been studies on adaptive performance conducted in the Malaysian context, for instance, studies by Guan, Amalia Madihie (2014) Shahidan et al. (2021) acknowledged the significance of adaptive performance from a Malaysian perspective. Nonetheless, these studies were limited to their specific contexts thus there is a need for more studies to be conducted on adaptive performance. Empirical evidences show that the need for adaptive performance studies has grown and there is also a need for further clarification on the development of its construct to be applied in the local context. Hence, it is worth further research to validate

the multidimensional scale of adaptive performance in Malaysia, specifically among the lecturers in public higher learning institutions.

3. Methodology

This study used individuals as the unit of analysis and the data gathered were for a one-off. The data were collected from five Malaysian RUs located in the north, south, and east of Malaysia. Furthermore, a simple random sampling technique was employed for the data collection process and a survey questionnaire was designed using Goole Form and distributed to the respondents via their respective institution's official email. The measurement of the adaptive performance construct was adopted using the scale proposed by Charbonnier-Voirin and Roussel (2012). The construct consists of five dimensions namely creativity, reactivity, interpersonal adaptability, training effort and handling work stress. The adaptive performance construct was measured using 19 items via a seven-point Likert scale.

Then, Statistical Package for Social Science (SPSS) version 26 was employed to undertake a statistical analysis, particularly for preliminary data analysis which involved the process of detecting and improving errors in the data file. The process included identifying blank responses, straight-line responses, outliers, and descriptive analysis. Next, the Partial Least Square approach was adopted to find the measurement model analysis.

Specifically, SmartPLS version 3.3 software was employed for identifying the measurement model analysis which included the analysis of convergent validity and internal consistency reliability. The higher-order construct in PLS-SEM was adopted to increase parsimony. (Sarstedt, Hair, Cheah, Becker, & Ringle, 2019). The convergent validity analyses encompassed the outer loading with a threshold value of 0.4 and above. (Hair, Ringle, & Sarstedt, 2011) and AVE with a threshold value of 0.5 and above (Bagozzi & Yi, 1988). The construct must surpass the recommended satisfactorily convergent validity then the process to identify internal consistency analysis will take place. Internal consistency analyses involved Cronbach alpha value and composite reliability. The threshold values for Cronbach alpha were between 0.8 - 0.9 (Nunally & Bernstein, 1978) and for composite reliability was 0.7 and above (Hair, 2018).

4. Results

Demographic Profile

The data were collected from lecturers at Malaysian research universities via email with the attachment of the Google Form link for the survey. A total of 1,600 questionnaires were emailed and the response rate of this survey was 12.9% with 197 responses. After the preliminary data were analyzed, the usable questionnaires were 196 responses of which male respondents represented 38.8% while female respondents were represented by 61.2%. In terms of age, 46 respondents (23.5%) were between 31 and 40 years old, and 63 respondents (32.1%) were between 41 and 50 years old. A majority of the respondents were PhD holders with 179 respondents (91.3%) while 14 respondents (7.1%) had a Master's Degree and the remaining respondents 1.5% were Certificate holders. Besides, most of the respondents (48%) had been working with their present institution for more than 15 years, while 20.4% had been working for less than 5 years.

Analysis

Figure 1 illustrates the model of adaptive performance construct together with lower order indicators, indicating convergent validity assessment such as outer loading and AVE not surpassing the satisfactory threshold. Although the outer weight for items in lower order construct showed less than 0.4, the AVE scored for the lower higher order or the dimensions of adaptive performance are more than the threshold values of 0.5. However, the AVE for adaptive performance is 0.432 implying the construct is convergently invalid, which requires further deletion of items. Thus, the figure illustrates the model of adaptive performance after the deletion of seven items (refer to Table 1).

Figure 1: Measurement model of Adaptive performance construct

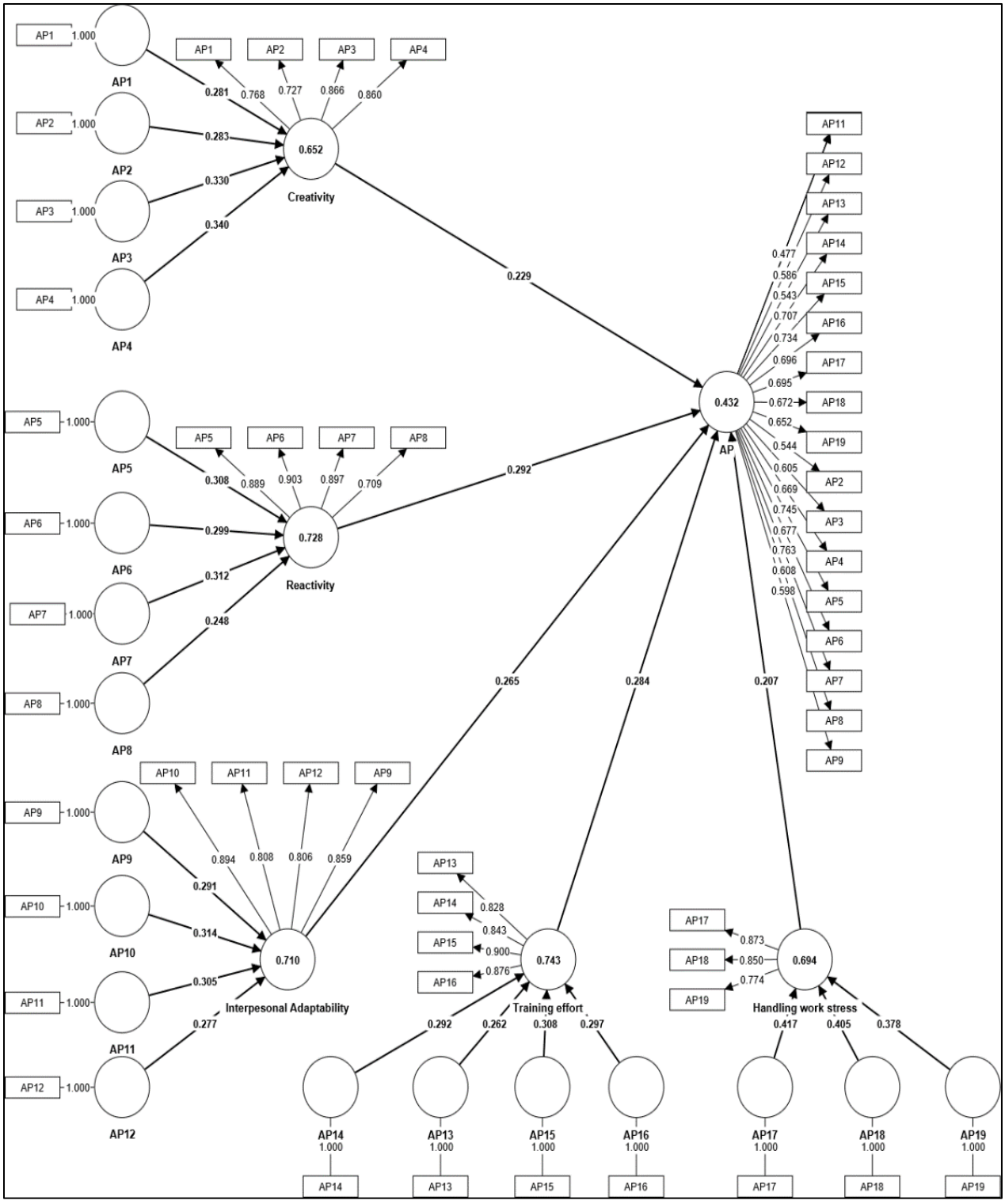


Figure 2: Measurement model of Adaptive performance after deletion of items

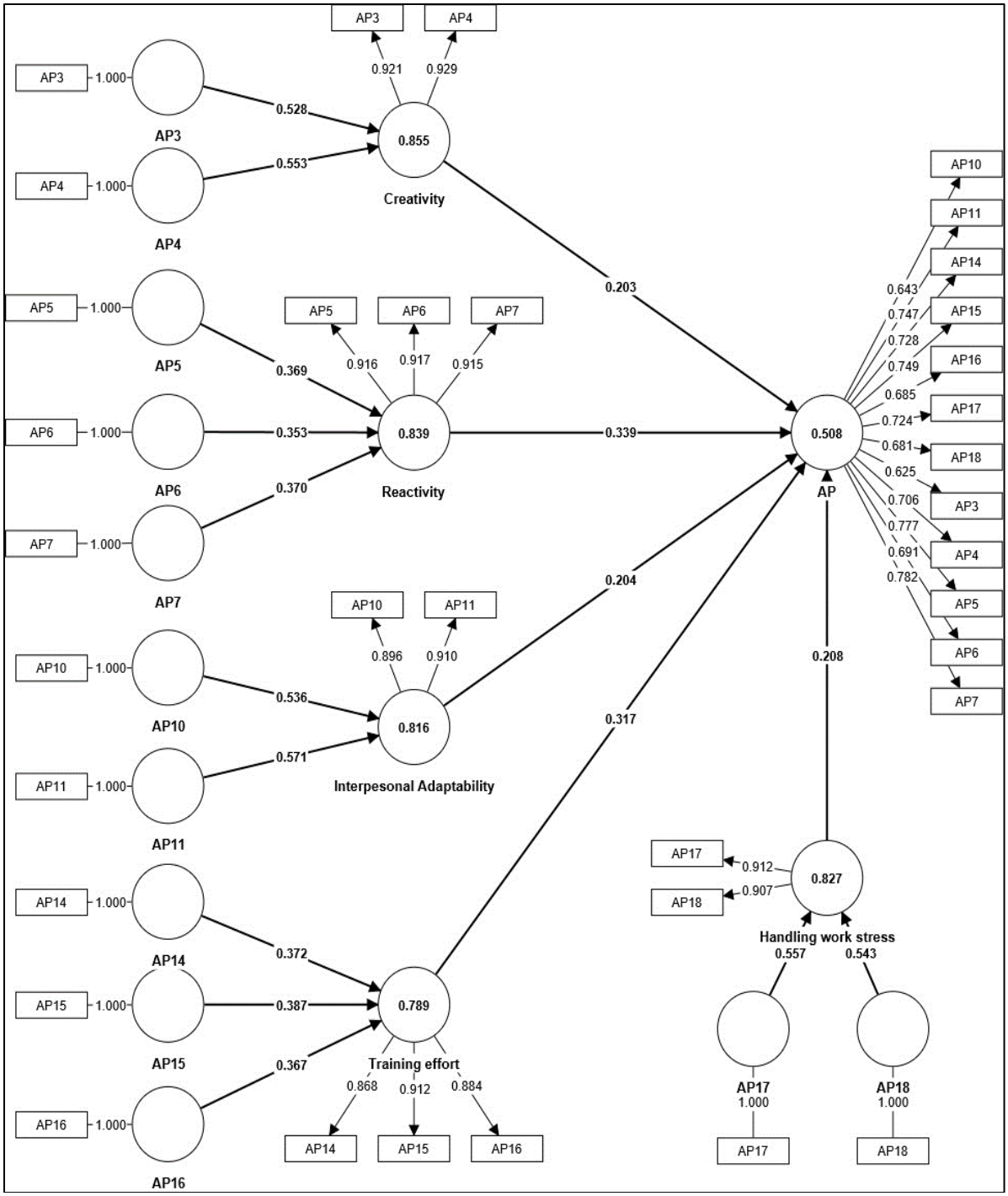


Table 1: Deleted Items for second order

Construct	Items		weight
Adaptive Performance	AP1	I do not hesitate to go against established ideas and propose an innovative solution.	0.281
	AP2	Within my department, people rely on me to suggest new solutions.	0.283
	AP8	I can easily reorganize my work to adapt to new circumstances.	0.248
	AP9	Developing good relationships with all my counterparts is an important factor in my effectiveness.	0.291
	AP12	I willingly adapt my behavior whenever I need to work well with others	0.277
	AP13	I undergo training regularly at or outside of work to keep my competencies up to date.	0.262
	AP19	My colleagues ask for my advice regularly when situations are difficult because of my self-control.	0.378

Table 2: Factor Loading for Adaptive Performance Construct

Items	Construct	Lower order	Higher order
Adaptive performance Dimension			
Creativity			**0.203**
AP3	I use a variety of sources/types of information to come up with an innovative solution.	0.528	
AP4	I can develop new tools and methods to resolve new problems.	0.553	
Reactivity			**0.339**
AP5	I can achieve total focus on the situation to act quickly.	0.369	
AP6	I can quickly decide on the actions to take to resolve problems.	0.353	
AP7	I can analyze possible solutions and their ramifications quickly to select the most appropriate one.	0.370	
Interpersonal Adaptability			**0.204**
AP10	I try to understand the viewpoints of my counterparts to improve my interaction with them.	0.536	
AP11	I learn new ways to do my job better to collaborate with other people.	0.571	
Training Effort			**0.317**
AP14	I am on the lookout for the latest innovations in my job to improve the way I work.	0.372	
AP15	I look for every opportunity that enables me to improve my performance (training, group projects, exchanges with colleagues, etc.).	0.387	
AP16	I prepare for change by participating in every project or assignment that enables me to do so.	0.367	
Handling Work Stress			**0.208**
AP17	I keep my cool in situations where I am required to make many decisions.	0.557	
AP18	I look for solutions by having a calm discussion with colleagues.	0.543	

In the second-order analysis, the value of AVE scored for adaptive performance construct is 0.508 with a Cronbach alpha value of 0.913 and composite reliability value of 0.926. Cronbach alpha value and the composite reliability value are less than 0.95 indicating that there are no items are redundant (Diamantopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012) which resulted in a satisfactory result for the adaptive performance construct validity.

Table 3: Summary of Measurement Model Assessment of Adaptive Performance Construct

Construct	Cronbach Alpha	Composite reliability	AVE
Adaptive Performance	0.913	0.926	0.508

5. Conclusion and Discussion

As adaptive performance is a vital construct for employees regardless of their disciplines, it entails further investigations (Park & Park, 2019; Shahidan et al., 2021), especially in the higher education sector in Malaysia. The present study was carried out as an attempt to ascertain the validity and reliability of adaptive performance construct using the PLS method, specifically through the measurement model assessment. The assessment includes convergent validity analysis where the value of outer weight and AVE were identified and reliability analyses involving Cronbach alpha value and composite reliability were carried out. The result found that it was conclusively identified that good internal consistency was observed for the variables measured in the specific scope of this study, namely adaptive performance.

It is generally recognized that studies on adaptive performance have been focusing on specific sectors, thus it is crucial to further discover more related insights in the Malaysian context through the utilization of multi-scale instruments following the idea proposed by Charbonnier-Voirin and Roussel (2012). The reliability and validity tests are vital in the development of a questionnaire as they ensure the meaningfulness and functions represented by each item and construct, which subsequently would contribute towards the overall comprehensiveness of the research framework. In the present study, it was found that the instrument possesses good validity and consistency. In addition, more analyses including on the factors that influence adaptive performance should be carried out to specifically ascertain its relationship in the Malaysian context.

The present study utilized the SmartPLS software as the statistical tool, it contributes to the body of knowledge specifically on the construct validity of adaptive performance in the Malaysian context. In addition, the present study also contributes theoretically to the growth of testing on adaptive performance constructs from various contexts about Malaysian lecturers. In the long haul, this study is anticipated to arouse interest among future researchers to further discover adaptive performance from other perspectives.

Limitation and Future Research

Even though there are several important insights covered by the present study on adaptive performance, there is a limitation that needs to be highlighted. Specifically, the limitation is on the sample for the present study which was rather homogenous involving lecturers servicing at Malaysian RUs which are public higher learning institutions. Therefore, it is suggested that future researchers may expand the usefulness of the instrument by involving lecturers from both public and private higher learning institutions in Malaysia. Additionally, future researchers are recommended to conduct a post-data collection study in the endemic phase as there will be possibilities that different results might be obtained.

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Cashless Payment among Rural Youth in Malaysia: Push Factors and Challenges

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Abstract: Fintech has become deeply embedded in society, enhancing daily life. Among the most utilized fintech services is cashless payment. Despite the benefits of cashless payments, their adoption among rural youth in Malaysia remains insufficient. This study investigates the factors driving and the challenges hindering the use of cashless payments among rural youth in Malaysia. A qualitative method, utilizing structured interviews, was conducted across all states in Malaysia. Thirty-nine in-depth interviews were conducted with rural youth from Perlis, Kedah, Perak, Pulau Pinang, Selangor, Negeri Sembilan, Melaka, Johor, Pahang, Terengganu, Kelantan, Sabah, and Sarawak. Most interviews were conducted face-to-face, with some online due to geographical constraints. The study identified inadequate infrastructure, limited cashless transaction operators, and a lack of digital literacy as primary barriers. Despite these obstacles, rural youths were highly optimistic about adopting cashless transactions, indicating their potential to engage actively in the digital economy and contribute to financial inclusion initiatives. The findings significantly aid policymakers, financial institutions, and community leaders in formulating strategies to promote digital acceptance in rural areas. This study also enhances the current body of knowledge by offering a deeper understanding of the factors influencing digital payment adoption in rural areas.

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Keywords: *Cashless Society; Rural Youth, Fintech, Digital Economy, Digital Literacy.*

1. Introduction

The world is increasingly digital, transforming social interactions, business operations, and public service delivery. Digital evolution has significantly influenced global competitiveness through innovation (Adham et al., 2008; Loh et al., 2021). Financial Technology (Fintech) is a product of technological advancements that have revolutionized financial services. The proliferation of Fintech has enabled individuals and businesses to access formal financial services more efficiently (Ali et al., 2019). In developing countries, national policies are increasingly incorporating digital technologies. The Twelfth Malaysia Plan (12MP), for example, outlines strategic directions for economic empowerment through Industry 4.0 (IR4.0) and resilient rural development over the next decade.

Recent data from Payment Network Malaysia (April 2023) indicates Malaysia is advancing towards a cashless society, with cashless transaction trends showing nearly 100% year-on-year growth among various e-commerce platforms (The Malaysian Reserve, 2023). Visa (2022) reports that 93% of users in Southeast Asia (SEA) and 96% of Malaysian users have adopted cashless transaction methods. However, 49% of Malaysians, especially in rural areas, still carry some cash. As Malaysia moves towards a cashless society, it is crucial to address the unique circumstances of rural youth in adopting electronic payments. Cashless transactions offer enhanced capability, transparency, and accountability, becoming trusted due to their safety and security features (Taasim & Yusoff, 2018). Malaysia has seen a significant increase in electronic payment transactions, driven by the booming e-commerce market (Loh et al., 2021).

Applications of cashless transactions have expanded to tolls, parking, healthcare, restaurants, public transportation, and retail. Ministries such as the Ministry of Health Malaysia (KKM) and the Ministry of Home Affairs have implemented electronic payment methods to improve revenue management and reduce misappropriation risks (Chan, 2024). Efforts by Bank Negara Malaysia, such as reducing instant e-payment fees and increasing cheque fees, have facilitated this shift. Statistics show a surge in internet and mobile banking

transactions, indicating a growing acceptance of cashless methods. Initiatives like accepting cashless payments on RapidKL buses and Grab rides further illustrate Malaysia's readiness for a cashless society (Loh et al., 2021). A cashless society eliminates physical coins and banknotes, replacing them with digital currency forms. Transactions are conducted via credit and debit cards, smartphones, and other digital means, signalling a shift to an all-digital transaction system. This progression offers benefits such as enhanced financial services and livelihood opportunities, making a cashless rural economy a tangible reality (Cnaan et al., 2023).

Approximately 50% of Malaysians embrace cashless payments (Ishak, 2020), suggesting an imminent cashless future primarily through credit and debit cards, electronic payments, and cryptocurrencies (Kadar et al., 2019). Digitization, innovative technology, and a focus on a green economy are driving this transition, making cashless societies integral to future economies. However, challenges persist for certain demographics, including the elderly, individuals with disabilities, immigrants, and small rural retailers reliant on cash transactions (Abdul Malek et al., 2022). Urban areas have seen a rise in payment banks and cashless transactions among urban youth, indicating a behavioral shift (Kadar et al., 2019). However, rural areas face unique challenges such as limited infrastructure and cultural factors (Cnaan et al., 2023). The emergence of a cashless society in Malaysia represents a transformative shift towards a more efficient, secure, and inclusive financial landscape. Efforts have resulted in increased electronic payments, with significant growth in transactions per capita from 14.3 in 2003 to 56 in 2012, with over 80% of retail payments now conducted electronically (Trade, 2020). According to the Department of Statistics (2023), youth constitute 46.64% of Malaysia's population and are forecasted to be major stakeholders by 2030 (Munikrishnan et al., 2024). Therefore, rural youth need to participate in the digital economy's evolution.

Rural communities are crucial to a country's political and economic stability and have always been a priority in national development agendas (Marshall, 2010). Various programs and strategies have been introduced to promote rural community well-being, from agricultural development to infrastructure provision and community development (Malek et al., 2022). However, issues of rural decline persist, exacerbated by globalization and rapid economic changes (Pikri, 2019). Most rural areas face the problem of rural decline, which directly affects the rural communities and leads to the complicated issue of breaking the cycle of decline. Rural areas and their communities have faced new challenges due to globalization and rapid economic changes. Rural communities are often isolated, and their economy depends on conventional work. They must address numerous issues to achieve economic equality and socio-economic sustainability (Munikrishnan et al., 2024). They have also seen little income growth because they are primarily involved in the informal sector and lack agricultural productivity. The government has implemented multiple strategies and plans to overcome these various problems in rural areas. However, some loopholes remain, particularly concerning the youth's reception, acceptance, and understanding of the cashless society. Moreover, past studies have explored the impact of the pandemic on the adoption of cashless transactions, highlighting an accelerated shift toward digital payments. However, there is still a lack of research on why rural youth use cashless methods despite the difficulties they face.

Therefore, this research aims to fill the gap by understanding why rural youth continue to use cashless payments despite challenges. The findings will provide valuable insights for government bodies, policymakers, academicians, and other stakeholders to improve awareness and promote cashless payments among rural youths. The research objective is to explore the factors driving rural youths to use cashless payments and the challenges they face.

2. Issues in Cashless Payment Literature

Several factors influence rural youth's use of cashless payments, including demographic, economic, and psychological aspects. Studies indicate that younger people in rural areas, especially those with higher education levels and financial knowledge, are more likely to use non-cash payment options (Nayak et al., 2017). However, transitioning to a cashless economy in rural areas presents significant challenges. In Nigeria, inadequate payment channels, internet fraud, weak electronic banking networks, and high transaction fees have hindered the adoption of digital payments by rural youth (Gupta, 2017). Similarly, in India, the demonetization decision pushed many towards digital payment methods, but mistrust in financial institutions and perceived online transaction risks, such as data theft, have made rural youth cautious (Mandal, 2024).

Furthermore, cultural and traditional norms can also impede young rural women's participation in digital financial initiatives. For example, Nigeria's e-wallet program saw limited participation due to gender inequalities and household responsibilities (Ghosh, n.d.). Despite these challenges, government initiatives promoting digital literacy and providing incentives for regular cashless transactions can encourage rural populations to adopt these technologies (Jayalakshmi & Dadakalandar, 2018). Overall, while rural youth have the potential to increase their use of cashless payments, addressing infrastructural, educational, and cultural barriers is crucial for fostering a more inclusive digital economy.

Push factors and challenges that rural youth face with cashless payments are driven by external initiatives and internal constraints. For instance, government initiatives linking welfare operations to bank accounts promote financial inclusion and digital transactions (Ali, 2024). In India, the demonetization drive catalyzed digital payment adoption, increasing mobile wallets and UPI solutions usage [23]. The rise of digital wallets such as Paytm, MobiKwik, and the BHIM app has furthered this trend by offering convenient payment options (Udoinyang et al., 2024; Uduji & Okolo-Obasi, n.d.).

However, several hurdles prevent the widespread adoption of cashless payments among rural youth. A significant barrier is the lack of digital literacy and awareness, making it difficult for many to understand and trust new technologies (Kumar Yadav & Ramesh, 2019; Udoinyang et al., 2024). Internet connectivity issues further limit access to digital payment platforms (Munikrishnan et al., 2024). Additionally, concerns about security breaches and mistrust in online transactions deter many from using cashless payment methods (Udoinyang et al., 2024). The complexity and variety of mobile wallet options also confuse, especially among the elderly and less tech-savvy individuals, complicating balance management across multiple platforms (Uduji & Okolo-Obasi, n.d.).

The scarcity of point-of-sale (PoS) systems in rural areas limits the practical use of digital payments (Jayalakshmi & Dadakalandar, 2018). Despite these obstacles, the potential benefits of a cashless economy, such as increased financial transparency and reduced corruption, underscore the importance of addressing these barriers through targeted educational initiatives and improved infrastructure (Jayalakshmi & Dadakalandar, 2018). Focusing on these areas can significantly accelerate the transition to a cashless economy in rural communities, benefiting the broader economic landscape.

3. Research Methodology

This study utilized qualitative methods to explore the natural experiences, attitudes, and beliefs of individuals (Fielding & Thomas, 2016). Qualitative methods are effective in capturing the diversity and uniqueness of individual experiences, providing a comprehensive narrative. Employing a qualitative research design is crucial to the study, offering a methodologically robust approach to investigating and understanding the perspectives of rural youths in Malaysia as they transition to a cashless society. An in-depth analysis is essential for thoroughly comprehending the adoption of cashless methods among rural youth (Roulston, 2018).

This research comprises 39 in-depth interviews with rural youth across 13 states in Malaysia: Perlis, Kedah, Perak, Pulau Pinang, Selangor, Negeri Sembilan, Melaka, Johor, Pahang, Terengganu, Kelantan, Sabah, and Sarawak. The respondents are labelled from R1 to R39 (Respondent 1 to Respondent 39). Most interviews were conducted face-to-face, while some had to be conducted online due to geographical constraints. Structured interview techniques were used to gather the data. Each interview guide was crafted using standard structured interview techniques (Collis & Hussey, 2014). The interviews lasted around 60 minutes, comprising: i) the initial introduction (5-10 minutes), ii) the key questions (20-30 minutes), and iii) the conclusion session (5-10 minutes). For recording the interviews, notes and audio recordings were used to capture data. The researchers transcribed the notes to ensure the accuracy, detail, and actual meaning of the responses before formally recording the data. Identifying themes helped the researchers pinpoint the push factors and challenges for a cashless society among rural youth in Malaysia. The questions were adopted from previous literature. For this study, thematic analysis following Creswell's (2016) procedures was conducted until themes of similar meaning related to the youth push factors and challenges in using cashless methods were highlighted (Creswell & Poth, 2016).

4. Analysis and Results

The informants consist of rural youths from various rural areas. Thirteen (13) Rural Community Centres were selected across Malaysia. A convenience sampling technique was used, and the study sample included both men and women, encompassing working individuals, non-working individuals, and students. Table 1 represents the demographic profile of the informants.

Table 1: Sample Description (*n=39*)

Items	Frequency	Percent
Gender		
Male	28	28.2
Female	11	71.8
Ethnicity		
Malay	34	87.2
Others	5	12.8
Occupation		
Employed	16	41.0
Unemployed	5	12.8
Own business	3	7.7
Student	15	38.5
Highest Academic Qualification		
SPM/SPMV/SMA	14	35.8
Diploma	15	38.5
Bachelor's degree	10	25.6
Master's degree/MBA	-	-

Source: Developed by the Researchers for the Current Study

The data shows that most respondents were female, comprising 71.8%, compared to only 28.2% male respondents. Most informants were Malay, with only 12.8% classified as others, including Indigenous respondents known as "*Temiar*" who live in a specific rural area in Perak. Among the respondents, the largest segment of youths was working either within rural areas or outside their communities. There were also students, while 7.7% were running their businesses. The highest educational attainment among respondents is diploma holders (38.5%), followed by those with SPM qualifications (35.8%) and degree holders (25.6%). Fourteen (14) questions were posed to the informants regarding the push factors motivating them to adopt cashless payments and the challenges faced about cashless payments within their communities. Three (3) themes were identified for the push factors: security, convenience, and time-saving, and three (3) themes for the challenges: connectivity, lack of service providers, and digital literacy. Table 2 summarises the themes for each contributing factor.

Table 2: Push Factors and Challenges

Push Factors		Challenges	
Theme 1	Security	Theme 4	Connectivity
Theme 2	Convenience	Theme 5	Provider
Theme 3	Time-saving	Theme 6	Digital literacy

Source: Developed by the Researchers for the Current Study

Theme 1: Security

The first push factor for rural youth to use cashless services is security. The examples from the quotes show that security concerns are the primary reason young people in rural areas use cashless payment methods. R28 and R12 both discuss how having a lot of cash makes people feel vulnerable, especially regarding their safety and the temptation to overspend. Regarding depositing money, R21 emphasizes the importance of trust and safety. This suggests that building trust is a crucial part of accepting cashless transactions. Additionally, R27 highlights the safety aspect of cashless payments, especially for larger purchases, where online transfers are considered a safer option than cash. These themes demonstrate the importance of changing people's

perceptions about security and encouraging better money management to facilitate the transition to a cashless society in rural areas.
R28: One reason is that I don't want to keep a lot of cash in my wallet because as a woman, sometimes I'm like, when I want to meet clients, even the car door might not be locked like that. Secondly, I don't want to go to the bank, stand in line to withdraw cash, and then keep a large amount. The more we have, the more tempted we are to go shopping, you know.
R12: I can control my expenses. If I have a lot of cash, I don't know where it goes. It's like that. So, the third thing is security.
R21: I feel that security issues are important, meaning when we register with something that involves depositing money, trust is indeed crucial for the security of our money
R27: What drives me to use cashless payments, as I just explained earlier, is, for example, when we need to make a payment for a large total amount. I tend to lean more towards online transfers. It's safer than carrying cash for me.

Theme 2: Convenience
The second theme, convenience, is evident in the quotes. R39 highlights the ease of making transfers online, reducing the need for frequent bank visits. R5 emphasizes how cashless transactions save time, especially for students who can allocate more time to other activities instead of making payments at various locations. R30 mentions the ease of conducting business in local stores through online transactions, contributing to overall convenience. R29 stresses the adaptability of cashless options in different situations, making them easy to use even when cash isn't available. Lastly, R31 concurs with the convenience of internet transfers for paying bills. These ideas underscore the importance of demonstrating the practical benefits of cashless purchases to increase adoption in rural areas.
R39: Yes, it helps with transactions because going to the bank, depositing whatever, it's all done through online transfers.
R5: I feel that's true. Yes, I strongly agree with cashless transactions because as a student, I will have a lot more time for other research, and I don't need to waste time going to various places for payments.
R30: aaa...When Asahan itself has it, where some shops conduct online transactions, it makes things much easier, much easier.
R29: Cashless is convenient. When we go anywhere, for example, if we go to an ATM or a rest area shop, if we, for instance, go to a rest area and don't bring cash, we can still use it for e-wallets, Touch 'n Go, and all. So, for me, the technology available now is very easy for us to use, and if possible, these things should be introduced in rural areas like this to facilitate transactions for them, for buying, and so on.
R31: Yes, I agree; because it's convenient for my daily activities. For example, if I want to pay bills or something, I just transfer. It's kind of like...

Theme 3: Time-Saving
The third push factor for rural youth to use cashless services is time-saving. The quotes illustrate that saving time is a significant motivator for rural youth to adopt cashless payment methods. This is especially important for youth who run their businesses and need swift transactions. R07 emphasizes the importance of not waiting for change when paying with a card. R23 discusses the limited availability of ATMs in rural areas, leading to long queues and time-consuming withdrawal processes.
R07: I am always on the go as I do business. So, I need to hurry in everything that I do, cashless is a way for me as I do not need to wait for the cashier to return small changes for me.
R15: One card is needed for all transactions, so I do not need to worry about whether I have enough money or not as what I need to bring is either my phone or my card. Very fast ...
R23: sometimes we need to be in an extra hurry as we bring our family, I have a small bay so I could not afford to wait for the queue. Sometimes to withdraw money also takes time when it's pay day. The queue can be very long and when my time comes, it's out of service.

Theme 4: Connectivity and Network
One of the challenges faced by rural youth is inadequate infrastructure, specifically issues with connectivity and networks. The quotes illustrate recurring themes related to these challenges. R20 points out the obstacles caused by internet downtimes, and some shops charging extra costs for using cards. R21 mentions relying on the shop's internet system to use e-wallets, indicating challenges during service disruptions. R37 highlights the

impact of network or signal issues on cashless payments, particularly in areas with unreliable phone signals. R34 emphasizes the difficulty of using cashless methods without an internet connection, similar to online banking challenges. These themes underline the need to address technological infrastructure issues to ensure the seamless adoption of cashless transactions in rural areas.

R20: ...the internet is down. So, we can't use it. Also, sometimes, certain shops...if we use a card, the prices are higher. So, when we use cashless methods, there is a small charge.

R21: The challenge, for example, is when the shop's system and its internet are down. So, customers can't use e-wallets.

R37: .... the challenge of using cashless payments is the network or signal issues; the phone signal may not cooperate in certain locations for making payments.

R34: It's difficult to use. If there's no internet connection, it is like when we use online banking online.

Theme 5: Provider

The quotes also highlight a theme related to the limited acceptance of cashless payments in certain places, making it difficult for rural youth. R17 notes that some stores only accept cash and don't offer cashless options. R26 discusses how different areas have varying levels of acceptance for cashless payments, with low acceptance in home areas but higher acceptance just a short distance away. R20 mentions that grocery shops prefer cash, complicating the use of cashless methods. R27 points out that many places still do not accept cashless payments, forcing people to continue using cash for purchases. These themes emphasize the importance of addressing the uneven acceptance of cashless payments to facilitate the transition in rural areas.

R17: The obstacles or challenges I face when using cashless payments include not being able to use them in certain places. As I mentioned, there are certain shops that still only accept cash payments. R26: If we're talking about the rural areas, in my residential area, it's not sufficient. Because there are not many who use cashless payments. But if you go about 1, 2, or 3 kilometers from the village, it's sufficient because there are supermarkets and other stores that use it.

R20: If you want to use it at a grocery store, but you can't because they prefer cash.

R27: Because there are still many places, and shops that do not accept cashless payments. Many places have yet to adopt it. That's how it is. So, we need to use cash when purchasing something.

Theme 6: Digital Literacy

The quotes also bring out the theme of digital literacy, highlighting the importance of education. Some respondents are not schooled, making it challenging to understand prompts in some applications for online shopping. Despite this, the respondents show interest in online shopping due to its wider selection, lower prices, and various features. They often shop with the help of friends or siblings. R02 explains that as a housewife, she helps manage her family's finances, and online shopping can be beneficial. R11 points out that the variety of accessories available online encourages them to shop, even though they cannot read and rely on friends for help.

R02: As a housewife, I always wanted to buy cheaper things to help my husband. My friend always talks about how cheap my baby clothes are in Shopee or TikTok but I never had imagined it could be very cheap. I am not that good at using my phone so I always ask my friend to buy it for me and pay her later. (laughing) ...

R11: Even though we are in a very rural area, even courier only sends your parcel at one point, we also want to shop online. We like to shop for motor accessories as it has many varieties and are very nice ... I am not schooling so I cannot read. I asked my friend here to buy it for me ...he is everyone's favorite as everyone here asks him for help ...

R26: I know that we can buy online from my sister. Every time I see good clothes, I send a picture to my sister to buy for me It's not that I don't want to buy myself, but I am not that confident to buy. I was afraid that it would be not the same as I am not that good at reading... my sister always scolded me for being too naive ...

5. Conclusion and Recommendations

This study investigated the push factors and challenges among rural youth in Malaysia regarding cashless payments in their communities. By applying a qualitative research method through in-depth interviews, the push factors and their challenges were identified. The results show that rural Malaysian youth are becoming competent with the cashless payment system. They are capable of making cashless payments in their communities. Security has been identified as one of the significant concerns motivating rural youth to use

cashless payments. The findings of this study are supported by [30]. The results indicate that the adoption of cashless payment methods increased during the Movement Control Order (MCO) due to community safety concerns and efforts to contain the spread of the COVID-19 outbreak [31]. Convenience is the second theme that motivates rural youth to utilize cashless methods. Respondents emphasized the convenience of cashless solutions for daily transactions, online shopping, and household purchases. The third theme, time-saving, shows that rural youths find cashless payment systems convenient and time-saving. Ultimately, this contributes to establishing a cashless society by motivating users to carry out transactions without concern for the lack of physical cash.

As for the challenges, connectivity, lack of service provided by telecommunication providers, and lack of digital literacy have become obstacles to applying cashless payments among youth in rural areas. These challenges highlight the need to address uneven cashless payment acceptance and seek comprehensive solutions to ensure inclusivity and accessibility in the transition to cashless transactions in rural areas.

These findings contribute to the literature by identifying the push factors and challenges among rural youth in Malaysia regarding cashless payments. The findings suggest significant efforts are required to overcome the obstacles faced by rural communities. This demonstrates the need for government support in improving services, expanding infrastructure, and making a cashless society more accessible in remote areas, specifically in Sabah, Sarawak, and West Malaysia. The empirical results show that addressing the challenges of a rural, young, cashless society in Malaysia should prioritize education, community engagement, and strong government assistance to remove barriers and create a more inclusive and progressive cashless environment. Rural youth have shared their suggestions and hopes for a better environment that supports cashless payments. It also highlights the need for targeted interventions to help more people accept them. Since people's willingness to go cashless varies by location, efforts to promote a cashless society should consider the unique business practices in rural areas. To solve this problem, policymakers and industry stakeholders need to offer incentives for companies to adopt cashless technologies and educate merchants and youths from rural areas about the advantages and practicalities of cashless transactions. The research findings provide a comprehensive picture of the problems faced by rural youth and help create a useful framework for promoting the widespread use of cashless payments in Malaysia's rural areas. This will ensure Malaysia's plans for fair and equitable economic development at all levels of society by 2030 can be achieved.

From these findings, it is hoped that future research can continue to explore digital literacy among youth, as there are still people in these areas who did not attend school. Researchers could also focus on other areas, not just the Rural Community Centre areas.

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Social Entrepreneurship Intention: Part and Parcel of Intention-Based Theories and Models

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Abstract: Investigating spending behavior among students is essential, particularly in understanding how they allocate funds toward academic priorities. This article aims to explore students' spending habits and the key practices that influence the allocation of semester-based educational funding. The study adopts a quantitative, cross-sectional approach, with 501 respondents selected from six higher education institutions in Melaka through a quota sampling technique. Data analysis was conducted using IBM SPSS software (version 28.0). The results indicate that both financial management knowledge and peer influence have a positive impact on students' spending behavior. This research contributes to the literature by enhancing the understanding of spending behavior patterns across the institutions studied, while also offering practical insights for higher learning institutions (HLIs) in Malaysia and their students. Limitations and suggestions for future research are also addressed.

Keywords: *Social Entrepreneurship, Intention-Based Theories, Models, innovative approach*

1. Introduction

Social entrepreneurship (SE) is an innovative entrepreneurial approach that uses business skills to undertake entrepreneurial activities that address socio-economic problems and pursue social values. Currently, this innovative approach is of great interest and concern to local and international parties (i.e., policymakers, academics, and practitioners) due to its significant effects on the social and economic transformation of a country (Barton, Schaefer & Canavati 2018; Chinchilla & Garcia 2017; Hockerts 2017; Medyanik & Al-Jawni 2017). The subject of SE has a substantial appeal on many fronts. However, Aure (2018) recommended that impending research should focus on exploring the connection between cognition and SE.

In this study, the cognitive approach refers to the 'intention' concept which has been proven to be the finest predictor of planned behaviors (Ajzen, 1991). "Intention refers to the willingness or readiness to engage in behavior under consideration" (Han & Kim, 2010; Tsou, Steel, & Osiyevskyy, 2023). It is widely accepted that all planned behaviors are intentional (Krueger, Reilly & Carsrud, 2000). In this context, any decision to begin a new social enterprise is planned rather than a conditioned response (Barton et al., 2018; Krueger et al., 2000, Wahid, Ayob & Hussain, 2022). Subsequently, intention as the first phase of behavior should be investigated (Tran 2018); if an individual possesses an entrepreneurial intention, he or she is more likely to perform the entrepreneurial behavior (Ajzen, 1991). Consequently, examining entrepreneurial intention plays a pivotal role in comprehending why someone chooses to be an entrepreneur.

As SEI is of growing interest to scholars, many papers are focused on the combination of theories or models from entrepreneurship, psychology, sociology and economics to enrich the literature and grow the theoretical and methodological strength of the SEI contributions. Because previous scholars scarcely discuss the relevant theories in explaining entrepreneurship intention in detail (Chipeta, 2015; Ernst, 2011; Bosch, 2013; Tran, 2018; Wilton, 2016), this current article will eventually be covered related theories and models. Subsequently, the first step is to identify which models and theories can be used to comprehend SEI meticulously.

2. Intention-Based Theories and Models

To begin, we have separated the theories and models into two: classical theories of behavioral intention (1970s - early 1990s) and contemporary theories of behavioral intention (1990s - 2000). Under classical theories of behavioral intention, we identified five relevant behavioral theories namely the Theory of Reasoned Action

(TRA), Norm-Activation Model (NAM) Theory of Planned Behavior (TPB), Entrepreneurial Event Model (EEM) and Bird's Model.

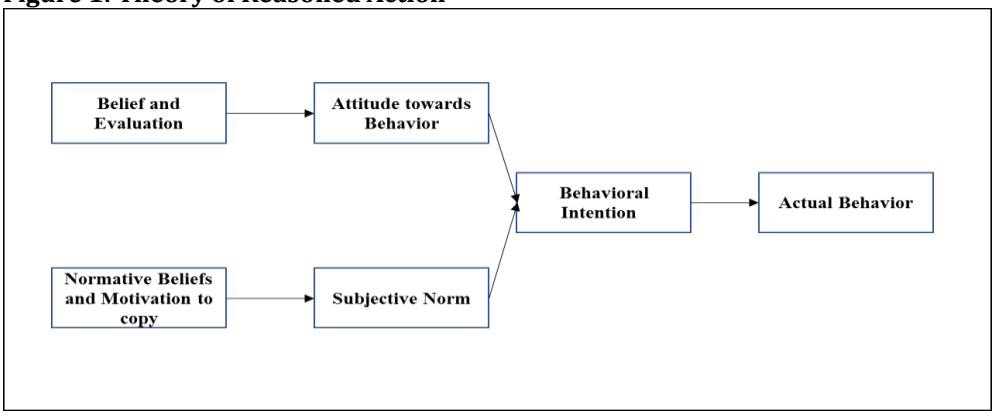
Starting mid-1990s, a blast of research was published on entrepreneurship intention models as a framework, thereby approving the applicability of the concept in various settings. Six theories and models have been found that specifically addressed entrepreneurship intention: Theory of Planned Behavior Entrepreneurial Model (TPBEM), Social Cognitive Career Theory (SCCT), Entrepreneurial Potential Model (EPM), Revised Entrepreneurial Intention Model (REIM), Extended Theory of Planned Behavior (ETPB) and Davidsson's model. During the early 2000s, there were no new models or theories related to intention studies; most were integrated entrepreneurial models. In 2006, Mair and Noboa were the first authors to introduce the Social Entrepreneurship Intention (SEI) Model.

Classical Theories of Behavioral Intention

a. Theory of Reasoned Action

The Theory of Reasoned Action (TRA) introduced by Fishbein and Ajzen (1975), aims to enlighten the association between attitudes and behavior within human conscious action. The decision to engage in a behavior is based on the outcome that the individual expects from performing the behavior. TRA assumes intention is determined by two factors (Ajzen, 1991; Fang, Ng, Wang, & Hsu, 2017): First, belief and evaluation components (i.e., personal attitude) are to understand an individual's underlying driver or motivation to act. Second, the normative component (i.e. social norm) is to understand whether or not the individual will perform the behavior if the surroundings give encouraging support (see Figure 1). The primary purpose of the TRA is to clarify how individuals will act based on their pre-existing attitudes on intentions.

Figure 1: Theory of Reasoned Action

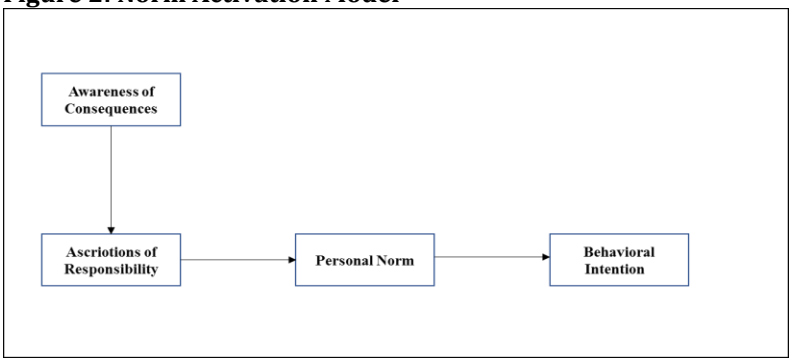


Source: Fishbein and Ajzen (1975)

b. Norm Activation Model

The Norm Activation Model (NAM) was introduced by Schwartz (1977) and aims to describe altruistic and environmentally friendly behavior. NAM can be used as a theoretical foundation for any social-based investigation, because personal interests need to be given up for the sake of the environment, and thus are regarded as a form of pro-social behavior or altruism (Stern, Dietz, Kalof, & Guagnano. 1995). The process of NAM is determined by two factors: awareness of consequences and ascription of responsibility. If an individual is aware of problems caused by certain actions (i.e., start-up business venture), he or she should take full responsibility for the actions taken (see Figure 2). The primary purpose of the NAM is to recognize an individual's degree of responsibility for a planned behavior, which is reflected in personal norms.

Figure 2: Norm Activation Model

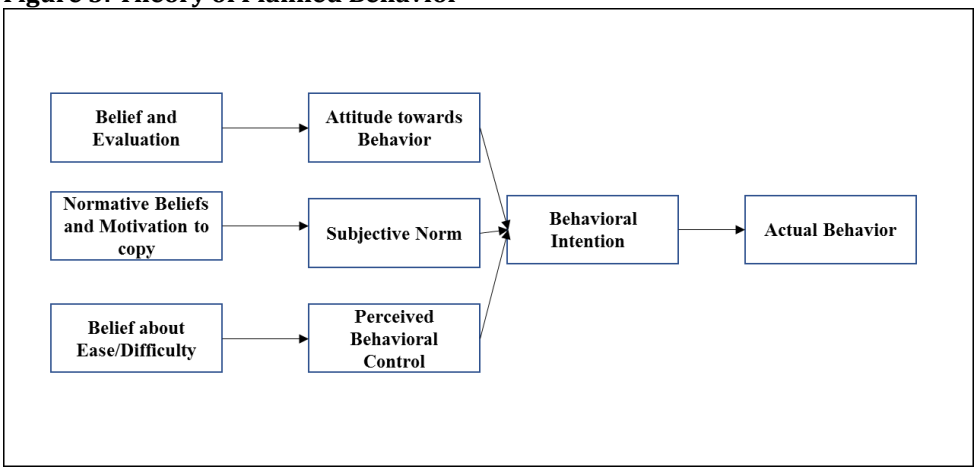


Source: Schwartz (1977)

c. Theory of Planned Behavior

The Theory of Planned Behavior (TPB) was established by Ajzen in the year 1991. TPB is based on the idea that is shaped by an individual's desire to act and ability to perform it. As suggested by Ajzen (2005), three variables have influenced the TPB: Attitude towards behavior (ATB), SN and PBC. TPB is an advanced and adapted version of TRA. Due to the lack of one's control factor on behavior, an additional PBC construct is introduced in the TPB (Ajzen 2005; Fishbein & Ajzen, 1975). Ajzen (1991) showed that if an individual acts rationally and is in control of his or her actions, he or she can forecast own actions based on the intentions. TRA only explains behavior rather than merely predicting it. ATB is a behavioral belief that represents the perceived outcome of the behavior (Conner & Armitage, 1998). SN is a normative belief that represents the perceived social pressure to perform, or not perform, the behavior (Ajzen, 1991; Kautonen, Gelderen & Fink, 2015). PBC is defined as an individual's perception of the ease or difficulty of performing the behavior and interest (Ajzen, 1991; Kautonen et al., 2015) (see Figure 3). The primary purpose of TPB is to counter the TRA's weaknesses whereby, TRA is meant to explain the behavior, whereas TPB is predicting it (Ajzen, 1991).

Figure 3: Theory of Planned Behavior



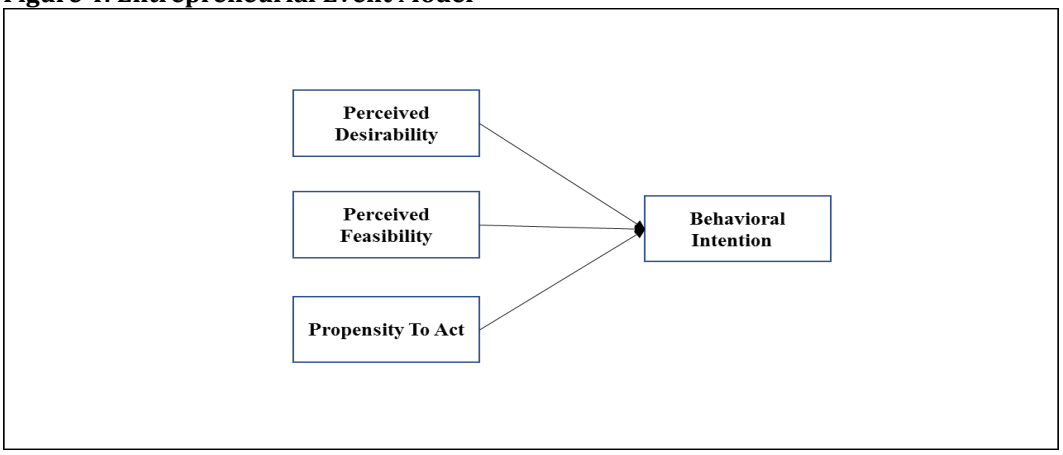
Source: Ajzen (1991, 2005)

d. Entrepreneurial Event Model

The entrepreneurial Event Model (EEM) was advanced by Shapero and Sokol in the year 1982 (see Figure 4). This model is among the earliest models introduced in the field of entrepreneurship. The EEM undertakes that two prerequisites should be met before business creation. First, an individual must have the intention of starting a business. Second, starting a business is initiated by some type of displacement experience which will lead to a change in behavior. This model shows that the intention to start a business is derived from three components: perception of desirability, perception of feasibility and propensity to act. The perception of desirability is shaped by the attitudes of an individual before starting a business (Krueger, 1993). The perception of perceived feasibility is based on the evaluation of an individual, whether or not they have the skill

and capability necessary to start a business (Krueger, 1993; Shapero & Sokol, 1982). The propensity to act was an important variable before the perceptions of feasibility and desirability were considered in this model (Shapero, 1975). The primary purpose of EEM is to describe the interaction of all possible factors that can lead to a business creation.

Figure 4: Entrepreneurial Event Model

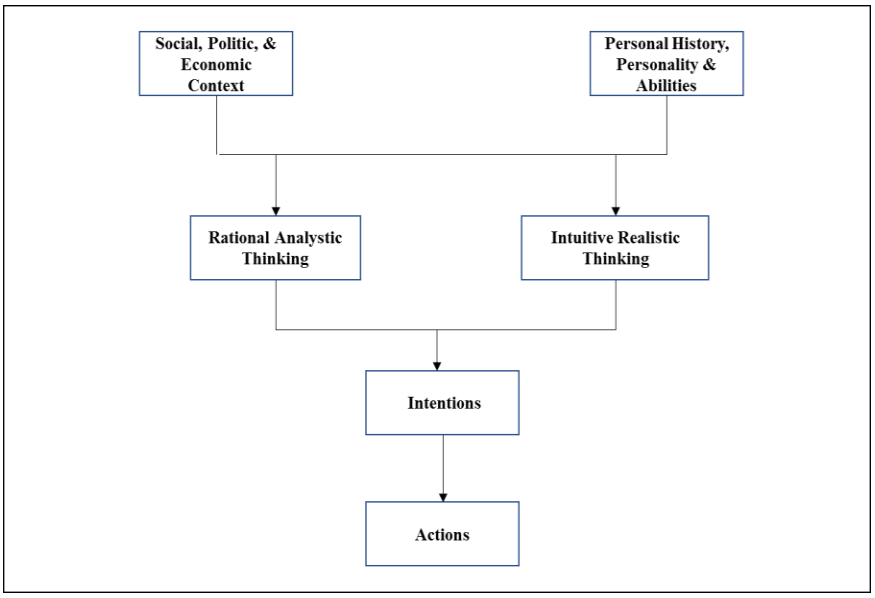


Source: Shapero and Sokol (1982)

e. Barbara Bird's Model

Bird's Model was established by Barbara Bird in 1988. Bird's Model is about an individual's state of mind directing individual action towards self-employment as opposed to organization employment. Bird's model depends upon two factors: rational analytic thinking and intuitive holistic thinking. Both thinking is the result of contextual (i.e., political, social and economic contexts) and personal factors (i.e., personal history, personality and abilities) (see Figure 5). Bird's Model aims to understand an individual's process of self-employment or establishing a new business.

Figure 5: Bird's Model



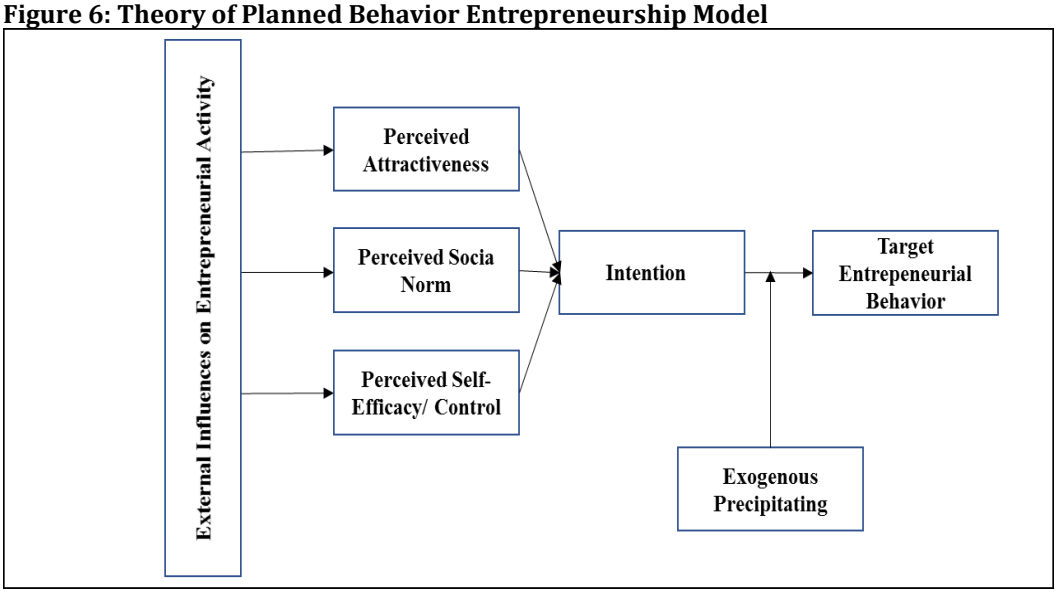
Source: Bird (1988)

Contemporary Theories of Behavioral Intention

a. Theory of Planned Behavior Entrepreneurial Model

The theory of planned behavior entrepreneurial model (TPBEM) was first introduced by Krueger and Carsrud (1993) and lies fully in the field of entrepreneurship. Because TPB demonstrated great utility to social psychologists and thus offered considerable potential for entrepreneurship research (Krueger & Carsrud, 1993), TPBEM was presented to meet the need among entrepreneurial scholars. TPBEM consists of three fundamental components: perceived attractiveness of entrepreneurial behavior, perceived social norms about entrepreneurial behavior and perceived control/self-efficacy for entrepreneurial behavior. First, the perceived attractiveness of entrepreneurial behavior is introduced for the individual's perception of the desirableness or undesirableness of performing the behavior. Second, perceived social norms about entrepreneurial behavior are based on the social influence of an individual's family, friends, role models and mentors to support his or her action in venture creation. The last component is perceived control/self-efficacy for entrepreneurial behavior which relates to one's control of his or her actions (see Figure 6). The primary purpose of TPBEM is to understand the concept of intention from the viewpoint of entrepreneurship.

Figure 6: Theory of Planned Behavior Entrepreneurship Model

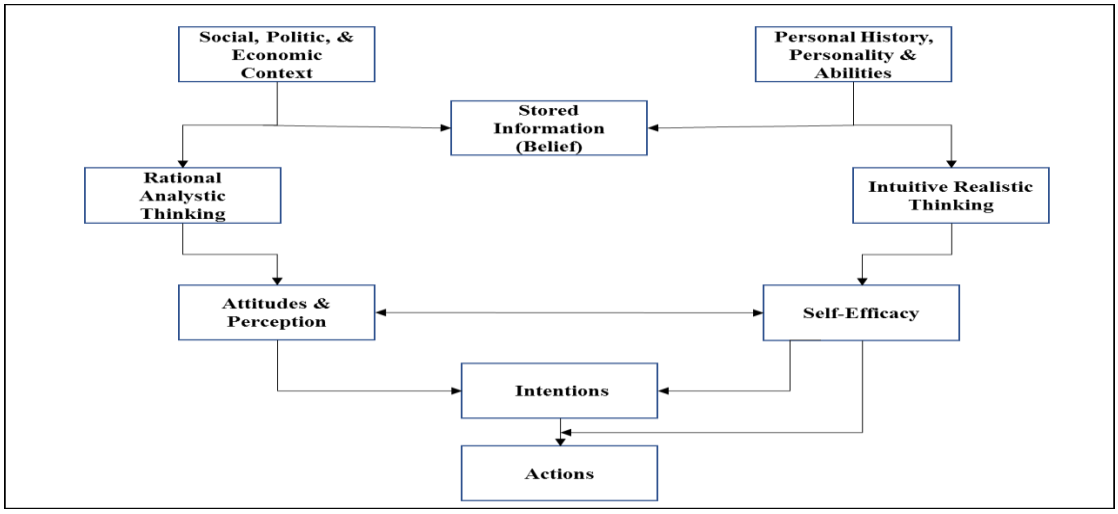


Source: Krueger and Carsrud (1993)

b. Revised Entrepreneurial Intentionality Model

The Revised Entrepreneurial Intentionality Model (REIM) is introduced by Boyd and Vozikis (1994) as an extension of Bird's model (Bird, 1988). They added new variables: self-efficacy and attitude and perception, to the framework. According to RIEM, intentions are formed based on how individuals act towards the environment (i.e., social, political, economic) and the future outcomes (see Figure 7). Similarly, RIEM depends upon two factors: rational analytic thinking and intuitive holistic thinking. Both thinking is the result of contextual and personal factors. According to Boyd and Vozikis (1994), RIEM is to improve Bird's Model as they claimed self-efficacy plays a significant role in the development of entrepreneurial intentions and actions.

Figure 7: Revised Entrepreneurial Intentionality Model

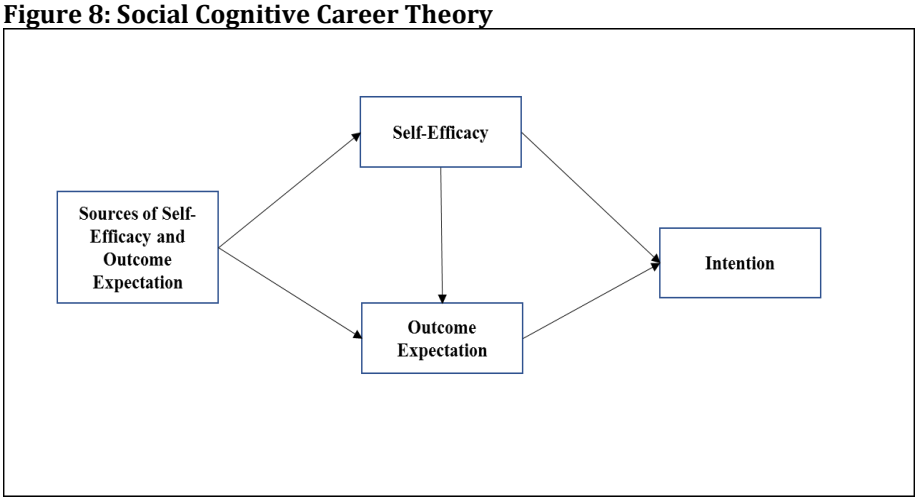


Source: Byod and Vozikis (1994)

c. Social Cognitive Career Theory

The Social Cognitive Career Theory (SCCT) was introduced by Lent and Brown (1994). In the SCCT framework, cognitive factors will affect an individual's intention to become an entrepreneur. The cognitive factors involve self-efficacy and outcome expectation. Self-efficacy refers to "people act on their judgments of what they can do." Whilst, outcome expectation is "one's belief about the consequences or effects of performing certain behaviors" (Bandura, 1977). SCCT suggests that in making decisions related to career issues, both factors should be significantly related (see Figure 8). The primary purpose of SCCT is to explicate the decision-making process which is closely linked to career choices.

Figure 8: Social Cognitive Career Theory

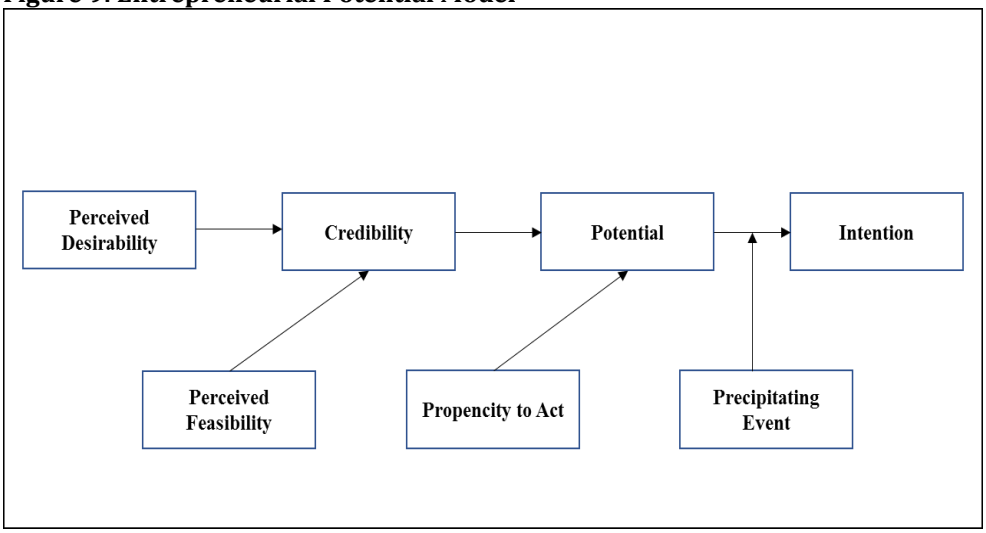


Source: Lent and Brown (1994)

d. Entrepreneurial Potential Model

The Entrepreneurial Potential Model (EPM) is advanced by Krueger and Brazeal (1994) and is inspired by the previous model of TPB (Ajzen, 1991) and EEM (Shapero & Sokol, 1982). Those two theories proposed three components: perceived desirability (attitude and SN), perceived feasibility (PBC) and propensity to act. However, in EPM, Kruger and Brazeal (1994) included two additional factors that are believed to influence intention, credibility and potential (see Figure 9). The primary purpose of EPM is to explore the potential entrepreneur in two disparate settings: corporate ventured and enterprise development. This EPM aspires to be a multilevel model, including individual and organizational constructs.

Figure 9: Entrepreneurial Potential Model

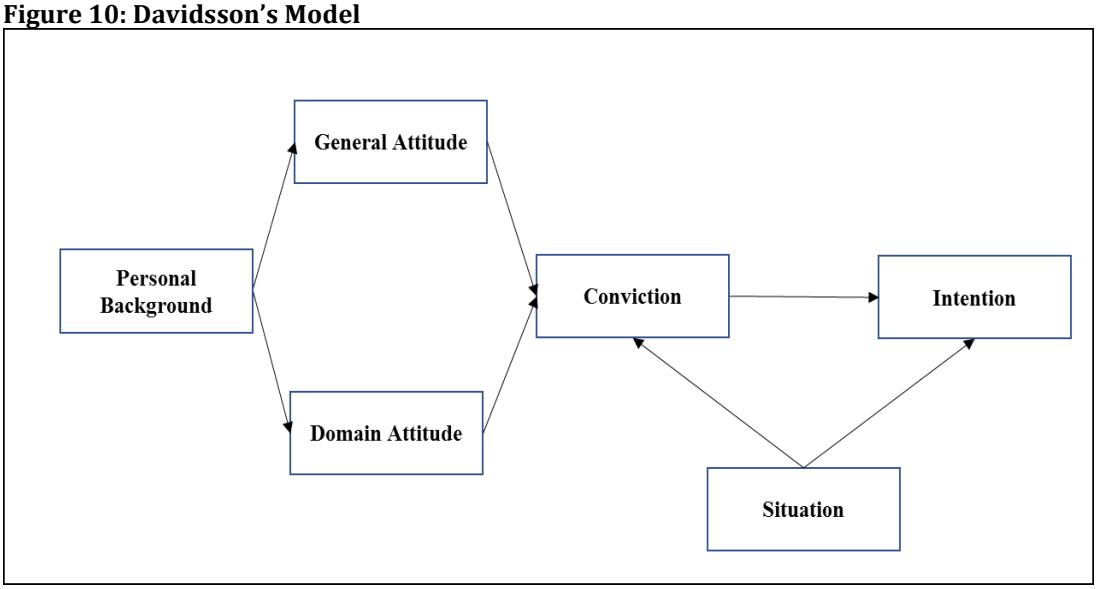


Source: Krueger and Brazeal (1994)

e. Davidsson's Model

Davidsson's Model is introduced by Davidsson in the year 1995. The model indicates that intention is influenced by two components: conviction and situation. In this Davidsson's Model, conviction causes an individual to act because of general and domain attitudes. General attitudes refer to those attitudes that are not related to being an entrepreneur: change orientation, competitiveness, achievement motivation, and autonomy. The domain attitudes refer to those that are highly connected to entrepreneurship, like payoff and societal contribution (Caliendo, Fossen & Kritikos, 2010). Situation refers mainly to an individual's employment status (Iakovleva, Kolvereid, & Stephan, 2011; Tran, 2018). And finally, personal background describes the individual's gender, experience, education and age (see Figure 10). Davidsson's Model was the first model to investigate the economic-psychological factors that affect a person's intention to become an entrepreneur.

Figure 10: Davidsson's Model



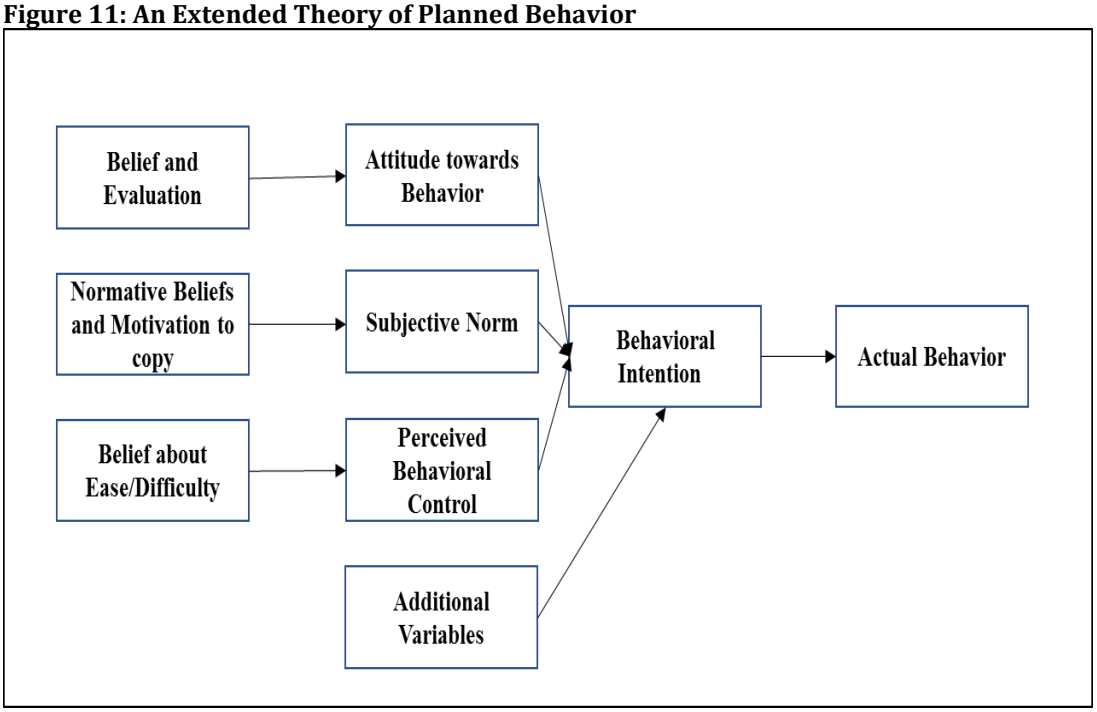
Source: Davidsson (1995)

f. Extended Theory of Planned Behavior

The Extended Theory of Planned Behavior (ETPB) was first applied by Conner and Armitage (1998). Ajzen (1991) who introduced the TPB, is open to the presence of new predictions. "If it can be shown that they capture

a significant proportion of the variance in intention or behavior after the theory's current variables have been taken into account" (Ajzen, 1991; Conner & Armitage, 1998). After understanding the basic premise of the TPB, numerous studies have tested the impact of other components on the theory in a variety of contexts. Previous research has suggested that additional variables to be included in ETPB such as demographics (i.e., age, gender, occupation, education, and religious beliefs), trust, religiosity and personality traits. (Masser, Bednall, White, & Terry, 2012). However, the primary concern with the additional new variables is that they possibly do not affect the intention or behavior (see Figure 11). The idea of ETPB is to capture a significant proportion of the variance in intention or behavior after the present study's variables have been considered.

Figure 11: An Extended Theory of Planned Behavior

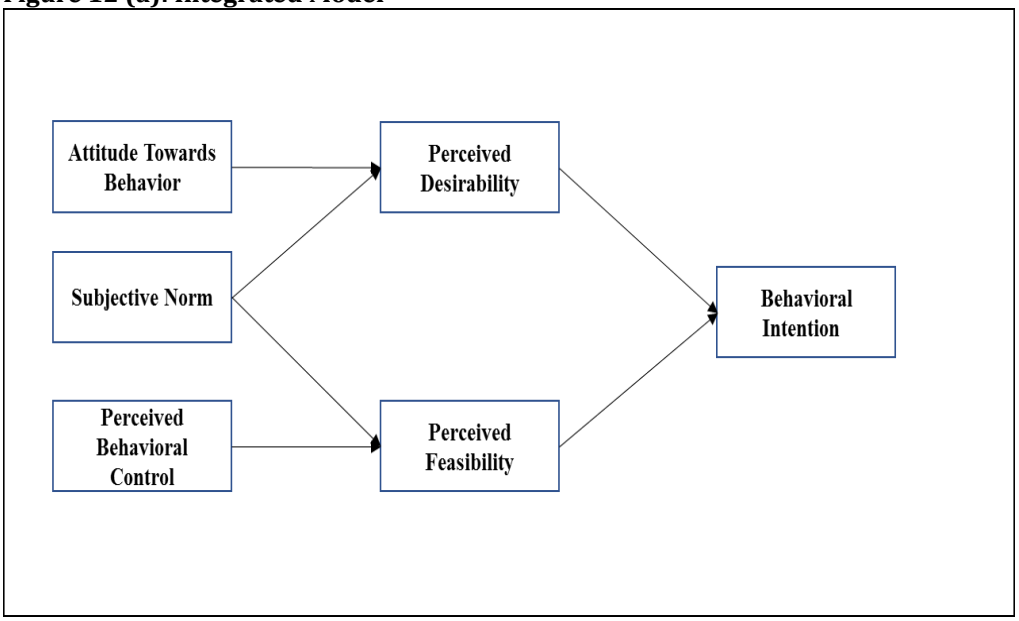


Source: Conner and Armitage (1998)

g. Integrated Entrepreneurial Model

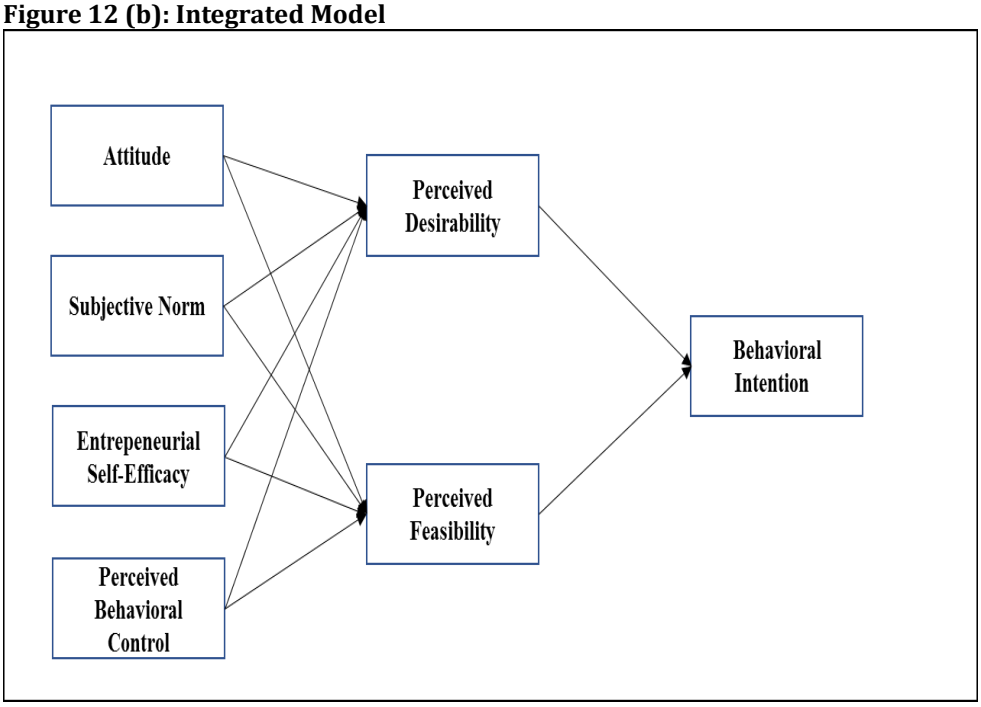
Since the year 2000, past scholars claimed that there is no new model or theory has been developed or introduced (Tran, 2018). Integrated Entrepreneurial Model (IEM) was implemented because current scholars, mostly, attempt to either test the validation and the reliability of those models and theories or put forth new variables by criticizing, revising, adjusting, and extending the leading and strong ones (i.e., EEM and TPB). Activities are varied to produce better empirical support using prominent and strong models. The theories like TPB and EEM are said to have high compatibility, as proven by work from Krueger et al. (2000) and Gelderen, Brand, Praag, Bodewes, Poutsma, & Gils (2008). Some scholars try to integrate them into one model, for example, Iakovleva and Kolvereid (2009) (see Figure 12(a)) and Schlaegel and Koenig (2014) (see Figure 12 (b)). However, until today, the results have been controversial. The primary purpose of IEM is to provide new empirical support using prominent and strong models.

Figure 12 (a): Integrated Model



Sources: Iakovleva and Kolvereid (2009)

Figure 12 (b): Integrated Model



Sources: Schlaegel and Koenig (2014)

3. Summary of the Relevant Theories and Models

It should be noted that TPB is the most appropriate grand theory to explain why and how to formulate the SEI. The TPB can cover an individual's non-volitional behavior which cannot be explicated by the TRA. An individual's behavioral intention cannot be the exclusive determinant of behavior if neglects the function of the individual's control over the behavior. By adding PBC, the TPB can better enlighten the interplay between intention and actual behavior. As compared to NAM, TPB offers a better explanation for the role of SN and PBC as well as personal attitude in predicting intention.

On the other hand, EEM theory undertakes that two prerequisites should be met first before beginning a new venture. Taking the pre-requisites into consideration, this theory is not suitable to be tested on university students, yet, not all students have started or own businesses. Both theories by Bird's Model and RIEM (Boyd & Vozikis, 1994) are argued based on rational and intuitive thinking which is hard to measure. Interestingly, the previous work has yet to validate Bird's model empirically (Shook, Priem, & McGee, 2003). Davidsson's Model is not comprehensive as it omitted the role of external factor.

In another development, TPBEM is considered a proxy for TPB which is specifically addressed in entrepreneurship. Nonetheless, TPBEM is not suitable to be employed because of the conceptual and measurement issues. For example, to measure ATSE, the study combines several types of measurement suggested by past scholars: "the important the advantages and disadvantages of entrepreneurship were for them" (Liñán & Chen, 2009), "the likely they think an outcome will be if the target behavior takes place" (Liñán & Chen, 2009), "the level of attractiveness of entrepreneurship or other career options" (Autio, Keeley, Klofsten, Parker, & Hay, 2001). In TPBEM, the theory only highlights the level of attractiveness of entrepreneurship as compared to other career options.

The idea of EPM is to investigate the potential entrepreneur in two disparate settings: corporate ventured and enterprise development. It will fit well if explored in the aforesaid setting. On the other hand, SCCT is related to the decision-making process of opting for entrepreneurship as a career choice. Yet, the limited study used this theory to explain SEI (Tran, 2018). As for extended and integrated theories, most of them are developed based on the original theory of TPB. Table 1 shows the summary of relevant theories and models.

Table 1: Summary of Relevant Theories and Models

Theories/Models	Advantages	Disadvantages
Theory of Reasoned Action (TRA)	The TRA suggests that stronger intentions lead to increased effort to perform the behavior, which also enhances the likelihood for the behavior to be performed.	Unable to explicate individual's non-volitional behavior.
Norm-Activation Model (NAM)	NAM suggests an individual should take full responsibility for their actions.	Fail to expound on the role of SN and PBC.
Theory of Planned Behavior (TPB)	TPB is a strong theory that has been widely used in the entrepreneurship intention domain and views intentions as significant predictors of behavior, mainly in the case of planned and goal-oriented behavior.	It is a generic model of intention. Some argue that it is not perfect for all fields.
Entrepreneurial Event Model (EEM)	EEM is among the earliest models introduced in the field of entrepreneurship.	Two prerequisites should be met first before beginning a new venture.
Bird's Model	Bird's Model is about an individual's state of mind directing individual action towards self-employment as opposed to organization employment.	Only based on rational and intuitive thinking which is hard to measure. The previous work has yet to validate Bird's model empirically.
Theory of Planned Behavior Entrepreneurial Model (TPBEM)	TPBEM is the first model introduced by Krueger and Carsrud (1993) and lies fully in the field of entrepreneurship.	All constructs in the model are the proxy of TPB. Unfortunately, the model needs to be revised especially in the conceptual and measurement issue.
Social Cognitive Career Theory (SCCT)	SCCT suggests that in making decisions related to career issues, self-efficacy and outcome expectation should be significantly related.	This model is related to the decision-making process of opting for entrepreneurship as a career choice. Yet, the limited study used this theory to explain SEI.

Entrepreneurial Potential Model (EPM)	EPM aspires to be a multilevel model, including individual and organizational constructs.	The model investigates the potential entrepreneur in two disparate settings: corporate ventured and enterprise development which is not suitable for the current research setting.
Revised Entrepreneurial Intention Model (REIM)	RIEM was introduced to improve Bird's Model in which self-efficacy plays a significant role in the development of entrepreneurial intentions and actions.	Only based on rational and intuitive thinking which is hard to measure.
Extended or Integrated Model	A better model can be developed and introduced.	Most of them are developed based on the original theory of TPB.
Davidsson's model	Davidsson's Model was the first model to investigate the economic-psychological factors that affect a person's intention to become an entrepreneur.	Omit the external factor in the model.

4. The New Landscape Of SEI Model

SEI Model can be considered as a new line of SE landscape (see Figure 13). There are still limited studies concerning SE domestically and globally (Ahuja et al., 2019; Fatoki, 2018). SEI can be best defined as a person with an innovative and entrepreneurial mindset to run a new social venture (Thompson, 2009), dispatch social activities, and maximize social value (Bosch, 2013). To date, the empirical findings on this topic, especially in Malaysia, are limited (Wahid et al., 2022).

The Mair and Noboa (2006) model can be considered the first model to measure SEI which adopted the classical theories of TPB and EEM. The cognitive-emotional variables, which include empathy and moral judgment, are the proxy for ATSE and SN, respectively. The enablers of self-efficacy and social support represent the PBC. This model 'borrowed' the variables from EEM: perceived desirability and perceived feasibility, to form intention. Furthermore, this model also replaced the traditional attitudinal constructs of TPB to fit the special traits of social entrepreneurs in the SE realm.

Empathy is proposed as a substitution for a person's ATSE, thus addressing the first component of Ajzen's (1991) TPB. In the context of SEI, ATSE is a crude proxy that reflects the "ability to recognize and emotionally share the emotions or feelings of others" (Mair & Noboa, 2006). They acknowledge empathy is a multifaceted concept. In the context of SEI, they describe empathy consist of cognitive empathy ("the ability to assess another person's emotional state") and affective empathy ("the propensity to react to another person's emotional state"). As a unique trait of a social entrepreneur, empirical evidence shows that highly empathetic people are more likely to develop intentions to involve voluntarily in SE-based activities (Yu & Wang, 2019).

Moral judgment is the second predictor of SEI. Mair and Noboa (2006) propose moral judgment as their proxy for the SN of TPB. Drawing from Kohlberg's model, moral judgment is a development of human cognition that increases the capacity for empathy and justice (Kohlberg & Hersh, 1977). In the context of SEI, they describe moral judgment as a "cognitive process that motivates an individual to help others in search of the common good" (Mair & Noboa, 2006). Hockerts (2015) found that 429 students with high levels of moral obligation are linked to a high tolerance of societal activities.

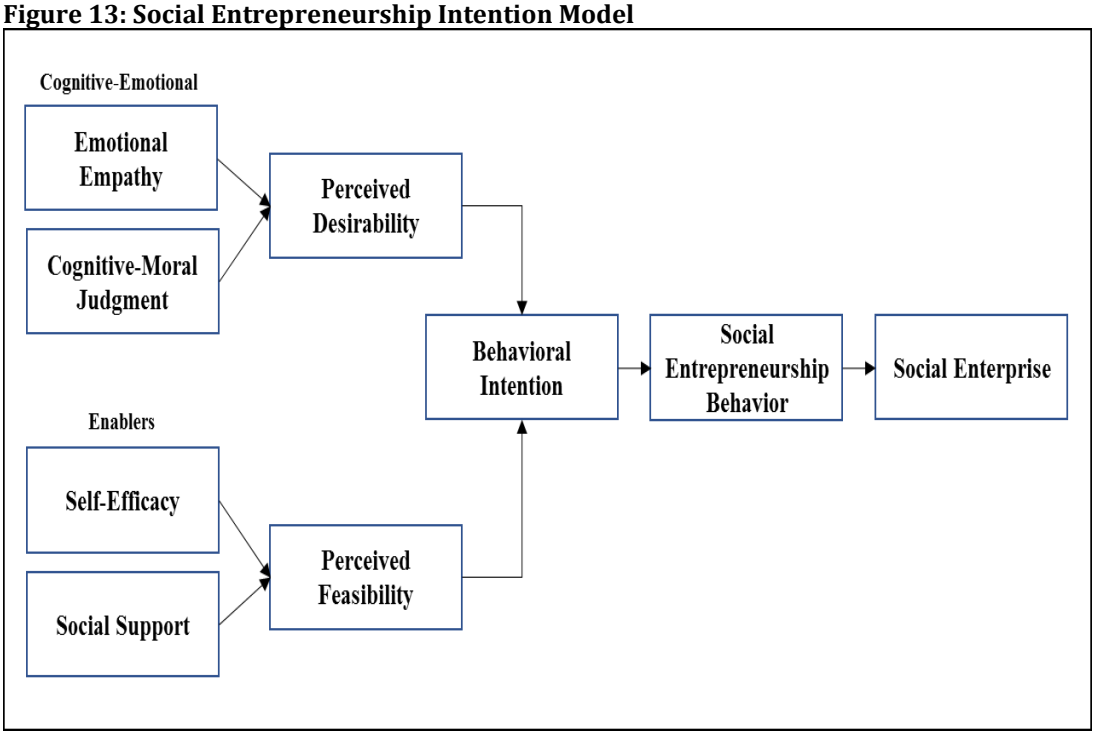
Self-efficacy is regarded as a substitution for internal PBC which they theorize to be a factor of intention in line with Ajzen's (1991) TPB predictions. In the context of SEI, self-efficacy is best described as a "person's belief that individuals can contribute toward solving societal problems" (Hockerts, 2017). Empirically, the higher the social entrepreneur's self-efficacy, the higher the level of innovativeness and sustainability of venture creation. Similarly, a study by Medyanik and Al-Jawni (2017) confirmed that self-efficacy significantly influences SEI among 300 Syrian students.

Social support is regarded as a proxy for external PBC drawn from Ajzen's (1991) TPB. Mair and Noboa (2006)

assume social support is determined by the support an individual expects to receive from his or her surroundings. In the context of SEI, Mair and Noboa (2006) suggest that increased resources that are gained from one's social network are linked with greater access to business capital and potential customers (Medyanik & Al-Jawni, 2017; Yu & Wang, 2019). Wahid et al. (2022) added that PSS from various entrepreneurship backgrounds assist entrepreneurs in capturing valuable resources to boost business performance. Chuah et al. (2016) found that 257 Malaysian students were willing to become entrepreneurs if they received support from their surroundings.

Mair and Noboa (2006) recommended that the intention to start a social enterprise develops from perceived desirability and perceived feasibility. Perception of desirability is affected by cognitive-emotional constructs of empathy and moral judgment. Also, the perception of feasibility is affected by the enablers of self-efficacy and social support. This model utilizes personal factors to form entrepreneurial intention because Mair and Noboa (2006) believe that personal or individual factors are the first level of analysis to be investigated. In short, the SEI Model is acknowledged as the first model proposed for determining predictors in the SEI context. Yet, empirical evidence to validate the model is limited. Therefore, it is relevant to consider this model as the supporting model to justify and form the SEI framework in any respective country.

Figure 13: Social Entrepreneurship Intention Model



Source: Mair and Noboa (2006)

5. Conclusion

In this present study, we can conclude that TPB is treated as the grand theory and Mair and Noboa's (2006) SEI Model as the supporting theory to explain SEI in the Malaysian setting. TPB is a strong theory that has been widely used in the entrepreneurship intention domain and views intentions as significant predictors of behavior, mainly in the case of planned and goal-oriented behavior. Drawing the TPB as the domain in this present study, it is adequate to function as the theoretical background for SEI formation (Ernst 2011; Hockerts 2017; Wahid et al., 2022). Politis et al. (2016) and Tiwari et al. (2018) have added one or more additional exogenous variables combined with TPB-based constructs in predicting SEI whereas some attempts to position the TPB-based constructs (i.e., ATSE, SN and PBC), as mediators (Luc 2018, Wahid, 2020).

Mair and Noboa's (2006) model is the first model introduced in the SE context. Drawing Mair and Noboa's (2006) model into the domain of SE research, it seems to be suitable as the supportive theory for SEI formation. Although Mair and Noboa's (2006) constructs were being accessed as the proxy of the TPB model, to date, no empirical evidence fully validates the model, but Hockerts (2017) and Tukamushaba, Orobia, & George (2011) have partially validated the model with varied findings.

From the abovementioned discussion, the selection of TPB and SEI Models as the foundation of the study is suitable and appropriate for SEI research due to their strong theoretical framework, which provides a comprehensive understanding of individual intention behavior in various contexts. Furthermore, to synthesize the large volume of empirical studies on SEI, the future researcher can reveal the variables that could potentially be predictors by using a systematic literature review (SLR) technique.

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Optimizing Financial Transparency and Accountability in Mosques: A Case Study Approach in Enhancing Reporting Practices

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Abstract: Financial reporting is essential for maintaining accountability and openness in non-profit organizations, including mosques. Notwithstanding the existence of worldwide financial reporting standards, mosques frequently have difficulties in conforming to standard practices owing to insufficient competence and the absence of established financial management frameworks. This case study analyses the financial reporting practices of a mosque in Malaysia, emphasizing critical issues such as the absence of standardized financial recording systems, procrastinated transaction paperwork, and restricted public financial disclosures. The study highlights the necessity for explicit financial separation between waqf and khairat monies, as each serves a unique function. It underscores the significance of streamlined financial recording methods to enhance openness, accountability, and community confidence. This research identifies essential areas for enhancement by comparing current behaviors with instructions provided by Malaysian religious authorities. Recommendations encompass the establishment of fundamental financial recording systems, the utilization of technology for real-time reporting, and enhanced adherence to financial regulations. The study adds to the expanding literature on financial accountability within religious non-profits and provides pragmatic suggestions for improving financial management in mosques. By using these methods, mosques can cultivate enhanced confidence between congregants and regulatory authorities, while assuring the appropriate management of donations and resources.

Keywords: *Financial Reporting, Mosque Accountability, Transparency, Waqf and Khairat Funds*

1. Introduction

Financial reporting plays a key role in upholding accountability and transparency within non-profit organizations. The existing body of research indicates that although there is widespread support for global financial reporting standards for non-profit organizations, the actual implementation of these standards encounters difficulties as a result of local customs and differences among stakeholders (Cordery et al., 2019). Several non-profit organizations have implemented national accounting standards, such as PSAK No. 45 in Indonesia, to augment openness and accountability. Nevertheless, the attainment of full compliance continues to provide a formidable obstacle (Tsunme et al., 2023). Empirical research has demonstrated a positive correlation between the adoption of enhanced governance practices and the enhancement of financial reporting within non-profit organizations. The findings underscore the importance of effective monitoring and supervision in improving the standard of financial reporting inside non-profit entities.

Mosques, which are a notable category of non-profit organizations in Muslim countries, play a crucial role in delivering religious, educational, and social services to their associated communities. As a prominent Islamic institution, mosques get financial support mostly from public donations in the form of infaq and waqf. Regrettably, the financial management of mosques has frequently been a matter of controversy, since there are concerns over the lack of transparency and accountability in the administration of mosque funds (Mahardika et al., 2022; Octisari et al., 2021; Puspita et al., 2022). While having an urgent requirement for proficient financial reporting protocols, the majority of these institutions tend to rely on basic accounting techniques rather than adhering to standardized conventions (Siregar et al., 2023; Sochib, 2023). The lack of standardized financial reporting methods between mosques results in variations in the level of transparency and ineffective financial information distribution as well as complicates the financial monitoring process. The present condition is further intensified by the inadequate level of expertise and understanding in financial management within a significant number of mosques, as committee members often lack formal education in financial institutions or accounting.

The importance of effective financial management in mosques cannot be overstated and an inadequate understanding of financial reporting obligations as well as internal control mechanisms can lead to a reduced degree of proficiency, thus affecting the transparency and accountability of mosque financial matters. Moreover, this phenomenon possesses the capacity to give rise to inefficiencies, non-adherence to regulatory requirements, and reduced trust among various stakeholders. In essence, improving efforts in mosque financial matters will help to ensure the responsible handling of both public and private donations and enhance the community's trust in the mosque's leadership (Kholmi, 2022; Nining, 2019). The primary objective of this study is to address the aforementioned problems by employing a case study methodology to investigate the financial reporting practices of a particular mosque in Malaysia. Specifically, the research aims to comprehensively examine the key concerns associated with the selected mosque on its current financial recording and reporting practices based on the existing protocols and guidelines from the regulatory authorities. The paper further proposes the implementation of a basic financial recording and reporting system for mosques, to improve effectiveness, openness and accountability in their financial operations.

The subsequent sections of this article are structured as follows: A literature review on accountability and transparency in the management of mosque finances is presented. The methodology utilized and the findings are elaborated in the subsequent section accordingly. The conclusion of this effort is presented in the final section.

2. Literature Review

Accountability and transparency are essential tenets in the financial management of mosques, significantly contributing to ethical stewardship and the efficient utilization of resources. Accountability denotes the responsibility of mosque leaders and financial management to furnish comprehensive and precise reports regarding the utilization of financial resources, ensuring that expenditures align with the mosque's objectives and serve the community (Muchlis et al., 2019). This involves the preparation of financial statements in compliance with established accounting standards and the implementation of internal controls to mitigate the risk of fraud or theft. (Yasin & Mokhtar, 2022). By cultivating a culture of accountability, mosque leaders may guarantee their role as responsible custodians of the trust bestowed upon them by their congregation, which is vital for preserving both the moral and operational integrity of the organization (Ga et al., 2021). Transparency entails the candid and forthright dissemination of financial information to the congregation, generally accomplished through the regular presentation of statements and financial data (Muchlis et al., 2019). Transparency guarantees that financial management processes are observable and accessible, facilitating the identification and resolution of any financial mismanagement or ethical issues. Consistently delivering financial reports, encompassing comprehensive income and expenditure figures, enables mosque members to comprehend the utilization of their donations. This strategy fosters confidence and credibility while promoting increased participation and sustained financial support from the community (War & Barlis, 2023).

Scholarly literature underscores the need to use standardized accounting systems as a means to enhance transparency and responsibility (Julkarnain, 2018). Numerous scholarly articles have also investigated the current use of accounting standards in the financial reporting protocols of mosques. The available literature suggests that a significant part of mosques continue to employ basic accounting techniques and have not completely embraced the accounting standards mandated by accounting regulations (Julkarnain, 2018; Siregar et al., 2023; Sochib, 2023). The absence of standardized financial reporting practices may result in inadequate reporting, thereby impacting the levels of openness and accountability (Diviana et al., 2020). To effectively implement the accounting standard, faith-based institutions must generate comprehensive financial statements encompassing statements of financial position, comprehensive income, cash flows, and accompanying comments to financial reports (Diviana et al., 2020; Siregar et al., 2023). Existing literature suggests that although certain mosques have undertaken initiatives to enhance financial accountability and transparency, there exists a prevalent requirement for improved comprehension and application of non-profit accounting principles within the realm of mosque financial management. (Asrori et al., 2020; Siregar et al., 2023).

Empirical research conducted on the financial administration of mosques in Indonesia has shown a prevalent dependence on basic procedures, underscoring the imperative for substantial enhancements. According to the

study conducted by Suarni et al. (2022), it was observed that the Dato' Tiro Islamic Centre Mosque employs a rudimentary manual protocol for documenting transactions, which deviates from the prescribed ISAK 35 criteria. The absence of comprehensive reporting highlights the imperative for regulatory modifications aimed at establishing standardized standards. In a similar vein, Siregar et al. (2023) observed that although the Al-Ikhlas Mosque demonstrates adherence to certain fundamental financial management principles, it fails to meet the comprehensive reporting standards mandated by ISAK 35 as a result of its restricted financial literacy. Kholmi (2022) underscored the need to streamline financial management procedures to augment openness and accountability. The author claimed that precise and unambiguous reporting may effectively match the operations of mosques with the expectations of the community. The study conducted by Diviana et al. (2020) showcased advancements made at Mosque Baitul Haadi through the implementation of financial statements that adhere to ISAK 35 standards, hence improving operational transparency and responsibility.

In their recent study, Yeni et al. (2021) Provided a comprehensive account of the effective execution of robust financial management methods at Fatimah At-Tuwaijiry Mosque. The authors highlighted the strategic allocation of finances and the cultivation of a culture of transparency. An investigation carried out by Octisari et al. (2021) Revealed shortcomings in the execution of ISAK 35 at mosques located in Kedungbanteng. These inadequacies were predominantly attributed to inadequate levels of awareness and training. Furthermore, the research undertaken by Mahardika et al. (2022) and Puspita et al. (2022) Has demonstrated that specific mosques located in Malang City and Bengkulu City have made notable advancements in improving their financial procedures by implementing training programs and standardization activities. Nevertheless, significant improvements are still necessary to attain full compliance with non-profit accounting requirements. In conclusion, the research suggests that enhancing transparency and accountability in Indonesian mosques requires upgrading financial reporting procedures, fostering a deeper comprehension of accounting standards, and employing training and technology judiciously.

The literature study about the financial management procedures of mosques in Malaysia reveals a varied and complex research landscape. Several research studies have indicated that some mosques have implemented effective financial reporting systems and robust internal controls to effectively manage their income and expenditures (Shaharuddin & Sulaiman, 2015). The aforementioned methods highlight the significance of precise financial documentation and increased accountability on mosque leaders to enhance efficiency and effectiveness in performance (Adil et al., 2013). However, subsequent studies indicate notable deficiencies, specifically in the domains of budgetary control, performance evaluation, and accountability, hence indicating the necessity for improvements in these specific areas (Nining, 2019). To enhance financial management practices and promote accountability, it is imperative to use effective procedures such as performance reviews, regulatory compliance, and social audits. (Nining, 2019). Notwithstanding certain advancements, a considerable number of mosques continue to exhibit deficiencies in their financial policies and reporting procedures (Shaharuddin & Sulaiman, 2015).

Further research has uncovered enduring challenges in the field of financial management. According to Nining (2019), the use of performance assessments, regulation, and social auditing serve as mechanisms for upholding accountability; yet, there persist certain obstacles in this regard. Mohamed et al. (2023) delineate challenges about fund management, regulatory compliance, and facility management, highlighting the divergence in governance approaches among different states. Zain et al. (2015) emphasize the lack of standardized accounting methods, which hinders the effective implementation of accountability and transparency measures. Said et al. (2013) Highlight the importance of robust internal controls and proactive committee involvement in fundraising efforts as a means to improve financial performance and provide crucial support to mosque initiatives. Furthermore, a study conducted by Wan Zakaria et al. (2020) reveals that a significant majority of mosques in Kuala Nerus, specifically 79%, continue to depend on manual accounting systems. This reliance detrimentally impacts operational efficiency and heightens the likelihood of errors. Despite the implementation of enhanced cash handling protocols, including regular inspections and secure storage, a notable proportion of mosques, specifically 39.1%, persist in manual cash handling before depositing funds. This practice presents a potential vulnerability to misappropriation, as highlighted by Wan Zakaria et al. (2020).

In summary, the academic literature about the effective administration of mosque finances underscores notable progress as well as persistent obstacles. Empirical evidence highlights the imperative nature of adhering to

standardized accounting methods to enhance financial openness and accountability. While many mosques have demonstrated significant advancements through the implementation of thorough financial reporting and robust management processes, numerous other mosques continue to depend on crude systems that do not meet formal criteria (Diviana et al., 2020; Suarni et al., 2023; Yeni et al., 2021). Insufficient financial literacy among administrators, inadequate training, and a lack of standardized procedures persistently hinder the effectiveness of financial administration (Kholmi, 2022; Siregar et al., 2023). In the context of Malaysia, it is evident that while several mosques demonstrate proficient financial controls, there exists a pervasive lack of budgetary management and performance evaluation, hence highlighting the necessity for enhanced practices and adherence to accounting standards (Nining, 2019; Shaharuddin & Sulaiman, 2015). The continued use of manual accounting methods and the absence of appropriate financial policies serve to intensify these issues (Wan Zakaria et al., 2020). In general, the existing body of literature suggests a significant requirement for improved financial reporting protocols, a more comprehensive comprehension of accounting principles, and the adoption of training and technological interventions to promote improved accountability and transparency in the financial management of mosques in Indonesia and Malaysia (Mahardika et al., 2022; Said et al., 2013; Siregar et al., 2023; Zakariyah et al., 2017; Zulfahmi et al., 2024). The significance of continuing enhancements in financial operational procedures is shown by the constant endeavors to foster transparency, strike a balance between comprehensive reporting and simplicity, and augment community participation strategies.

3. Methodology

The proposed research methodology of a case study approach is well-suited to investigate the financial reporting practices of a mosque. This qualitative strategy enables a comprehensive examination of a range of data sources, including the mosque's financial records, internal policies and procedures, and any relevant archival documentation, which is the central aim of this research (Crowe et al., 2011). It also allows the researcher to delve into the intricate details of the mosque's financial management systems, shedding light on the current challenges, shortcomings and limitations, providing valuable insights that can inform the development of a simplified and more transparent reporting system. (Asrori et al., 2020). The qualitative nature of the case study methodology also enables the researcher to engage with the key stakeholders, such as the mosque's financial management committee, through semi-structured interviews to gain a comprehensive understanding of the current practices, challenges, and potential solutions. This multi-faceted data collection approach ensures a thorough examination of the financial reporting mechanisms, enabling the researcher to identify the specific areas that require improvement. (Asif et al., 2019; Yaacob et al., 2015).

This understanding can then be used to propose practical solutions that simplify the reporting process and enhance the overall financial accountability and transparency of the mosque (Mohamed et al., 2014; Yaacob et al., 2015). The Financial Management Coordination Guidelines for Mosques and Suraus Across Malaysia, issued by the Department of Islamic Development Malaysia (JAKIM), serve as the primary reference for evaluating the financial management practices of the chosen mosque in this case study. The guideline's main goal is to function as a reference for the financial administration of mosques, specifically focusing on improving the competence, responsibility, and honesty of its committee members. Additionally, it promotes a culture of methodical and open management and administration of financial procedures and internal control inside mosques. The study also refers to the Guideline for Mosques and Suraus issued by Melaka State Islamic Religious Council as well as the Enactment on Administration of the Religion of Islam (State of Melaka) 2002. These guidelines also serve as a regulating mechanism for the authority overseeing mosque financial management, with a specific focus on preserving the mosque's integrity. In proposing the basic recording and reporting practices for the mosque, references are also made to the relevant financial accounting standards and Melaka State Fatwa Council, particularly on the definition and classification of waqf and khairat funds.

4. Findings and Discussion

The primary objective of this investigation is to address the challenges associated with the financial administration of a particular mosque. This study aims to conduct a comprehensive examination of the primary constraints of its current financial recording and reporting procedures. The study aims to improve the efficacy, transparency, and accountability of the mosque's financial operations by providing a basic financial recording and reporting system. The summary of observations is represented in Table 1.

Table 1: Summary of Observations

Key Observations*	Explanation
Donation Boxes	Donation boxes are classified into two categories: immovable and portable. The stationary steel bins attached to the mosque wall are intended for waqf and khairat contributions. The portable boxes are made of wood and fitted with locks, used during important meetings, while plastic containers are typically utilized for gathering immediate donations during religious classes.
Access to Donation Box and the Counting Practices	Two authorized individuals, the treasurer and the Imam, hold the keys to the donation boxes. Contributions in these boxes are counted by the Imam every other day after the Isya prayer. Weekly, after Friday prayers, the treasurer, Imam, and a committee member open and count the donations.
Donation Box Handling and Fund Transfer	All funds extracted from the donation box are maintained by the Imam, as no safe deposit box is evident at the mosque. The funds are designated as the mosque's petty cash for the week. Any unutilized money is subsequently transferred to the treasurer every week after the completion of each Friday prayer session.
Petty Cash Allocation and Excess Fund Management	The Treasurer will record the excess cash received from the donation boxes as a petty cash fund and allocate the funds to address the mosque's short-term financial need. If the sum is excessive, the funds are subsequently deposited into the bank account. Nonetheless, no definitive cash sum has been established as the threshold for the petty cash fund.
Financial Recording Process	The treasurer is tasked with maintaining a cash book to record all financial inputs and outflows. The documentation of financial transactions is generally deferred due to the absence of a designated deadline. The financial records of the waqf fund and the khairat fund lack clear delineation, despite their differing objectives.
Financial Reporting and Disclosure Practice	The cash book is presented exclusively during the committee meeting, which generally takes place bi-monthly. The mosque administration does not engage in the public disclosure of financial information for its congregants, nor is there an apparent demand for such disclosure from the community, as asserted by the treasurer.
Financial Transparency	Financial reports are not displayed on the Mosque noticeboard. The sole observable financial data is the aggregate collection from each weekly Friday prayer, which is, however, not presently updated.
Petty Cash and Major Purchases	The chairman typically dictates the allocation of petty cash to meet the mosque's immediate financial requirements. For a significant acquisition above RM5,000, the chairman will submit the proposal during the meeting for assessment and resolution.

*Notes: Observations above are based on the Guidelines for the Coordination of Financial Management for Mosques and Surau Throughout Malaysia, established by the Department of Islamic Development Malaysia, JAKIM (*Garis Panduan Penyelarasan Pengurusan Kewangan Masjid Dan Surau Seluruh Malaysia*, 2021)

Source of Revenues

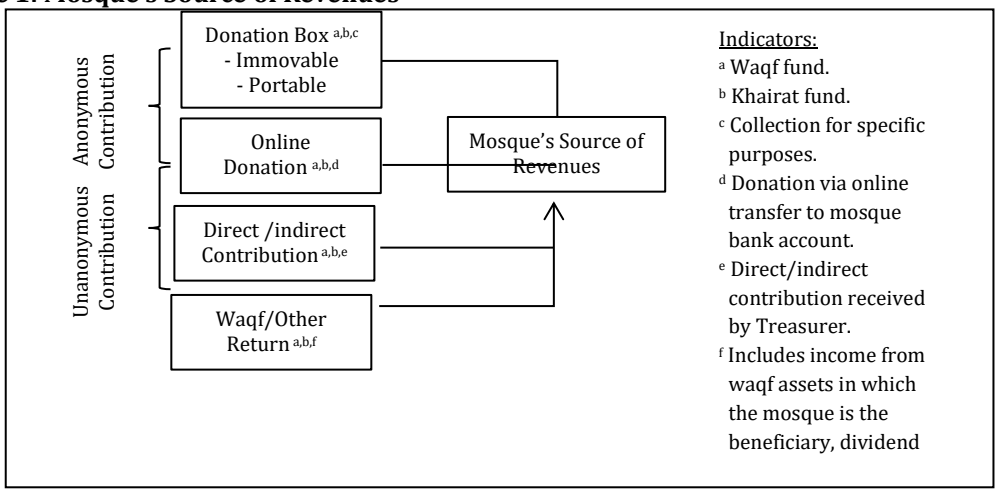
Typically, the revenue of a mosque is derived from three primary sources: public donations, financial support from the government, and other funds generated through activities such as rent collection and investment returns, which are managed by the mosque's committee members. There are two categories of public donation, namely the waqf fund and the khairat fund. The purpose of collecting waqf funds is to finance mostly capital expenditures, including the expansion of buildings, maintenance, repairs, infrastructure, and physical amenities required to satisfy the current and future needs of the mosque building and waqf assets. Meanwhile, the khairat fund collection is utilized to meet the mosque's operating expenses, which encompass supporting the management and administration costs, as well as funding diverse programs that provide benefits to the congregation members and the surrounding communities. These expenses include providing financial incentives to speakers at the mosque, staging banquets, and holding rituals for the breaking of the fast.

There are two immovable affixed types of donation boxes situated within the mosque premises. The first box functions as the collecting box for the waqf fund, while the adjacent box is designated for the collection of the khairat fund. The boxes are prominently displayed at the main entrance, strategically positioned to make it

convenient for contributors to put in their cash donations. In addition to the physical donation box, the mosque also received online contributions from the public. The mosque has established banking relationships with two notable financial organizations that strictly follow the rules of Syariah (Islamic) Law. The first bank account is specifically allocated for the waqf fund, which is intended for the advancement of the mosque and other essential capital outlays. On the other hand, the second bank account is primarily used for various operational expenses associated with the mosque. Although public donation forms the main source of income for the mosque, the mosque also generated income by leasing its waqf asset. According to the treasurer, currently, there are two sources of monthly revenue: one from renting out a house and the other from operations related to a palm oil plantation. The tenant remits the house rental payment directly to the bank account, whereas the proceeds from the palm oil plantation are received in physical currency.

An authorized individual is granted access to both immovable-affixed-typed donation boxes designated for the waqf fund and the khairat fund on alternate days, excluding Fridays. The donated amount will be computed, and the petty cash report will be promptly reviewed. Every week, following the Friday prayer session, the two boxes are opened by a minimum of two permitted individuals in expectation of receiving a significant contribution. The treasurer will transfer any sum over the specified threshold for petty cash into the bank account. As per the treasurer, there is a separate donation box designated for collecting voluntary contributions from the participants of a certain religious class, which is intended for the invited speaker. The donation box is portable and primarily passed around among the female congregants during the lesson. The portable donation box will be passed on to a designated individual to open, count, and collect all the money obtained. These funds will then be sent to the speaker of the day. There is a lack of official documentation for this collection. The sole goal of this is to enable female congregants to contribute to the predominantly male preacher. Typically, male members of the congregation swiftly offer their contributions to the preacher during the handshake that occurs after the group prayer.

Figure 1: Mosque's Source of Revenues



Apart from funds received anonymously through the donation boxes, the mosque will issue an official receipt for each direct contribution received. Initially, the treasurer is primarily responsible for receiving contributions and producing formal receipts. Occasionally, certain contributors just pass their funds to any of the committee members. Afterward, the committee member will hand over the donated amount to the treasurer before issuing formal receipts. Meanwhile, the official receipt for a donation made through an internet transfer to the mosque's bank account is only prepared after the amount has been confirmed as indicated in the bank statement.

Categories of Expenses

The financial records of the mosque reveal several typical charges associated with its operation. This analysis delineated four types of expenditures: Waqf and Development, Programs and Activities, Cemetery Management, and Mosque and Surau Management. Waqf & Development encompasses mostly capital expenditures associated with the Mosque, including renovation costs, maintenance, and fixtures and fittings. The second category, Programs and Activities, encompasses all expenses incurred for the benefit of congregants and the

community, including costs associated with religious classes, contributions to disadvantaged community members, expenses for youth activities, and additional related charges. Cemetery management expenses encompass provisions for gravediggers, alongside landscaping and maintenance of the cemetery grounds. Finally, the expenses categorized under Mosque and Surau management encompass allowances disbursed to mosque officials and attendants, in addition to utility expenditures. The list of expenses is presented in Table 2: Categories of Mosque Expenses and Sources of Funding.

Table 2: Categories of Mosque Expenses and Sources of Funding

Categories	List of Expenses	Sources of Funding
1. Waqf Assets and Mosque Development	- Renovation activities - Maintenance cost - Fixtures and Fittings	Waqf fund
2. Programs and Activities	- Financial incentives for speakers - Miscellaneous costs in organising Islamic classes - Financial incentives to young congregants on academic achievement - Contribution to flood victims* - Contribution to the deceased family members* - Contribution to the young congregants* - Contribution to Hari Raya Celebration*	Khairat fund *<u>Notes:</u>* *Disbursement of specific collections organized by the mosque committee to the intended recipients.*
3. Mosque Administration	- Allowance for mosque officials - Utility Bills	Khairat fund
4. Cemetery Management	- Gravedigging expenses - Allowance for Gravediggers - Landscaping and Maintenance	Khairat fund

Financial Recording and Reporting Practices

The treasurer stated that the mosque's present financial recording method consists solely of cash inflows and outflows from the mosque fund. The financial records of the waqf fund and the khairat fund lack clear separation, despite their distinct purposes. It was also found that the recording of financial transactions is typically postponed, as the mosque management does not practice public disclosure of financial statements for congregants, nor is such disclosure requested by the community. Despite the guideline issued by the state religious authority explicitly addressing the necessity for such disclosure, the mosque management is not treating it with proper seriousness, mostly attributed to the insufficient enforcement by the religious authority itself. Considering these findings fundamentally undermine the concepts of accountability and transparency, the mosque's finance committee members need to reveal the mosque's financial position, as this would elucidate any unarticulated concerns regarding its financial management.

The financial reporting and transparency issues of mosques identified in this study are frequently documented in prior research. Although financial disclosure is essential, it seems the mosque is not sufficiently prioritizing the compilation of financial reports, resulting in inadequate financial disclosures. The basic template for financial disclosures about weekly and monthly collections is prominently displayed on the mosque's noticeboard; nonetheless, the financial information seems outdated. However, interviews with the several mosque's attendees revealed no apparent indications of dissatisfaction among community members regarding the mosque's financial affairs. Figure 2 below depicts the reporting of the Waqf and Khairat funds according to the classifications of expenses derived from the examination of mosque expenditures in this study.

Figure 2: Proposed Waqf Fund and Khairat Fund Reporting

a) Waqf Fund Reporting

Particulars	RM	RM
Opening balance		x,xxx
Add: *Revenue*		
- Donation boxes	xx	
- Online contribution	xx	
- Direct/indirect contribution	xx	xxx
- Waqf/other return	xx	
Less: *Waqf Asset & Mosque Development*	xx	
- Renovation expenses	xx	- xxx
- Mosque maintenance		
- Assets acquisition		
Closing balance		x,xxx

b) Khairat Fund Reporting

Particulars	RM	RM
Opening balance		x,xxx
Add: *Revenue*		
- Donation boxes	xx	
- Online contribution	xx	
- Direct/indirect contribution	xx	xxx
- Waqf/other return	xx	
Less: *Programs and Activities Management*	xx	- xxx
- Financial incentives for speaker	xx	
- Miscellaneous costs	xx	- xxx
Mosque Administration		
- Allowances for mosque officials	xx	
- Utility bills	xx	- xxx
Cemetery Management		
- Gravedigging expenses		
- Allowance for gravediggers		
- Landscape and maintenance		
Closing balance		x,xxx

5. Conclusion and Recommendations

The financial reporting and disclosure challenges faced by mosques, while similar to those found in previous studies, require effective strategies for improvement. Despite a lack of enforcement by authorities and no direct demand from congregants, the need for timely financial transparency is clear. While adopting full accounting standards is seen as the best solution, it remains impractical for small and medium-sized mosques. Currently, mosques are only required to provide basic cash flow reports under state regulations. However, this study highlights significant opportunities to improve financial transparency and reporting practices within mosques. A key improvement needed is the clear separation of income into the waqf fund and the khairat fund. This distinction would aid regulatory compliance and enhance financial management, especially regarding expenditures, budgeting, and strategic planning for future projects. Mosque committee members must understand the importance of maintaining this segregation to ensure proper fund allocation and oversight. Simplifying cash flow recording through technology is vital, particularly to manage contributions and expenses tied to both funds. Further research into user-friendly financial platforms is essential, and adopting advanced technology for real-time reporting could greatly improve accountability and transparency.

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Market Valuation Analysis of Selected Companies in the Healthcare Industry

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Abstract: The COVID-19 pandemic was characterized as a global phenomenon by the WHO in March 2020. The pandemic had significant effects, short and long-term impacts on healthcare companies and the healthcare industry. Hence, healthcare companies should analyze their financial performance to sustain themselves in this critical period. For that reason, this paper aims to comprehend how selected companies in the healthcare industry utilize all the components in a company's financial statement to achieve outstanding company performance. Our analysis used market valuation ratios such as earnings per share (EPS) and book value per share (BVPS). To strengthen our analysis, we determine the strengths and weaknesses to assess the healthcare companies' position in the market. Thus, we will recommend strategies that will aid the company in better performance in the future.

Keywords: *Market valuation, Healthcare companies, Healthcare industry, EPS, BVPS*

1. Introduction

The global pandemic of COVID-19, caused by the severe acute respiratory disease coronavirus-2, has impacted the world with its rapid and continuous spread. According to Wen et al. (2020), the virus arose at the end of 2019 in Wuhan, China. This epidemic has had far-reaching consequences for several industries around the world. Healthcare is one of the industries that has been significantly affected. The COVID-19 pandemic has had a significant influence on the healthcare business, which is critical in providing necessary medical services to individuals (Gertz et al., 2022). The epidemic has highlighted the critical need for digital health solutions.

The healthcare industry is vital to the entire well-being of individuals and society. It includes a broad range of services, such as medical care, preventive measures, and health promotion. The healthcare industry, particularly the hospital industry, is a service-intensive economy that relies significantly on advanced medical technology and the availability of qualified healthcare workers to provide high-quality care (Mehmood et al., 2022). Further, there is a global shortage of about 7.2 million healthcare employees, and it is anticipated to expand to 12.9 million by 2035 due to the high turnover of healthcare professionals (Bhattacharya & Ramachandran, 2015). Healthcare companies are prone to grabbing big market opportunities. However, there are visible disparities in the company's market valuations. Market valuation is key for investors to measure the company's past and current performance and a tool to predict future returns.

Market valuation analysis helps investors and business strategists to assess a company's financial health, competitiveness, and development potential. According to Dosso & Vezzani (2019), the market valuation of corporate tangible and intangible assets depends on the actual performance of firms and investors' expectations of their future performance. It guides investors by showing if a company's stock is overvalued or undervalued, highlighting investment opportunities or risks. At the same time, companies need to monitor the elements of market valuation to measure their current financial standing. Thus, the company can attract more investment capital to their business.

With this regard, the paper aims to evaluate the company's market position by using the selected healthcare companies' market valuation metrics (earnings per share and book value per share) and identify their market strengths and weaknesses for strategic planning. Through this analysis, investors and healthcare peers can get practical insights and standards for industry positioning. To sum up, market valuation analysis tells a company's story beyond financial measures, affecting the business ecosystem and economy.

2. The Healthcare Industry in Malaysia

The healthcare system in Malaysia is separated into two systems, which are the public healthcare system and the private healthcare system. Each system offered healthcare and medicine services to accommodate the need of demand from low-income to high-income households. A public health care system owned and funded by the government which provides services for the general public. The medical care expenses are free of charge, minimum charge, or covered by the government fund. Whereas for private healthcare systems, the medical expenses are borne by the patients themselves. Both systems deliver excellent medical care services and facilities in their abilities. However, the outbreak of the COVID-19 pandemic affected numerous sectors, including the healthcare sector. This crisis makes the company in the sector adapt to new circumstances to remain competitive in the market.

There are three sub-sectors between healthcare companies, which are healthcare equipment and services, healthcare providers and pharmaceuticals. Manufacturers and distributors of health care equipment and providers of health care services such as lab testing services and dialysis centers are the first sub-sectors. The second sub-sector is companies' owners and operators of health care, including hospitals, clinics, nursing homes and rehabilitation centers. Examples are KPJ Healthcare Berhad and TMC Life Science Berhad. The third sector of pharmaceuticals is companies engaged in the research, development, production, or distribution of pharmaceuticals. Such companies in the pharmaceutical sector are APEX Healthcare Berhad, Duopharma Biotech Berhad and Pharmaniaga Berhad. Overall, under the healthcare sector, there was a total of 99 counters presently traded in Bursa Malaysia.

3. Contemporary Overview of Market Valuation

The market valuation ratio measures and analyzes stock prices and compares market prices with those of market competitors and against other facts and figures. These ratios track the financial performance of public companies to understand their position in the market. These ratios are employed by current and potential investors to determine whether a company's shares are overvalued, undervalued, or priced fairly.

Although a wide variety of market value ratios are available, the most popular include earnings per share (EPS) and book value per share (BVPS) ratios. Others include the price/cash ratio, dividend yield ratio, market value per share, and the market/book ratio. Each of these measures is used differently, but when combined, they offer a financial portrait of publicly traded companies. In addition, market value ratios give management an idea of what a firm's investors think of its performance and prospects. Many factors should be considered, including a range of market value ratios, when deciding about an investment. A stock with one great-looking measure could be an undiscovered gem, or it could be a flop that is underpriced for a reason.

Earnings Per Share (EPS)

EPS is the portion of a company's profit that is allocated to every individual share of the stock. It is a term that is of much importance to investors and people who trade in the stock market.

$$EPS = \frac{Earning\ after\ tax\ (EAT)}{Number\ of\ share\ outstanding}$$

This ratio serves as a valuable comparative market valuation analysis and understanding of the company's financial position in the present as well as its past performance. The higher the ratio, makes the company become more attractive to future investors as well as current investors.

Book Value Per Share (BVPS)

BVPS measures how efficiently investments and assets are used to generate income for a company. Companies that deploy their assets efficiently to generate profit will do better than those that are less efficient.

$$BVPS = \frac{Common\ Equity}{Number\ of\ share\ outstanding}$$

To evaluate the market position of a particular company, the BVPS is commonly used by shareholders and investors. Shareholders used this ratio to measure how much they would gain in the company event of liquidation. Investors can use this ratio to determine whether the company stock price is overvalued or undervalued compared to the market value per share (MVPS). Higher BVPS than MVPS are deemed as undervalued stocks.

4. Selected Companies for Analysis

Out of the many companies offering healthcare services, three (3) have been selected to be our sample. The choice of the companies fulfills our criteria, such as the product or services offered and market capitalization (CAP). Company A is a Malaysia-based investment holding company that was established in 1991. Company B is a publicly listed company which principally engaged in investment and was established in 1988. Company C is an international provider of integrated healthcare services and was established in the year 1974.

Table 1: Comparisons of Selected Companies

	Company A	Company B	Company C
Product/ Service	Manufacturing, processing, and trading of nitrile, latex, and surgical gloves	Manufactured the largest nitrile medical gloves	Provides a range of established healthcare services, including private hospitals
Market CAP (KLSE)	RM234.8 million	RM5.5 billion	RM52.7 billion

Sources: Author's Work

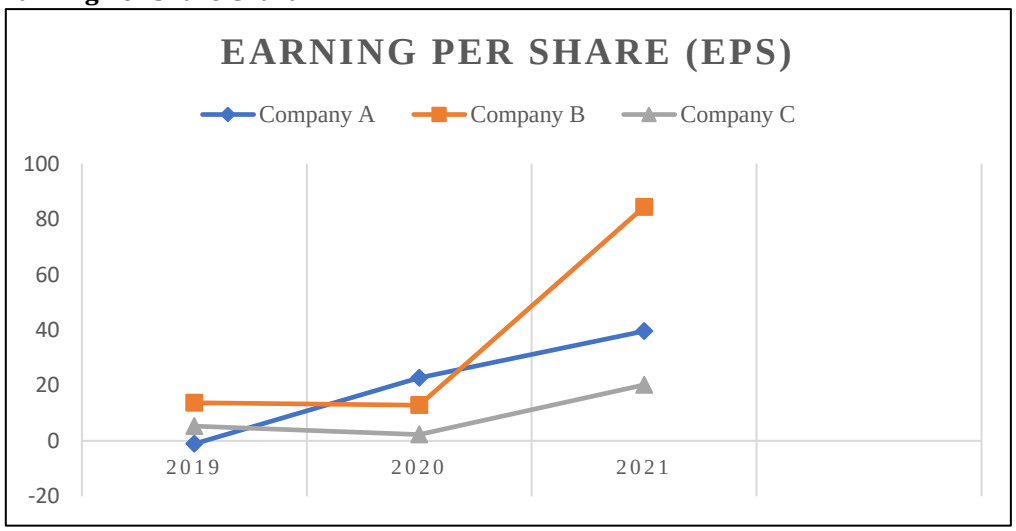
Earnings Per Share (EPS) Analysis

Table 2: Earnings Per Share Analysis

Year/Company	Company A	Company B	Company C
2019	-1.08	13.69	5.28
2020	22.78	12.88	2.27
2021	39.58	84.43	20.20

Sources: Author's Work

Figure 1: Earning Per Share Chart



Sources: Author's Work

Based on Figure 1, the EPS for three companies has an upward trend for three years of analysis starting from 2019 to 2021. Company A started with the lowest EPS at -1.08 sen per share in 2019 and drastically increased

to 22.78 sen per share and 39.58 sen in 2020 and 2021, respectively. Company B and Company C also showed the same result as Company A. From 2019 to 2021, both companies recorded the lowest EPS in 2019 and the highest EPS in 2021. In 2019, Company B had the highest EPS compared to Company A and C. The ratio is RM13.69 per share. This indicates that the company gained more profit to be distributed among its shareholders. However, the EPS slightly declined in 2020 to RM12.88 per share. However, the ratio is still the highest EPS among other companies in this analysis. Meanwhile, in the year 2021, Company B recorded the highest EPS with RM84.43 per share. The result explained that company stock price is in an upward trend as higher EPS makes the company stock price increase. Meanwhile, for Company C, their EPS in 2019 was RM5.28 and declined to RM2.27 in the year 2020. As of 2021, Company C drastically increased its EPS to RM20.20. An increased ratio of EPS illustrates that the company will increase its dividend payment, and this element is important for the investor in making prudent investment decisions. By comparing the EPS among the company, investors can choose the highest EPS as it reflects the promising profit of the company as well as a good investment choice.

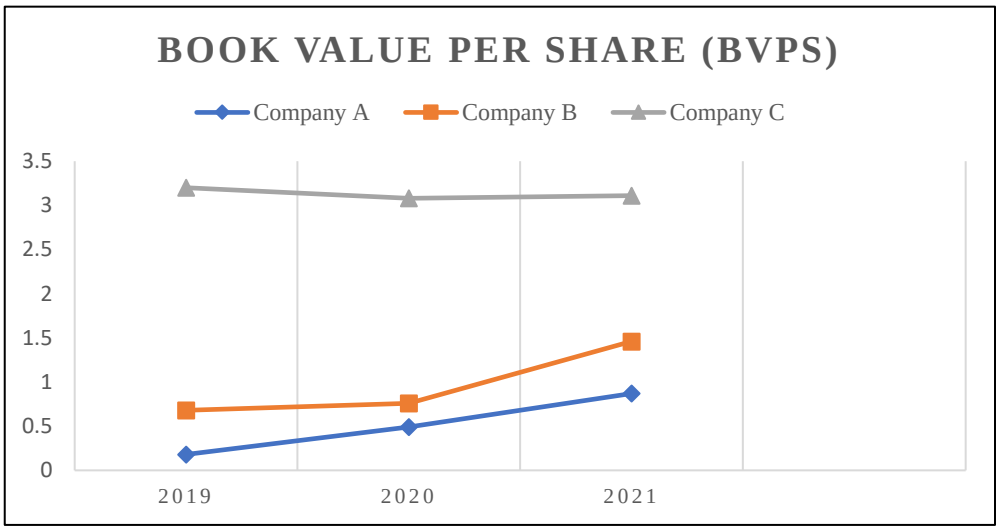
Book Value Per Share (BVPS) Analysis

Table 3: Book Value Per Share Analysis

Year/Company	Company A	Company B	Company C
2019	0.18	0.68	3.20
2020	0.49	0.76	3.08
2021	0.87	1.46	3.11

Sources: Author's Work

Figure 2: Book Value Per Share Chart



Sources: Author's Work

Based on Figure 2, the comparative figure for the three companies' book value per share (BVPS) exhibited a similar trend except for a slight decline for Company C in 2020. The analysis for Company A showed a positive trend in BVPS, as they had 0.18 sen in 2019, which increased by 0.31 sen to 0.49 sen in 2020. The trend keeps increasing, as Company A had 0.87 sen for the year 2021. This means that in 2021, each stock of Company A would be worth RM0.87 if the company liquidated. For Company B, their BVPS is higher than Company A by 0.5 sen, with 0.68 sen in 2019. followed by a slight increase in BVPS in 2020 with 0.76 and a drastic increase to RM1.46 per share for 2021. An increasing trend in the BVPS of the company will attract more investors as they consider the company stock to have a good potential investment return. For Company C, their BVPS ratio is higher as compared with Company A and B, as the ratio for 2019 is RM3.20 per share. Company C BVPS will fall slightly to RM3.08 in 2020 before rising to RM3.11 in 2021. To make an informed investment decision, prospective investors should compare the BVPS with the stock price of a particular company. If the BVPS is

higher than the stock price, the stock is deemed undervalued as it will cost less than the assets. Prospective investors should buy undervalued stocks, as they can buy them at a cheaper price and gain a higher return.

5. Discussion and Recommendations

From the result of market valuation measurement, this analysis highlighted the strengths and weaknesses of the selected companies by referring to Table 4. By using EPS and BVPS as the main indicators of the analysis, each company has its unique ratio as it has been influenced by several market factors.

Table 4: The Strengths and Weaknesses of the Selected Companies

	Company A	Company B	Company C
Strengths	Consistent upward trend of BVPS	Gained the highest EPS	Achieved the highest BVPS
Weaknesses	Recorded the lowest EPS	Recorded a minimal increase in BVPS	Recorded inconsistent trend of EPS

Sources: Author's Work

An upward trend of BVPS is the strength of Company A. The BVPS ratio provides investors with a measurement of the company's potential profitability of the investment. It is suggested for investors to buy the undervalued stocks as it is a good investment choice. As for weaknesses, their EPS is the lowest among the other companies. A low ratio of EPS gives the impression that the investment is riskier than one with a high ratio of EPS. This is because the investors will gain less when the company distributes some of its profits. At the same time, low EPS indicates low dividend gains for shareholders. As the measurement of EPS used the amount of profit divided by the number of outstanding shares, these two elements contributed to the high or low ratio. Low EPS happened when the company had a lower profit, but the number of outstanding shares remained unchanged. Otherwise, low EPS is due to stagnant profit and increased outstanding shares.

Company B boasts a high EPS in comparison to its competitors. Using EPS as a measurement tool for market valuation helps investors decide the stock value of an investment. At the same time, high EPS will drive the share price to increase. There are many significant factors contributing to high EPS, but the main contributor is the high profit earnings of a particular company. Prospective investors can monitor the company's performance by looking at their respective EPS and the share price. If the company has a steady stream of income, its EPS will increase year by year. This element can be used to predict the profit of a company in the future. Moreover, high EPS is likewise influenced by the number of outstanding shares of the company. A lower number of outstanding shares with high earnings contributes to high EPS. At the same time, a high number of outstanding shares also contributes to a significant increase in EPS, but with a greater increase in profit for the company. As for Company B, the BVPS ratio recorded a minimal increase in value. Even though their BVPS keeps increasing year by year, the increasing margin is considered small. The ratio of BVPS can be used to determine the level of risk in investment. Company stock with high BVPS is less risky than low BVPS.

This analysis highlighted high common equity as the strength of Company C. Prospect and current investors can monitor the potential returns of share investment by the amount of common equity. The amount of common equity included the amount of common stock, retained earnings and paid-in capital of the specific company. Specifically, as the common equity rises, the return to common stockholders can be expected to rise. Potential common stockholders can consider investing in the company by calculating the amount of common equity. Companies need to monitor their amount of common equity to remain competitive and attractive to investors in the stock market. At the same time, an excellent amount of common equity will benefit companies when their cash flow is inadequate. Company C recorded an inconsistent trend of EPS. To maintain as a suitable investment option, the company must monitor their EPS. An inconsistent EPS is usually not preferred by the investors, especially the conservative type of investors.

The company's market value in operating the business can be demonstrated through market valuation. As a result, the company must maintain consistent growth in revenue, earnings, and dividends paid. The company needs to keep up with consistent growth using financial controls, which allow it to monitor cash inflow and cash outflow (Lieberman, 2020). This is because reliable financial controls are one of the main value drivers for

the company as they protect the assets of the business (Safina, 2021). Through financial controls, the company will be able to determine its key performance indicators (KPIs) and consistently follow the KPIs. In addition to the financial controls and KPIs, the company can prove its growth as a promising investment choice.

Conclusion

In assessing the financial health and potential profitability of companies, various metrics offer insights into their strengths and vulnerabilities. Company A's strength is evident in its upward BVPS trend, indicating promising profitability potential. However, its lower EPS compared to other firms signifies potential investment risks. Company B, distinguished by its high EPS, suggests a strong market position and likely share price growth, even though its BVPS growth is modest. Company C's high common equity presents an attractive proposition for potential returns to stockholders, but its fluctuating EPS emphasizes the necessity for stability to attract discerning investors. Across the board, maintaining consistent growth in revenues, earnings, and dividends is essential. Investors and companies alike must remain vigilant to these indicators to mitigate the risk exposure of the stock market efficiently.

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The Perception of the Muslim Community Towards the Management of Qurban Ritual by Mosques in Malaysia

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Abstract: The study aims to assess the perception of the Muslim community towards the general management of Qurban by mosques in Malaysia and to determine whether the Qurban ritual complies with the Shariah principles. Questionnaires were distributed to around 466 Muslims in the Central and Southern regions of Malaysia. Findings revealed that the Muslim community perceived that the Qurban ritual was managed efficiently by the mosques and that the Qurban process complied with the Shariah requirements. Nevertheless, the satisfaction rate of the Muslim community was slightly lower on certain aspects of the management and compliance with the Shariah requirements. The study proposes that the mosques should take the initiative to enhance the internal control system in managing the Qurban by disseminating Qurban distribution reports to the public as well as combatting the risk of misappropriation of Qurban meat.

Keywords: *Muslim community, Qurban, internal control system, Mosque, Shariah principle, Malaysia*

1. Introduction

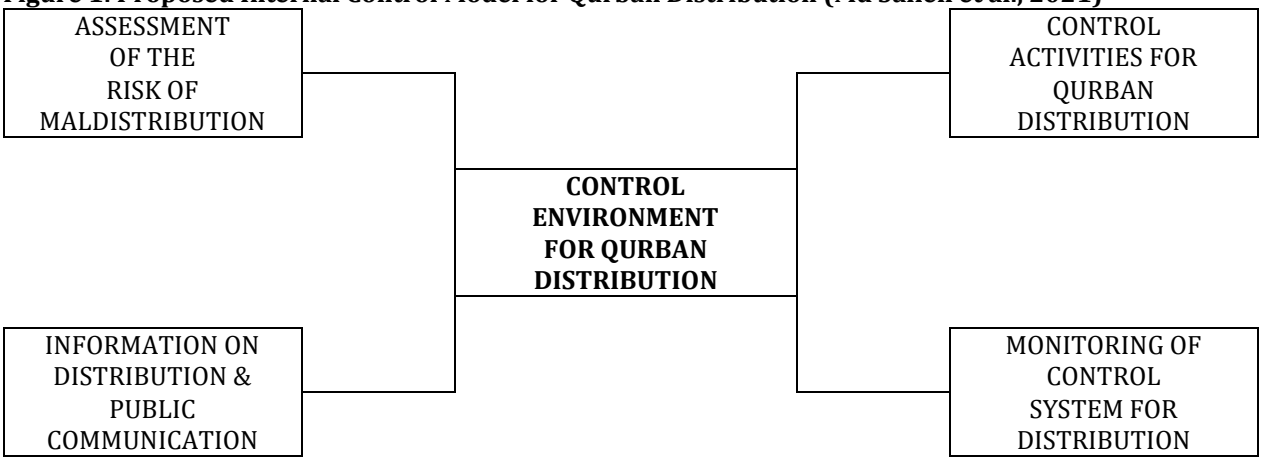
Qurban or sacrifice is a special Islamic ritual that is performed by slaughtering livestock during specific dates in the Islamic calendar and then distributing the meat to specific categories of beneficiaries. In Malaysia, it is a common practice that the entire Qurban ritual is managed voluntarily by mosques on behalf of the Qurban participants.

The implications of the management of Qurban by mosques are significant, as they have the potential to shape the perception of the Muslim community towards this important ritual. Existing literature has explored various aspects of mosque management and community engagement in Malaysia, which can provide insights into the role of mosques in managing the Qurban ritual (Asif et al., 2019; Omar, Omar, et al., 2019; Sahad et al., 2022). The management of Qurban by the mosques involves the collection of funds from the participants, purchasing and slaughtering the livestock, packaging the Qurban meat, and distributing the Qurban meat to the beneficiaries based on the prescription of the Shariah. The risks associated with the management of Qurban include ineffective management of Qurban and non-compliance to the Shariah requirements. For instance, the mosque might not prepare a Qurban distribution report, there might be a lack of information on the Qurban disseminated to the community members, and the Qurban meat might not be distributed to the poor and needy groups at the appropriate percentage. `

Prior studies on mosque management (Bara & Pradesyah, 2021; Sanusi et al., 2015) Have highlighted the importance of effective financial management and internal control systems within mosques to ensure accountability and transparency. This suggests that the overall financial management and governance practices of the mosques may influence the community's perception of the management of Qurban by mosques. However, there is limited research specifically examining the perception of the Muslim community towards the management of Qurban by mosques. Thus, the study aims to fill the gap in the literature by exploring this important aspect of mosque-community relations.

The following Internal Control Model for Qurban Distribution, which was developed based on the five (5) components of internal control issued by the '*Committee of Sponsoring Organizations of the Treadway Commission'(COSO)* (2013) is relevant in the context of understanding the perception of the Muslim community towards the management of Qurban by mosques:

Figure 1: Proposed Internal Control Model for Qurban Distribution (Md Salleh et al., 2021)



This study explores the perception of the Muslim community in Malaysia towards the management of the Qurban ritual by mosques. Perception of the community refers to how the Muslim community in Malaysia views, understands and evaluates the role of mosques in overseeing and facilitating the Qurban ritual. A questionnaire-based research was used in collecting data from a sample of the Muslim population in Malaysia on their perception of the mosques' management of the Qurban ritual. Two aspects of the Muslim perception towards the mosques were evaluated specifically in the study: the perception towards the general management of Qurban and the perception towards compliance with the Shariah requirements.

The perception of the Muslim community would reflect their satisfaction with the management of the Qurban ritual by mosques. Thus, the study is important in identifying potential weaknesses and areas for improvement in the mosques' management of the Qurban ritual, which can enhance the community's satisfaction with the services provided and further strengthen the role of mosques as central hubs for community engagement. Besides, the findings could be used by the relevant authorities to develop better policies and guidelines for mosques to manage the Qurban ritual more effectively in the future.

2. Literature Review

The study on mosques and their effectiveness has been a growing area of research, as mosques play a vital role in the Muslim community's spiritual, social, and economic development. In Malaysia, researchers emphasize the need to reinstate the principles and functions of mosque institutions to restore community development and mobility (Asif et al., 2019; Omar, Muda, et al., 2019). The performance of mosques in the country can be measured by the size of their regular congregations and the number of religious classes they offer (Sahad et al., 2022). On the other hand, the roles and functions of mosque institutions in Malaysia should not be limited to solely religious activities, as these institutions possess the potential to serve as community hubs that can actively contribute to the overall betterment and development of the Muslim population (Omar, Muda, et al., 2019). For instance, during the COVID-19 Movement Control Order in Malaysia, mosques provided various forms of financial support and assistance not only to the poor and needy groups but also to the community members who were facing hardship due to the MCO (Salleh et al., 2021). Effective mosque management is crucial for several reasons such as in ensuring transparency and accountability, handling financial resources, maximizing the impact of their resources by implementing efficient and impactful programs for community development, and responding effectively to crises, as demonstrated by their role in providing financial assistance during the COVID-19 pandemic (Bara & Pradesyah, 2021).

Empirical studies on the effectiveness of the mosque in undertaking various activities remain limited in their scope and depth (Islamiyah, 2019; Said et al., 2013). Similarly, there is a lack of specific literature on the evaluation of efficiency in the management of Qurban by mosques. Nonetheless, studies on other aspects of management from the Islamic perspective could also be used as a basis for reference in the current study. For instance, Hosen et al. (2021) highlighted that while shariah compliance is a critical factor in Islamic Banking

services, the overall customers are satisfied with the services. However, there are some areas where customer satisfaction is lower, such as access to services, pricing, service interruptions, technological sophistication, and product variety (Hosen et al., 2021). Given the significance of the Qurban ritual in the lives of Muslims, understanding the community's perception of how mosques manage this event could provide valuable insights into the overall effectiveness of the mosque institutions in Malaysia (Asif et al., 2019; Omar, Muda, et al., 2019). The Qurban ritual, a significant tradition in Islam, involves the slaughter of livestock and the subsequent distribution of the meat to the underprivileged members of the community (Thaha et al., 2021). Mosques in Malaysia play a crucial role in the organization and management of this ritual, and their performance in this regard has a significant impact on the perception of the Muslim community (Sahad et al., 2022). Research conducted on mosques in Java, Indonesia has shed light on the importance of internal control practices within these institutions, particularly emphasizing the management of donations and financial resources as critical components in maintaining accountability and transparency (Islamiyah et al., 2020).

In the management of Qurban by mosques, there are risks that the Qurban distribution may not be made to the poor and needy at the appropriate percentage, Qurban distribution may not be made fairly to the community members, excessive distribution to the committee members, and distribution made without the authorization of the Qurban managers. To mitigate the risks of mishandling Qurban distribution, there is a need for Qurban managers to adopt a methodical approach by implementing a formal system for Qurban distribution. (Md Salleh et al., 2020). If the Qurban management does not adhere to the shariah requirements such as if the distribution does not reach the poor and needy in the correct amounts or percentages, there is a concern that the Qurban ritual performed might not fulfill the religious obligations. Improper Qurban distribution might lead to the non-acceptance of the Qurban as a valid form of worship (Md Salleh et al., 2021). In another study, it was noted that the Muslim community in the central and southern regions of Malaysia has not acquired a firm grasp of understanding of the overall fundamental laws relating to Qurban and its distribution. The misunderstanding pertains to key aspects such as who is eligible to receive the Qurban meat and the appropriate ways to distribute it (Md Salleh et al., 2023).

The study on the Qurban distribution model in Malaysia by Mahat et al. (2023) aims to improve the management of Qurban, particularly the Sharia-compliant distribution of meat. The study highlights that current regulations primarily focus on hygiene, health practices, and disease prevention, often neglecting the crucial aspects of meat distribution and accountability within Qurban committees. The researchers developed a comprehensive Qurban Meat Distribution Scorecard for Qurban Managers to address this gap. This scorecard is based on the widely recognized COSO model's internal control principles (Mahat et al., 2023). The need for an appropriate Qurban management system was also highlighted by Viandari & Aini (2020) who analyzed the development of a Qurban Management Information System for a non-government institution in East Jakarta. Their study suggested that there is a need for modernized Qurban management due to the increasing number of Qurban participants and proposed a system to streamline the Qurban process, reduce manual work, and provide real-time information to stakeholders. By providing a clear and auditable record of Qurban transactions, trust and confidence in the Qurban program could be enhanced (Viandari & Aini, 2020).

As one of the established Muslim countries, Malaysia has been continuously working on reforming the administration and management of Islamic practices, such as the Qurban ritual (Azmi et al., 2018). The way how mosques manage the Qurban ritual may be a key factor in determining the community's perception of their overall performance. The effectiveness of mosque operations in Malaysia has also been a subject of study, with researchers emphasizing the need to reinstate the principles and functions of mosque institutions in restoring community development and mobility (Asif et al., 2019; Sahad et al., 2022). The study of Qurban management by mosques is important because mosques are deeply embedded within the Muslim community, serving as the central hub for celebrating important Islamic festivals and the focal point for daily religious observances and community activities (Omar, Muda, et al., 2019). With the lack of adequate study on Qurban management, the community's perception of the mosque's role in this ritual remains largely unexplored and represents a significant gap in the existing literature.

3. Methodology

Population and Sampling

The population of the study is Muslim residents in the South Region (Negeri Sembilan, Melaka, Johor) and Central Region (Selangor, Putrajaya, and Kuala Lumpur) of Malaysia aged 18 years and above were selected as the targeted respondents for this research. Both of these regions were preferred because both regions have similar approaches employing the Qurban. Around 466 samples were incorporated in this study as the number of populations in both regions was 9,111,428 people in the year 2021 (Department of Statistics Malaysia, 2020). Respondents will then be selected through a convenience sampling technique. Convenience sampling is used because of a simple, fast, and effective technique. (Stratton, 2021).

Research Instrument

The survey was conducted using a questionnaire to collect the data and information needed since it is more practical and effective due to the large population size. The constructed instrument will then be given to an expert for content validity, and the items from the instrument will be refined to obtain robust results. To measure the level of satisfaction and perceptions towards Qurban ritual in the South Region and Central Region Malaysia, the Likert scale was used and analyzed using Statistical Package for the Social Sciences (SPSS) Version 26. Descriptive analysis (Demographic profile, frequency, and percentage analysis towards general management of Qurban as well as percentage towards compliance with Shariah principles).

4. Findings and Discussion

Demographic Profiles

The following table shows the demographic data of the participants: A total of 466 respondents were involved in this study.

Table 1: Demographic Profile of Respondents

Gender	Frequency	Percentage (%)
Male	183	39.3
Female	283	60.7
Age		
18 - 30 years old	221	47.4
31 - 40 years old	71	15.2
41 - 50 years old	62	13.3
51 - 60 years old	86	18.5
61 years old and above	26	5.6
Occupation		
Students	204	43.8
Public Employee	113	24.2
Private Employee	54	11.6
Self-employed	38	8.2
Retired	45	9.7
Housewives	11	2.4
Not Working	1	0.2
Total	466	100

Regarding the information in Table 1, we can see that 283 respondents (60.7%) of the respondents were female whereas 183 respondents (39.3%) were male. There are five different age categories and respondents aged between 18 to 30 years old constitute the largest respondents i.e., 221 respondents (47.4%). In terms of occupation, most of the respondents are students which consists of 204 respondents (43.8%), followed by

public employees (113 respondents; 24.2%) and private employees (54 respondents; 11.6%). Meanwhile, only one respondent (0.2%) is not working or unemployed.

Table 2: Involvements of the Respondents

Committee Members	**Frequency**	**Percentage (%)**
Yes	61	13.1
No	405	86.9
Total	466	100.0
Involvement in Qurban Organized by Mosque	Frequency	Percentage (%)
Yes	278	59.7
No-	188	40.3
Total	466	100.0

Table 2 above reveals the involvement of the respondents as committee members of the mosque and involvement in the Qurban ritual organized by the mosque. Only 13.1% of the respondents are mosque committee members whereas 278 of the respondents (59.7%) had previously been involved in Qurban rituals organized by the mosque.

Table 3: Satisfaction Towards General Management of Qurban

Items(s)	**Percentage (%)**			
	Strongly Disagree (1)	**Disagree (2)**	**Agree (3)**	**Strongly Agree (4)**
The Qurban ritual was managed effectively by the mosque.	0.6	2.4	24.5	72.5
The funds for the Qurban ritual were managed appropriately by the mosque.	0.9	1.7	26.4	71.0
The Qurban distribution to the beneficiaries was monitored closely by the mosque.	0.9	3.6	25.1	70.4
Detailed Qurban distribution records were maintained by the mosque.	1.7	11.4	32.4	54.5
The Qurban distribution report prepared by the mosque contained detailed information on the Qurban meat distributed to the different categories of beneficiaries.	2.4	12.9	31.8	53.0

Table 3 analyzes the level of satisfaction of the Muslim community i.e., whether the Muslim community is satisfied or not with the general management of Qurban by mosques in Malaysia. Based on the data presented in Table 3, a majority of the respondents (72.5% strongly agree and 24.5% agree) concluded that the Qurban rituals were managed effectively by the mosques in Malaysia. Similarly, a majority of the respondents expressed their overall satisfaction (71% strongly agree and 26.4% agree) concerning the proper management of funds collected for the Qurban rituals. Furthermore, the respondents rated the mosques positively on the monitoring of the Qurban distribution to the beneficiaries (70.4% strongly agree and 25.1% agree). The high level of satisfaction and positive perceptions by the respondents indicate that the mosque institutions in Malaysia have played a significant role in facilitating and overseeing the Qurban rituals within the community.

On the other hand, a lower satisfaction level was noted concerning the proper maintenance of the detailed Qurban distribution record by the mosque whereby only 54.5% and 32.4% of the respondents strongly agreed and agreed respectively with the statement. It is also pertinent to note that a higher dissatisfaction level i.e., 1.7 disagree and 11.4% strongly disagree was noted concerning the maintenance of the detailed Qurban distribution record by the mosque, compared to the first three items being examined. This finding suggests

that the mosque management needs to strengthen its record-keeping practices to ensure transparency and accountability in the Qurban distribution process.

A lower satisfaction level was also noted in the dissemination of the Qurban distribution report containing detailed information on the Qurban distribution to the different categories of beneficiaries. 2.4% of the respondents strongly disagreed whereas 12.9% disagreed with the statement that the Qurban distribution report prepared by the mosque contained detailed information of the Qurban meat distributed to the different categories of beneficiaries.

The above findings suggest that while mosque institutions have demonstrated effective management of Qurban rituals, there may still be opportunities to improve transparency and accountability in communicating or disseminating the relevant information about the distribution of Qurban meat to the community. The findings are consistent with literature that highlights the need to strengthen the financial management and accountability practices of mosque institutions. (Nining Islamiyah, 2019; Sanusi et al., 2015)

Table 4: Perception Towards Compliance with the Shariah Requirements

Items(s)	Percentage (%)			
	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
The procedure of slaughtering sacrificial animals complied with the requirements of Shariah.	0	0	17.4	82.6
The distribution of Qurban to the beneficiaries is done by the requirements of Shariah.	0.2	2.8	21.9	75.1
The distribution of Qurban to the poor and needy groups was made at the appropriate rate.	0.4	3.9	27.7	68.0
Irregularities are rare in the management of Qurban by the mosque.	1.7	10.9	30.9	56.4
No part of the Qurban animal is taken by the mosque committee members as a personal reward for managing the Qurban ritual.	4.3	17.0	33.3	45.5

Table 4 evaluates the perceived compliance to the Shariah requirements by mosque in Malaysia in the handling of Qurban ritual i.e., whether the Qurban ritual follows the Shariah requirements or not. Results from Table 4 show that 100% of the respondents perceived that the procedure of slaughtering sacrificial animals complies with the requirements of Shariah, which is a critical requirement in the Islamic practice of Qurban. Most of the respondents (75.1% strongly agree and 21.9% agree) also believed that the distribution of Qurban complied with the Shariah requirements, thus suggesting that mosques in Malaysia have played their roles effectively in managing the distribution of Qurban meat to the beneficiaries. The result is consistent with the respondents' overall perception (68% strongly agree and 27.7% agree) that the distribution of Qurban to the poor and needy group has been given at the appropriate rate.

Concerning the issue of irregularities in the management of Qurban, the results indicate that a majority of the respondents (56.4% strongly agree and 30.9% agree) perceived that the possibility for irregularities to happen is quite rare. Similarly, most of the respondents (45.5% strongly agree and 33.3% agree) believed that no part of the Qurban animal is taken by the mosque committee members as a personal reward for managing the Qurban ritual. It is pertinent to note that taking any part of the slaughtered Qurban animal as a personal reward is strictly prohibited in Islam (Jalil et al., 2018).

On the contrary, some of the respondents (1.7% strongly disagree and 10.9% disagree) perceived that irregularities might occur during the process of managing the Qurban. The result is also consistent with the respondents' perception towards the last question (4.3% disagree and 17% agree) that no part of the Qurban animal is taken by the mosque committee members as a personal reward for managing the Qurban ritual. Even though the percentage of disagreement is not very high, it is important to note from the findings that potential

irregularities involving the misappropriation of the Qurban meat by the committee members could not be eliminated or disregarded totally.

5. Conclusion and Recommendations

The study provides valuable insights into the public's perception of the effectiveness of mosque institutions in managing the Qurban rituals in Malaysia. The study found that the Muslim community generally perceived that the mosque institutions in Malaysia have played a positive role in the administration of Qurban. Two major findings were revealed. Firstly, the majority of the respondents were generally satisfied and had a positive perception towards the management of Qurban by mosques in Malaysia. The finding indicates that mosque institutions in Malaysia have played a good role in the administration of the Qurban rituals within the community, as reflected in the high levels of satisfaction and positive perceptions expressed by the respondents. Nevertheless, a slightly lower satisfaction level was noted concerning the maintenance of the details of the distribution record to the Qurban beneficiaries and the contents of the distribution reports disseminated by the mosque to the community members and the Qurban participants. Secondly, most respondents were generally satisfied with compliance with the Shariah requirements in the handling of Qurban by mosques in Malaysia. Thus, it may be inferred that the Muslim community perceived that the mosques, as Qurban Managers, had duly complied with the Islamic rules in the management of Qurban. However, a slightly lower satisfaction level was noticed regarding irregularities in the management of the Qurban and the possibility that the mosque committee member might take some of the Qurban meat as a personal reward.

The study suggests certain areas for improvement in the handling of Qurban by mosques. Firstly, it is suggested that the mosques in Malaysia review their management practice and ensure that the Qurban distribution report, containing detailed particulars of the Qurban distribution is duly prepared and made accessible to the public after the Qurban distribution process has taken place. Secondly, the mosque management should focus on strengthening their record-keeping practices and enhancing transparency in communicating information related to the distribution of Qurban meat to the community. Thirdly, the Qurban Managers should take the necessary steps to ensure that there are no irregularities in the management of Qurban and that no parts of the Qurban meat are taken as personal rewards by the committee members since such an act is forbidden in the Shariah principles. For future research, a more detailed study might need to be carried out on the specific internal control system to ensure effective management and shariah compliance distribution. Besides, additional research could be conducted to identify the factors that may lead to irregularities in the process and to develop strategies to mitigate such risks. Research may also be carried out on pertinent factors usually considered by Muslims in selecting a particular Qurban Manager. Alternatively, a similar study may be conducted covering different regions, not covered in the current study.

In conclusion, this study provides insights into the management of Qurban by mosque institutions in Malaysia. The findings indicate that while mosque institutions in Malaysia have generally demonstrated effective administration of Qurban rituals, there are opportunities to further enhance transparency and accountability in distributing Qurban meat to the community. Lastly, this study provides a foundation for future research on the Qurban management perspective in the context of mosque institutions.

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Exploring Reflections on Learning Grammar through Task-Based Activity among Undergraduates

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Abstract: Task-based activities in L2 classroom settings such as preparing multimedia presentation materials and cooperative presentations can significantly improve L2 learners' language acquisition, in terms of encouraging self-directed learning, improving students' confidence and interest in learning, as well as promoting peer interactions. Nevertheless, this kind of language learning activity can be difficult, even for advanced L2 students due to challenges like problems working in a team, presentation anxiety, and cognitive load. Within this context, the present study aimed to explore the perception of L2 learners when learning English grammar through task-based activity. This qualitative study is derived from a conceptual framework from Willis (1996), which comprises three stages of task-based learning (TBL). The sample of this study consists of forty-one English language undergraduates who are studying a communicative English language course in a Malaysian public university. The data was derived through a survey questionnaire based on open-ended questions. The findings revealed both positive and negative reflections on the TBL, even though they are considered advanced users of the L2 language. The findings are comparable to past studies of different contexts. From these findings, it is suggested that future research should explore participants' perspectives on the potential effectiveness of implementing TBL in pairs.

Keywords: *Task-based learning, Grammar learning, Group work, Multimedia, Second language learners*

1. Introduction

Background of Study

While previous research on grammar acquisition has demonstrated the efficacy of conventional Presentation-Practice-Production (PPP) methods (Purnomo et al., 2023), more varied and interactive learning strategies are required, such as the function that peer interaction plays in the acquisition of grammar during oral communication (Collins & Ruivivar, 2021). Le (2023) asserts that the use of presentation software increases students' confidence and interest in grammar learning, indicating that incorporating technology into grammar lessons can be more engaging. Furthermore, Marlina et al. discovered that poster presentations encourage self-directed learning, which gives students control over their learning process and is essential for grammar acquisition (Marlina et al. 2020). Furthermore, Lee's study shows that cooperative presentation classes greatly improve students' comprehension of grammar, underscoring the significance of peer interaction in the learning process (Lee 2024). In the meantime, task-based activities positively affect learners' grammatical acquisition and motivation, as stated by Ha et al. (2023), supporting the effectiveness of task-based learning (TBL) in grammar.

Despite these findings, further research is required to explore how oral group presentations enhance student participation and grammar acquisition. The current research gap in learning grammar through presentations lies in the limited exploration of students' feedback on their engagement and self-directed learning, especially when using movie excerpts as one of the tools to facilitate understanding grammar concepts.

Statement of Problem

In tertiary education, grammar learning presents different challenges as students are required to engage with complex academic texts. Students are also expected to perform at an advanced level which can heighten anxiety associated with the risk of making errors, potentially leading to avoidance of complex grammatical structures and language tasks (Chen et al., 2019; Giray et al., 2022). The challenge is particularly pronounced for L2 learners navigating advanced lexical items, syntactic structures, and field-specific lexicons. To compound the difficulties, factors such as limitations of pedagogical rules (Rankin & Wagner, 2024), traditional testing

methods (Hwang, 2023), and even resistance to transition from traditional teaching to communicative competence practices (Nghia & Quang, 2021) contribute to challenges to integrate new methods and multimedia tools in grammar learning. Consequently, grammar instructions in tertiary education may not fully engage language learners or support a meaningful understanding of grammatical concepts.

On another hand, the landscape of second language learning is progressively shifting from rote learning towards interactive, student-centered environments. Since then, task-based learning (TBL) has gained popularity as an alternative to promote collaborative learning and practical application of grammar in context. With the growing availability of and accessibility to digital tools and resources in education, imbuing multimedia with TBL offers new opportunities to support students in interactive and meaningful ways (BavaHarji et al., 2014; Harji & Gheitanchian, 2017; De Jesus Ferreira Nobre, 2018; Eslit, 2023). Adding to that, interactive multimedia has been shown to help create an engaging learning environment that encourages deeper learning (Alobaid, 2020; Shen & Chang, 2023) by providing better visual representations of theory and concept, interactive learning activities, and multisensory content, allowing for a more immersive learning environment.

Movies were traditionally considered passive multimedia, however, when integrated into a learning task in which learners interact with the content through discussions and analysis, movies can become interactive learning tools to enhance grammar learning. Students can see how grammar functions in real-life situations, potentially reinforcing their understanding of abstract grammar rules. Movies are also inherently engaging, capturing students' attention and interest in the subject matter (Giampieri, 2018; Roslim et al., 2021). This method facilitates a deeper connection with the content which can contribute to improved comprehension and retention of the material. In sum, integrating movies with TBL can significantly support grammar learning by providing context-rich tasks that engage students in meaningful communication.

Despite the transformative potential of incorporating movies in task-based grammar learning, further research on multimedia tools in task-based activities remains a critical area to explore. One significant concern is to ensure that learning objectives align with the approach and content. Mayer and Moreno (2003) cautioned that pictorial and verbal materials in multimedia may result in cognitive overload which can disrupt cognitive processes crucial for learning. Given that grammar can be technical and objective, it is important not to overlook students' cognitive load management to ensure knowledge and skillsets can be developed. Moreover, practical challenges in implementing multimedia in TBL are varied, including considerable self-regulatory demands on students (Hoch & Schüler, 2019), students' ability to understand the meaning of task (Butarbutar, 2021), and poor peer interaction (Belda-Medina, 2021).

Given all the above, conducting this study is beneficial to further inform instructional strategies and re-evaluate existing ones. For this reason, this paper aims to analyze the impacts of integrating movies into grammar learning within a task-based framework.

Objective of Study and Research Question

The following are the research questions that served as the foundation for this study:

- What challenges do learners face when learning grammar through task-based activity?
- How do learners reflect on their experiences of learning grammar through task-based activity?

2. Literature Review

Problems of grammar learning among Undergraduates

The value of communicative competence in higher education has been widely recognized (Fatt, 1991; Fang, 2010; Mammadov & Kholiavko, 2019) while the literature on the topic will continue to interest educators. However, the reality remains that grammar is often assessed in writing and speaking, especially for high-stakes standardized testing like TOEFL and IELTS, which heighten L2 learners' challenges to academic success. These challenges can lead to anxiety and apprehension about engaging in meaningful interactions involving complex grammar knowledge or participating in spontaneous conversations. The psychological aspects such as fear and embarrassment about making errors or being judged, put barriers to free expression, practice, and fair communication for many L2 learners. In a study derived from a broader research project involving nearly 300

Thai college students, test anxiety and fear of negative evaluation markedly emerged as dominant performance anxieties (Akkakoson, 2016). Interestingly, the study participants indicated positive attitudes towards speaking English in the classroom despite these anxieties. This finding corroborates with Chowdhury (2023) who concludes that grammar phobia significantly impedes oral fluency even when the students are reported to have a preference to speak in English. Chowdhury further suggests that heightened fear and anxiety over grammar underscores a learner's innate rhythmic ability to speak (2023). This paradoxical relationship may serve as a balance, revealing a potential area where learning interventions can be introduced to sustain resilience and enhance students' confidence and performance.

Learners are also naturally expected to master increasingly complex grammatical structures and advanced vocabulary as they advance to higher education. The demand to perform in increasingly elaborate grammatical constructs can exacerbate L2 learners' cognitive load particularly because the nuances of technical academic language can prove challenging to grasp and apply. Managing cognitive load is important to a quality learning experience as it is positively correlated with students' performance and motivation to learn (Refat et al, 2019). Rote learning or traditional methods that rely on explicit instructions may not be able to effectively promote healthy cognitive load management due to their overemphasis on form and accuracy. There is no doubt that traditional, explicit grammar instruction benefits learners' awareness and grammar comprehension, however, extensive research has shown that grammar learning must be paired with meaningful instructions to result in effective language learning. (Klapper & Rees, 2003). In many cases, grammar is still being taught in isolation with limited integration into meaningful contexts. It is important to remember that language is social, and its teaching and learning will not be adequate without incorporating other communicative components such as discourse skills and pragmatics. It is imperative for teaching and learning to account for how languages are acquired and learned, and evidence demonstrates that a task-based design enables learners to develop both linguistic and interactional competence required for successful communication in a target language (Ellis, 2018).

Task-based learning

Task-based learning is a type of instruction that focuses on communication by using authentic language skills while performing tasks, especially when learning languages. Task-based learning differs from some other methods, such as traditional grammar-based instruction, because it emphasizes the practical, purposeful use of target language in tasks that resemble real-life scenarios.

According to Willis (1996), task-based learning focuses on meaning over form. They are authentic to social contexts, e.g. they involve ordering food or problem-solving in groups (Ellis 2003), thus promoting contextualized learning. It is a tool for communication, meaning that learners come to know grammar and vocabulary only in the context of task-based (Skehan, 1998). Additionally, task-based learning is considered to be learner-centered. It encourages autonomy through pair or group work, which leads to more interaction among learners (Long & Crookes, 1992), which is an essential driving force in language acquisition. Task-based learning involves stages of learning: pre-task, which introduces a target topic and orients learners to the upcoming new content; task phase can be where the actual main activity is happening with teacher guidance as well as underlying support feedback loop from the student base (Willis, 1996); post -task when reflective practice on using language offers more excellent retention. Ellis (2003) mentioned that task-based assessment measures how students convey and complete a task, not just whether or not they get their grammar right.

Xu & Fang (2022) did a quasi-experimental study on applied task-based language teaching to English as Foreign Language learners. This study focused on measuring the grammatical accuracy of the EFL learners through pre-test/post-tests of 60 Chinese university students categorized into a group receiving task-based learning treatment and another control experience in traditional grammar instruction mode. The results showed a significant superiority of the experimental group over the control one in grammatical accuracy, thereby supporting task-based learning has a social power advantage over traditional methods in improving EFL learners' grammatical competence.

Ali and Ahmed (2022) also examine the role of task-based learning in the enhancement of speaking skills with an investigation into a case study on English as a Foreign Language setting. Involving 30 Saudi Arabian high school students, the study included classroom observations, oral proficiency tests and student feedback. Results

demonstrated that task-based learning had a significant positive influence on both speaking fluency and perceived confidence along with similar gains of talk time spent by test-takers. The most positive effect of task-based learning found in the study appears to be that on speaking skills, suggesting its effectiveness based on discussions and presentation work which can generate more active language use across a wide range implemented from English as a Foreign Language contexts.

To sum up, task-based learning is identified as one of the most effective approaches to language education with many benefits compared to traditional instruction methods. Task-based learning focuses on meaningful dialogue and tangible activities from outside the classroom drives greater learner involvement and relevance. Thus, it helps with actual language usage and learner's autonomy which will yield better interaction.

Review of Past Research on Learning Grammar through Task-Based Group Activity

In this study, the researchers examine how L2 learners learn grammar through Task-Based Learning (TBL) group activity. It is a significant approach to ensuring students' engagement and developing meaningful communication while learning grammar for L2 learners (Bryfonski & McKay, 2017). According to bodies of past research, notable findings of learning grammar through TBL are improved comprehension of grammatical proficiency, multimedia in TBL and increased learners' engagement and positive attitudes towards language learning.

Past research has proven that there are positive effects on grammar comprehension due to TBL in learning grammar. For instance, a study conducted at Dong Nai Technology University demonstrated increased student performance in grammar acquisition and learners' motivation (Ha et al, 2023). They accentuated that L2 learners who learn grammar through TBL and cooperative learning are more motivated, and more successful in their grammar achievement than others who learn grammar through memorization and traditional approach, thus affecting their academic performance positively. This is further supported by Soali et al. (2023), Lam (2023) and Albelihi (2022) whereby it was reported that using TBLT enhances learners' grammar accuracy. On the contrary, Ji & Pham (2018) mentioned that TBL does not always result in the enhancement of grammatical proficiency comprehension. The study revealed learners' dependency on the instructors, reluctance to work in groups, and lack of holistic knowledge acquisition were found to be the significant factors.

Next, evidence also suggested that there is a positive outcome when TBL is integrated along with multimedia such as increasing learners' motivation and engagement in language learning. According to Pradnyawati et al. (2023), in a study that was conducted on 7th grade students, TBLT based on multimedia-digital storybooks, facilitates learners in the language learning process and also boosts motivation. Meanwhile, Fridayanti et al. (2023) added that the inclusion of multimedia in the study promotes learners' engagement effectively and facilitates their language development. Therefore, based on these bodies of past research on the inclusion of multimedia in TBL, it could be perceived that multimedia plays a crucial role alongside TBL in improving learners' perception of language learning.

Additionally, another issue that is discussed actively about learning grammar through TBL group activity is increased learners' engagement and positive attitudes towards language learning. Willis (2021) proposed a framework for TBLT. It emphasizes meaningful communication tasks in grammar instruction. However, instructors must be competent to use TBL group activity successfully in their lessons. Lack of understanding would lead to poor task design that fails to highlight the balance of grammatical aspects and communicative competence (Ellis, 2020); (Long,2021). Meanwhile, in a study conducted by Huang & Gandhioke (2021), it was reported that students enjoyed their participation in TBLT. Thus, based on past studies, it could be observed that learners were actively engaged with each other during TBL in language learning.

Based on the above discussion, it can be observed that numerous studies have been conducted on learning grammar through TBL. While most of the findings are positive for learners' comprehension and improvement of grammatical proficiency, some findings reported negative outcomes due to TBL in group activity. Hence, it could be concluded that learning grammar through TBL has several significant findings such as enhanced comprehension of grammatical knowledge, multimedia inclusion in TBL and increased learners' engagement and positive attitudes towards language learning.

Benefits of Task-Based Group Activity in Grammar Learning

Task-based Learning provides a different approach to learning a second language. The primary emphasis in a task-based lesson is on a particular task; the lesson revolves around accomplishing that task (Handabura, 2020). When implementing a Task Based Lesson, there are two main advantages to this teaching method as discussed by Hima et al., (2021) and Sholeh et al., (2021).

Fosters better learning opportunities (Hima et al., 2021): Task-based learning inculcates a learning environment where students can be actively present in meaning-focused activities. This provides the opportunity for two-way feedback from the teacher and the classmates themselves. With a meaning-focused activity, students are seen to have more time on their hands to exercise the target language to complete the task. This is in contrast with the traditional Presentation – Practise – Production method of teaching, where educators felt that it was very teacher-oriented. This is because educators who practiced this traditional method were required to dominate the lesson and provide less active student time in the classroom. However, this was not the case for a TBL classroom, the role of an educator in the classroom is not limited to monitoring and ensuring the students foster the required role in the given task. Students are monitored by the given task and in groups with their classmates which resulted in them being preoccupied with finishing the task. This left room for the teacher to foster more roles other than just a monitor. These included meaningful roles which helped the students accomplish the given task such as an assistant or a consultant.

Improves language exposure and student engagement in a classroom (Sholeh et al., 2021): In a TBL environment, students are placed in a setting where they are required to exercise the language among their classmates or team members to complete the task. This is driven by the fact that the teacher no longer spoon-feeds the learners. When in such a situation, it fosters room for improvement in terms of language usage because students will have to put aside their shyness and order to achieve the task set by the teacher. This indirectly increases a student's engagement in the classroom. Another factor as to why this is achievable is because students find themselves in a comfortable setting among their classmates and this provides room for the students to use the language and learn from their mistakes. Hence, allowing a real-life simulation setting. When in such a simulation, TBL will positively influence the student's language skills as this approach curiosity and autonomy of study concerning the lesson and language used.

In conclusion, Task-Based Learning is seen as an ideal approach for students to exercise the language, for the students are placed in an active learning setting where most of the output comes from their end. A teacher on the other hand is able to foster a more flexible role in the classroom instead of practicing the typical policing role in a Presentation – Practise – Production classroom. In TBL, students have more autonomy over their learning process and the process of how they conclude the task (Hima et al., 2021).

Challenges of Learning Grammar through Task-Based Group Activity

While it is true that learning grammar through Task-Based Learning (TBL) offers numerous benefits, there have been several challenges, which are documented and reported, in bodies of previous research. To ensure that both instructors and L2 learners can achieve the advantages of TBL, it is crucial to address these challenges. Following past research, the challenges of learning grammar through TBL are the complexity of task design and L2 learners' adaptation.

The first challenge which will be discussed is regarding the complexity of task design such as balancing grammar input with real-world activities and time constraints in doing so. Kurbanova (2023) reported that curating tasks in task-based group activities is one of the challenges that instructors encounter when applying TBL in the classroom. There is an urgency of being able to design suitable tasks, by making sure that the targeted grammar topic is also incorporated in the communicative activities for meaningful learning to happen. As a result, insufficient focus on grammar proficiency occurred as the L2 learner's main aim was to finish the task rather than paying attention to the grammatical aspect at the same time. This is supported by Jin & Hock (2023), Lee (2022), Chitra (2022), Lam et al. (2023), Nhem (2020) and Phuong (2018) whereby these bodies of past research findings reported that task design complexity becomes the main challenge of why instructors are reluctant in integrating TBL while teaching grammar in the classroom.

Next, another challenge in learning grammar through TBL is L2 learners' adaptation. As mentioned by Cabrera and Quesada (2023), there is a lack of exposure to TBL as L2 learners are used to the Grammar Translation Method and rote learning. Due to this limitation, L2 learners struggle to adapt to TBL as it differs from the usual memorization and drilling tasks. It takes a significant amount of time for them to adapt and to make it worse, some L2 learners are confused and frustrated. Similarly, Lee (2022) reported that student adaptation has been identified as one of the challenges faced in learning grammar through TBL in the classroom whereby students are not keen to participate in group work and work together as a team. This is further supported by Moore (2022) and Iveson (2019)

In conclusion, the complexity of task design and L2 learners' adaptation have been identified as prominent challenges when it comes to learning grammar through TBL in the classroom. There are also other challenges which are also mentioned in previous studies such as L2 learners' proficiency and engagement (Lam, 2023) and lack of teaching materials (Zhang, 2019). It is highly important to find out and address these challenges to develop better solutions and recommendations to curb the challenges of learning grammar through TBL that are faced currently by instructors and L2 learners. Therefore, instructors, learners and policymakers must be aware of the challenges that could hinder the process of learning grammar through TBL and its effects on instructors and learners.

Theoretical Framework

The task-based approach was first introduced by Prabhu (1987) where learners are given a task to complete. Task-Based Learning (TBL) is also referred to as Task-Based Language Teaching (TBLT) and Task-Based Instruction (TBI). Its focus is on the completion of meaningful tasks. The theoretical framework for the present study adopted the model by Willis (1996) which comprises three stages. The three stages include preparation for the task (pre-task), the task itself (task cycle), and follow-up or language focus (post-task). The TBL framework stages are further described below.

Stage 1: Pre-task

Pre-task phase is when the teacher introduces the topic and task, and students get exposure to linguistic chunks. This phase will give students a clear understanding of what will be expected of them and include any important knowledge or details they need to know. This is also a good time to lead into the task by brainstorming or asking questions about the topic.

Stage 2: Task Cycle

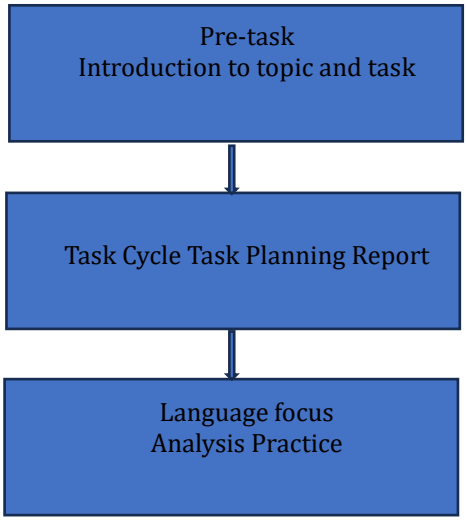
The task cycle can be subdivided into three task stages, including the task stage, planning stage, and report stage. This is the main task phase in which students use the target language the most to accomplish task requirements; the fluency and meaning focus is mainly attended. In the task stage, students get ready to do the task. Students are given what they need to complete the task (handouts and written instructions) and are assigned to work in pairs or small groups while the teacher monitors and offers encouragement when necessary. The teacher's role is typically limited to one of a coach, guide, and facilitator. Next, the planning stage involves students working on the task in pairs or small groups and reporting or presenting their results or product. They make important decisions about their presentation and assign each person in the group a part of the task to present, so everyone takes responsibility during the report stage. The group rehearses its presentation. The teacher walks around, helps if needed, and takes notes on anything that needs to be addressed after the presentations. The third stage is the reporting or presenting stage where students present their findings to the class in the form of a presentation. The rest of the class listens to the reports and writes down feedback which will be given to the presenters after all reports have been heard. The class can also ask questions or provide some quick oral feedback after each presentation. The teacher also gives feedback on the content as well. Students vote on the best presentation, report, or product.

Stage 3: Post-task/Feedback

The last phase is the post-task or language focus, in which the teacher, based on what learners have done in the previous phase, helps learners enrich linguistic items with more focus on accuracy. After presenting their completed task, others in the class can offer constructive feedback.

The TBL framework of Willis (1996) is illustrated below:

Figure 1: TBL framework of Willis (1996)

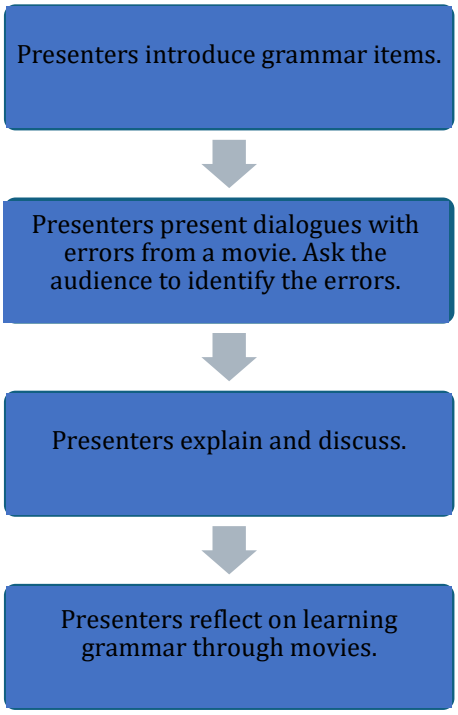


3. Methodology

The present study adopts a qualitative approach to generate students' perceptions of task-based learning for improving grammar. Both quantitative and qualitative methods were used to collect data. The quantitative data was through a survey questionnaire while the qualitative data was derived from reflections and experiences based on the open-ended questions. The survey questionnaire comprised four sections, Section A was related to demographic information, while Sections B, C, and D comprised 5-point Likert-scale questions and open-ended questions related to students' grammar knowledge, preparation of the task given, and their perceptions of the task-based grammar learning activity.

The participants of the study were forty-one students from Semester 1 taking the Diploma in English for Professional Communication program from a public university. They took the Grammar 1 subject that semester and were taught various grammar items such as Present tense, past tense, future tense, perfect tense, and continuous tense by their instructor. Subsequently, the participants were given a task-based learning activity in groups of 5-6 members. Students were required to watch an English movie and identify and highlight examples of grammar items in the movie that they were assigned by their instructor. This was to raise awareness of the target grammatical items, which is pertinent to task-based learning methods. Next, the students conducted an oral presentation of the English structures or grammatical items identified in the movie, followed by an exercise for the audience to identify errors in sentences. Finally, the students reflected on the task-based learning activity. The following Figure 1 illustrates the implementation process of the task-based grammar learning activity.

Figure 2: Task-Based Grammar Learning



The quantitative data from the questionnaire was analyzed in the form of frequency counts and percentages to see the distribution of students' feedback on task-based learning. As for the qualitative data, the participant's responses to the open-ended questions related to experiences and reflections on task-based grammar learning were analyzed thematically.

4. Findings

Respondents are named as Respondent 1-40 (R1-R40) in the following findings.

Research Question 1: What challenges do learners face when learning grammar through task-based activity?

The learners' responses were organized into six themes to highlight the challenges faced when learning grammar through task-based activity. Below are the identified categories:

a. Team dynamics

The theme pertains to the interaction among the team members to complete the task. It is categorized into three parts: closeness and comfortability, poor communication, and clashes of personalities.

Closeness and comfortability with their respective teams proved a challenge during the task, as shown by participants' responses:

"It was so hard to communicate with my group members because all of them were close with each other while I was just their classmate. So, it does make things awkward because they sometimes misunderstand me and I struggle a lot trying to clean up after their mistakes." (R3)

"It was a bit challenging because I was not close with the group members at first." (R9)

"I worked with people who I don't usually even talk with." (R25)

"There's one person that made it less enjoyable but I learned to work with people and be respectful and to listen to criticism." (R34)

Poor communication contributes to teamwork issues when completing the task, as shown in these responses:

"But one of the group members makes me annoyed because of lack of communication changing my slide without telling me." (R8)

"...and I believe the key point to this group presentation is communication, every member should do their part" (R24)

"It was hard at first especially when working with other classmates I barely communicate with". (R30)

Clashes of personalities are also reported to be challenging for the learners. Participants expressed that:

"I'm not used to working with people" (R12)

"It is a bit stressful to keep the group together as sometimes one of the group members does not cooperate with us" (R28)

"There's one person that makes it less enjoyable, but I learned to work with people and be respectful and to listen to criticism" (R34)

b. Cognitive load and learning complexity

Learners expressed the taxing nature of cognitive demands to complete the task successfully:

"To present all of these tenses you might need to memorize but most importantly you need to understand" (R24)

"I need to study my part harder than anyone else since I'm a little bit slow and need to practice over and over" (R27)

"I have to fully understand my topic before presenting to the classmates" (R29)

"I need to improve my presentation skills" (R35)

"It was challenging but I learned something to improve my presentation skills" (R37)

c. Stress

Learners also commented on the stress they experienced during the completion of the task:

"At first .it was stressful since I hate group projects. Later then I realized that it is how the reality of working" (R17)

"It's rather chaotic and maybe a little stressful but I'm happy to know that my teammates did well in the end" (R18)

"It was stressful yet quite fun" (R20)

"It is a bit stressful to keep the group together as sometimes one of the group members does not cooperate with us". (R28)

d. Personal insecurities and nervousness
Learners also articulated doubting their capabilities and feeling nervous during the task:

"I want to be more prepared in my other presentation so that it'll be beneficial to others" (R4)

"I wasn't confident with my explanation and the way I presented it" (R10)

"Overall experience was okay for the group presentation but in my part, I think I did very badly because I was too nervous the whole time" (R26)

"I need to practice over and over my presentation, since I am always nervous and can't speak well in front of people" (R27)

e. Self-regulation
Self-regulation also emerged as a challenge among the learners:

"We had the most prep time yet we still did it last minute" (R22)

"Every member should do their part so they can understand the topic they'll present" (R24)

"I need to study my part harder than anyone else since I'm a little bit slow and need to practice over and over my presentation" (R27)

"I have gained my knowledge more as I have to fully understand my topic before presenting to the classmates" (R29)

f. Need for additional support
Learners also mentioned the feedback and help they received from the lecturer which implies the need for additional support or coaching:

"The feedback from the lecturer was really helpful and to be honest, it has always been my major weak point" (R2)

"However, our group forgot to include some suggestions given by our lecturer and I felt quite disappointed by that" (R23)

"I think I did very badly because I was too nervous the whole time but after the feedback from the lecture I did manage to do well in my other presentation" (R26)

Overall, learners faced multifaceted challenges while completing the task. It is also notable that the findings also reported positive attitudes and perceived gains among learners.

Research Question 2: How do learners reflect on their experiences of learning grammar through task-based activity?
The learners' responses were categorized into eight themes to answer how they reflected their experiences of learning grammar through task-based activity. Below are the categories;

a. Collaboration and Team Dynamics
Collaboration and team dynamics can be divided into two parts: positive collaboration and challenges in communication.
Positive collaboration is a reflection received when learners are grateful for the support and cooperation from the group members when they mention them:
"…enjoyed doing the group presentation with my group…came out with many excellent idea…(R8)
"We worked well together and there wasn't any miscommunication at all." (R9)

Challenges in communication are when the learners face some issues but manage to overcome them, as stated in the responses:

"One of the group members made me annoyed because they changed my slide without telling me. Overall, I learned to handle that problem smoothly." (R8)

b. Skill Development

Skill development can be divided into two subcategories: presentation skills and understanding grammar.

Presentation skills are gained when learners can acknowledge improvements in their presentation skills, which allows them to gain confidence and develop better ways of explaining the presentation. As mentioned,

"... improved my presenting skills and increased my confidence level..."(R12)

Understanding grammar is a reflection gained when learners can understand the grammar topics that they had to explain to their classmates, which leads to a more profound understanding of the lesson; as stated by the students,

"...gained more knowledge as I had to fully understand my topic before presenting to the classmates." (R16)

c. Personal Growth

Increased confidence and overcoming nervousness are the subcategories of personal growth.

i. Increased confidence was mentioned in learners' statements while presenting. They boosted their confidence as stated,

"... gained more confidence after this group presentation."(R9)

Overcoming nervousness was reflected in this task-based activity. Initially, they were nervous regarding their presentation. However, after receiving feedback from the instructor, they managed to overcome their anxiety for the following presentation:

"...I think I did very badly because I was too nervous the whole time...after the feedback from the lecturer, I did manage to do well in my other presentations."(R26)

d. Group Dynamics and Individual Contributions

Equitable contribution and individual challenges are the subcategories for group dynamics and individual contributions.

Equitable contribution is a reflection in this task-based activity when learners can contribute equally, which leads to a more effective and balanced presentation. At the same time, the learners respected each other's input in preparing the content for the presentation, as stated:

"...groupmates were very cooperative...everyone chipped in their ideas, and the teamwork in my group was great!" (R5)

Individual contributions are also noted where the learner has issues, such as feeling left out while dealing with the group members. This experience reflects the need for effective conflict resolution, as stated in the feedback form:

"...was so hard to communicate with my group members because all of them are close with each other while I'm just their classmate..."(R3)

e. Learning From Feedback

Constructive criticism is a subcategory under learning from feedback.

Constructive criticism relates to the feedback given by the lecturer as a learning process, as stated,

"…feedback from Madam was really helpful…and it helped me improve not just in this presentation but in others as well." (R23)

f. Preparation and Time Management
Planning and Execution are a subcategory of preparation and time management.
Planning and Execution reflect the task-based presentation. The presentation should be well-planned and executed, as the learner mentioned:

"We had the most prep time yet we still did it last minute."(R22)

g. Emotional Experience
Stress and enjoyment are a subcategory of emotional experience.
Stress and enjoyment relate to the reflection of emotional experiences that the learner had received while working on task-based group presentation; as stated by the learners,

"At first, it was stressful since I hate group projects. Later then, I realized that it is how the reality of working is." (R17)

"It was stressful yet quite fun because I got good groupmates." (R20)

h. Learning from Peers
Peer learning is a subcategory of learning from peers.
Learning from Peers is a reflection the learners receive where they can gain new perspectives and understanding about grammar and presentation, as stated,

"…each member demonstrated a strong work ethic, which was evident in their commitment to meeting deadlines and producing high-quality content…effectively divided responsibilities based on each person's strengths, which allowed us to create a well-rounded presentation.". (R1)

All in all, learners often reflect positively on their encounters with grammar forms through task-based activities.

This helps them engage in a real-life situation that makes grammatical structures more relevant to themselves in meaningful content. Furthermore, reflecting on these activities encourages learners to see their development and gain insight into where they can improve even more so that they can have a deeper involvement in being active participants throughout the language learning process.

5. Conclusion and Recommendation

Summary of Findings and Discussions

Research Question 1: What challenges do learners face when learning grammar through task-based activity?
The thematic findings show the participants' feedback on their engagement and self-directed learning experience when watching movies to prepare multimedia informative slides and during the grammar oral presentation. The challenges that learners face when learning grammar through task-based activity can be divided into two: the complexity of task design, and L2 learners' adaptation. Regarding task design, participants find it challenging when it comes to the stress of completing the task. This validates studies from Ellis (2020), Long (2014) and Butarbutar (2021) on the stress of understanding task design which leads to the stress of balancing grammatical aspects and communicative competence. Another setback related to task design is cognitive load and learning complexity. This is consistent with findings from Mayer and Moreno (2023) about graphical materials that could result in cognitive overload. Consequently, participants mentioned the need for additional support such as the instructor's feedback and coaching to complete the task. This could indirectly make L2 learners aim to finish the task rather than pay attention to the grammatical aspect, in line with the study done by Kurbanova (2023).

The next challenge is learners' adaptation. Based on the findings, poor team dynamics hinder their experience in learning grammar. This is parallel to the study by Lee (2022), Moore (2022), Belda-Medina (2021), and Iveson (2019) in which some of the participants encountered difficulties in working as a team during TBL activity due to several problems related to communication among group members. Other obstacles include personal insecurities and nervousness. This indirectly impedes their oral fluency even when students are comfortable presenting in English due to grammar phobia. This finding corroborates with Chowdhury's (2023). Finally, this study also identified self-regulated learning as a challenge, echoing the findings of Hoch & Schüler (2019), who highlighted the need for self-regulatory skills in multimedia-based TBL.

From the above outcomes, all these are similarly reported by Ji & Pham (2018) that TBL activities can be challenging in terms of learners' dependency on instructors, reluctance to work in groups, and lack of holistic knowledge acquisition.

Research Question 2: How do learners reflect on their experiences of learning grammar through task-based activity?

As discussed by Hima et. al (2021) and Sholeh (2021), there are two distinctive advantages of implementing a TBL group activity, namely fostering better learning opportunities and improving language exposure and student engagement. From the findings, it is noted that participants learn better from peers' and instructor's feedback. Another outcome linked to increased learning opportunities is the improvement in preparation and time management skills.

Several key outcomes taken from the analysis should be highlighted. The first is the positive collaboration and team dynamics reported by participants. This supports the study from Long & Crookes' (1992) findings that TBL promotes autonomy through pair or group work, encouraging more interactions among students. TBL activities in this study such as discussions and presentations also promote greater engagement in language use, potentially managing cognitive load in being precise when using grammar in communication. The next positive feedback from the participants is that they have developed their presentation skills and grammar knowledge. This is parallel to the findings from Klapper & Rees (2003) which conclude that grammar learning must be paired with meaningful instructions to result in effective language learning. In this study, the task briefing serves that purpose. In line with the findings of Fridayanti et al. (2023), participants in this study also reported that their grammar knowledge improved during the preparation of presentation slides, which suggests that multimedia fosters active learning and supports language development. Ultimately, the participants responded that learning grammar through task-based activity increases their personal growth, in terms of motivation to overcome nervousness, and increased confidence. This is comparable to the study by Akkakoson (2016) which resulted in the participants' positive attitudes when communicating in English in the classroom despite experiencing anxieties.

To sum up, despite challenges, positive reflections from the respondents' experiences of learning grammar through TBL suggest resilience and cooperative learning in language acquisition.

Pedagogical Implications and Suggestions for Future Research

In the context of grammar lessons, task-based learning, or TBL, has important pedagogical consequences. There are three main pedagogical implications identified based on the results obtained in this research. Firstly, based on the varied feedback given by the respondents. It is understood that TBL sets a grammar learning environment within meaningful content rather than in isolation. For instance, students worked in a group to complete the given task and were required to present their findings to their classmates. This is in contrast to the traditional method of teaching grammar where verb tenses are drilled in isolation. When students are required to present their findings to their classmates, this provides room for the students to utilize the language and indirectly practice the grammar lesson learned. By doing so, TBL helps students recognize the practical application of grammar rules in real communication, hence contextualizing grammar is achieved.

Moreover, TBL is seen to prioritize fluency over accuracy. This method places students in an environment that requires them to focus on task completion rather than grammar lessons in isolation. Inculcating the said surroundings shifts the students' focus upon task completion rather than the nitty gritty expect of grammar rules, when this is fostered with success, students can develop their fluency and confidence in using grammar

instead of focusing on precise accuracy. This method helps construct a grammatical competence basis that students can refine in the future on their own time.

Finally, TBL formulates a surrounding where most of the task given out involves groups of pair work. This permits students to use and practice grammar collaboratively. This exchange has led to peer correction and support, which promoted a boost of confidence among students in using the language and grammar rules.

The sole suggestion for scholars wishing to conduct additional research on TBL and grammar is to look into how effective TBL would be if it were done in pairs rather than in groups. As seen in the feedback given by respondents, most of them clearly emphasized the challenges of being in a foreign environment among unknown groupmates. Being in such a situation has resulted in stress and difficulty in communication which has affected task completion in some way. Hence for future scholars, group formation for a TBL lesson is selected among students themselves or done in pairs instead. By doing so, the researchers can pose a question in terms of the effectiveness of TBL conducted in groups and pairs when teaching a grammar lesson.

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Badiuzzaman Said Nursi's Approach to Effective Da'wah Management: The Role of Eye Contact, Facial Expressions and Body Gestures in Information Delivery

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Abstract: Effective communication information is essential today. In the field of da'wah management, the mastery and skills of non-verbal communication by the da'i, such as eye contact, facial expressions, and body language management, can enhance the effective delivery of da'wah messages. In the 21st century, among the successful da'i is Badiuzzaman Said Nursi, whose approach integrates both verbal and non-verbal communication techniques to ensure information reaches its intended audience effectively. This study focuses on the three elements of non-verbal communication contained in Badiuzzaman Said Nursi's kenesik communication, and their role in managing information flow within da'wah. Three elements are eye contact, facial expressions, and body language. The study employed a qualitative approach, utilizing document analysis and content analysis to examine Said Nursi's writings and da'wah strategies. The results reveal that Badiuzzaman Said Nursi's effective da'wah management through non-verbal communication significantly contributed to the global acceptance of his message, demonstrating that managing non-verbal cues enhances message clarity and audience engagement. These findings provide valuable insights for preachers in both traditional and contemporary settings, emphasizing the importance of synchronizing verbal and non-verbal communication for effective da'wah management.

Keywords: *Da'wah Communication, Non-verbal Communication, Communication Management, Badiuzzaman Said Nursi, Effective Information Delivery.*

1. Introduction

Communication plays a crucial role in managing da'wah efforts. Without proper communication techniques, the flow of information in da'wah becomes ineffective. Scholars argue that deficiencies in managing communication methods, including verbal and non-verbal elements, can hinder the overall spread of Islamic teachings. Hence, managing both verbal and non-verbal communication in da'wah is essential for ensuring the proper delivery of its message. A significant deficiency in delivering da'wah can lead to stagnation in da'wah activities and hinder the spread of Islam, the religion of mercy for all of humanity (Erwin Jusuf, 2020).

While this significant responsibility is accompanied by great honor and substantial rewards, it also brings numerous challenges, obstacles, and trials. One of the primary challenges of da'wah, both in the past and present, is the deficiency in knowledge and skills, including ineffective approaches, inaccurate theme or communication element selection, and flawed methods of delivering judgments or punishments. Consequently, the value and reputation of Islamic communicators whether they are preachers, religious teachers, or scholars may ultimately diminish in the eyes of the community (Ibtisam & Berhanundin, 2019).

Effective communication is not solely about verbal expression but also involves non-verbal communication ethics. Da'wah communication extends beyond verbal aspects and must consider non-verbal factors, such as the content of the message, the environment, resources, target audience, language proficiency, and more. All these communication elements must be synchronized to ensure the objectives of da'wah communication are fully realized (Meerangani, 2019; Zulkefli & Nur Damia Husna, 2017).

According to da'wah scholars, one approach to addressing this issue is to elevate a recognized figure within the da'wah community as a role model. This figure can serve as a guide and standard for Islamic preachers to follow. According to Mohamad Zaidin et al. (2018), two primary challenges hinder the effective instillation of noble values. The first is the lack of a role model for society to observe and assess, and the second is the apprehension among non-Islamic communities that the approach is merely an attempt to convert or attract them to Islam.

Given these issues, the researcher identifies the need to emphasize a figure who is both suitable for the contemporary context and relevant to the diverse, multiracial, cultural, and religious landscape of Malaysia. This figure is Badiuzzaman Said Nursi, a renowned scholar in the field of Islamic da'wah and Islah (Elmira, 2021).

He is a figure with extensive experience in preaching across various fields, including politics and governance, education, spirituality, and morality—even in the arena of warfare. His involvement in all these areas of da'wah led to his recognition as a contemporary leader in religious reform, earning him the title *Badiuzzaman,* or "excellence of the age" (Ahmed & Sharifah Norshah, 2017). He achieved this by skillfully employing elements of persuasive rhetorical communication, both verbal and non-verbal, as well as creative analogies and wisdom, to enhance understanding among the wider public (Mehmet, 2016; Muhammed Ali, 2022).

A strong command of religious knowledge and effective use of tools (such as mediums and communication techniques) significantly supported Said Nursi's da'wah efforts in the field. His credibility also made him widely accepted by society (Nur Sakinah, 2019). Rather than relying on a single approach, Said Nursi diversified his methods and strategies to enhance the delivery of his da'wah message to the public (Norullisza et al., 2022).

2. Literature Studies

Among the studies on Said Nursi and Da'wah is a work by Ichwansyah (2018) titled "Thought and Activism of Da'wah Bediuzzaman Said Nursi (1877-1960)", as well as one by Qaisar (2018) titled "A Brief Sketch of the Memoirs of the Life and Works of Bediuzzaman Said Nursi". Both studies examine the stages of Bediuzzaman Said Nursi's life, from the early to later phases, and provide a brief overview of his specific methods and strategies in Turkey.

In a similar vein, Edi Amin's (2018) study, "The Thought of Badiuzzaman Said Nursi's Da'wah", examined the concept of murasalah (correspondence) as a method for delivering da'wah, proposing 'ustadhiyyah al-Quran' (the Quran as the primary teacher) as a foundation for transformation. Aligning with Amin's approach, Norullisza et al. (2021) in their work, "Aspects of Human Development: Analysis of Badiuzzaman Said Nursi's Personality", explored Said Nursi's da'wah methods broadly through various facets of human development, including spiritual, emotional, and intellectual growth.

Additionally, Elmira (2021) in her study, "Said Nursi on Secularism, Religious Rights, Ethics, and Education", delves into Said Nursi's efforts to bridge science and religion, aiming to harmonize European civilization with authentic Islamic teachings a central aspect of his da'wah mission. Similarly, Zulqarnain et al. (2022), in "Interpretation of Diverse Dimensions of 'Faith' by Bediuzzaman Said Nursi and Its Impact Upon Reawakening Muslim Societies", highlight Said Nursi's emphasis on 'faith' as the core of da'wah, which served as a catalyst for transformation across all facets of human life.

3. Methodology

This study employs qualitative methods for data collection. The analysis aims to explore the theory and practical aspects of Badiuzzaman Said Nursi's da'wah communication in Turkey, as presented in his work Rasail an-Nur. Both primary and secondary data sources were utilized in this research. Primary data was gathered through documentation, while secondary data was sourced through content analysis from research reports on da'wah communication, resolutions from seminars or discourses on Badiuzzaman Said Nursi's teachings, and documents from various da'wah societies, organizations, and other related entities.

Some studies share similar features and focus on abstracts. This review article will be summarized through a detailed evaluation of keywords related to communication and da'wah, along with elements of kinesic communication. The data collected were analyzed using a content analysis framework. The findings and analysis presented in this paper serve as an academic contribution and reference for developing effective da'wah communication models or methods, particularly in Malaysia.

4. Effectiveness Of Badiuzzaman Said Nursi's Communication Da'wah

Badiuzzaman Said Nursi's approach to da'wah primarily draws from three principles: 'da'wah bil-hikmah' (inviting with wisdom), 'da'wah bil-hasanah' (inviting with goodness), and 'da'wah al-mujadalah al-husna' (engaging in the best form of reasoning). These principles are inspired by Surah al-Nahl, verse 125, which encourages calling to Allah's path with wisdom, kindness, and the best form of reasoning.

However, in several other studies, researchers categorized his da'wah communication into two main components, verbal and non-verbal communication. This is because Said Nursi not only conveyed his message through speech but also demonstrated it through his behavior and actions (Norullisza et al., 2022; Thameem, 2019).

In his book Rasail an-Nur, Badiuzzaman Said Nursi addressed over 130 topics, including al-Kalimat, al-Maktubat, al-Luma'at, al-Shu'a'at, and Signal al-I'jaz fi Mazan al-Ijaz. His primary goal was to safeguard the community's faith by clarifying the essential principles and truths of the Quran. Beyond its comprehensive content, covering themes of both horizontal and vertical communication, these writings were also meant to protect his students (Tullāb al-Nūr) who faced various legal challenges, especially concerning complex issues like the oneness of Allah SWT, the hereafter, and more (Mohd Sairi, 2015).

Like other well-known Islamic preachers or da'i, Said Nursi also has his characteristics or approach to his method of da'wah. An appropriate and strategic approach according to the current modernity will differentiate the impact and level of community acceptance of the call of da'wah (Amin, 2015). Bakti (2021) highlighted that Said Nursi's communication style is exemplary for communicators, particularly Islamic preachers. His ideas align with the Active Reception model, which encourages community members to actively participate in changing their fate.

Through his profound understanding of religious knowledge and communication techniques, Said Nursi was able to effectively highlight his abilities. His credibility was a key factor in earning the community's trust and acceptance of his da'wah endeavors (Nur Sakinah, 2017).

Non-verbal Communication

Non-verbal communication refers to conveying messages or signals without words, using methods like eye contact, facial expressions, gestures, posture, object usage, and body language. As Adler & Rodman (2003) describe, non-verbal communication involves "oral and non-oral messages expressed through means other than language." Similarly, Kristiyanti (2012) explains that non-verbal communication encompasses gestures, mannerisms, vocal intonations, attitudes, and other cues that enable people to communicate without spoken language.

Non-verbal communication is divided into several types. Among them are the objects of communication (how to dress), touch (shaking hands), chronemics (use of time), 'gesture' (facial expression), proxemics (space), vocals (voice intonation) and environment (space dan distance) (Kristiyanti, 2012). Ruben & Stewart (2005) explained, that non-verbal communication has several channels, namely paralanguage covering vocal auditory messages made in the form of speech. In addition, it also includes tone of voice, tone of speech, intonation, loudness or lowness of voice and speed of speech.

Every time non-verbal communication occurs between two parties, it often involves behaviors such as gestures, eye movements, posture shifts, and facial expressions, either consciously or unconsciously. These behaviors and movements complement the spoken message, significantly influencing the effectiveness of communication and feedback (Noor Afzaliza Nazira et al., 2022).

Non-verbal communication is a crucial aspect of human interaction, conveying messages and emotions through various means beyond spoken language. As described by experts as mentioned above, non-verbal communication encompasses gestures, facial expressions, eye contact, body language, and vocal nuances, all of which play a significant role in expressing ideas and emotions without words. These non-verbal cues, whether

consciously or subconsciously displayed, enhance the effectiveness of communication by complementing verbal messages and providing additional context.

Kinesics Elements

One of the elements of non-verbal communication is kinesics. Kinesics comes from the Greek "kinesis", in this contact means physical movement of the body and its study. It is a study of the way in which certain body movements such as hands, body conditions and facial expressions when communicating (Grothe, 2022). Kinesics is the main method of communication and often supports or even replaces verbal communication (Nuredayu & Salafiah, 2021).

According to Richard (2009), there are many studies related to body language and found that the way a person appears in public in terms of his body gestures can determine the success or failure of one's communication. Meanwhile, according to Joshua (2007), controlling body movement while communicating is essential when conveying a message. Besides, supporting what is being said verbally, it can attract the attention of the audience or listeners (Nordin, 2016).

Kinesics Elements of Badiuzzaman Said Nursi

Said Nursi asserts that humans are wonderfully endowed with a variety of body parts, in addition to the mouth and tongue used for communication. These include both internal and external organs, senses, emotions, and other bodily components. Each of these creations serves a specific function and plays a vital role in both our relationship with Allah SWT and our interactions with one another. They stand as evidence of the beauty and perfection of creation (Said Nursi, 2008).

According to Said Nursi, several forms of kinesic communication play a vital role in human relations, especially in the context of effective da'wah communication. This study will examine kinesic elements, including eye contact, facial expressions, and body gestures.

Eye Contact: Eye contact is a vital non-verbal communication channel. It can convey signals and messages to others, expressing emotions like happiness, sadness, and more. For instance, repeatedly blinking may symbolize anxiety (Noor Afzaliza Nazira et al., 2022). A person's eyes can reveal a range of emotions, including hostility, interest, and attraction. In one of his writings (The Twenty-fifth Word), Said Nursi explained that a lustful glance can damage both the heart and morals.

According to Said Nursi, harsh words are not always necessary to cause harm; even the language of the eyes can lead to destruction in others' lives. The worship of outward appearances profoundly damages morality and leads to the corruption of the spirit, as seen in the following: just as lustful and desirous glances at the corpse of a beautiful woman, who deserves compassion, erode moral integrity, similarly, gazing at the images of deceased women or even those of living women, whose likenesses are akin to small corpses, weakens and ultimately destroys the core of elevated human emotions (Said Nursi, 2007c).

Said Nursi's advice aligns with the teachings of the Prophet SAW, as reflected in the Quranic verse: "Tell the believing men to lower their gaze and be modest; That is purer for them. Indeed, Allah is All-Aware of what they do" (Surah an-Nur, 30). In Rasail an-Nur, Said Nursi discussed the wisdom of the hijab, noting that men's gazes often make women uncomfortable and that veiling helps alleviate this discomfort (Said Nursi, 2007a).

In reality, Said Nursi revealed what was said in the writing preach. Vahide (2005) recorded that on several occasions when interacting with women, Said Nursi always maintained his manners by guarding his eyes when dealing with them. Said Nursi will not turn to look at a woman if there is no need or interest (Norullisza et al., 2021).

"The Old Said stayed in Istanbul for ten years during his youth, and he did not look at a woman once" (Vahide, 2005, 2011).

Facial Expressions: Facial expressions play a significant role in nonverbal communication. A simple smile or frown can convey a wealth of information, often being the first thing we notice before someone speaks. In the

realm of non-verbal communication, facial expressions are part of "gestures" or body movements that include more than just the movements of hands, feet, or eyes. These expressions fall under the kinesic elements that help interpret messages during communication. Without us realizing it, our facial expressions can change constantly while we speak or listen (Noor Afzaliza Nazira et al., 2022).

Said Nursi explains that Allah SWT created humans as the finest of His creation, as mentioned in Surah at-Tiin, verse 4: "Indeed, We created man in the best form." Nursi emphasizes that all creatures are designed with precision, having their organs and parts balanced perfectly. Additionally, each living being is granted a unique, well-proportioned, and beautiful face (Said Nursi, 2007b).

Given the importance of the face, Said Nursi emphasizes its function and role in the "Risalah al-Mathnawi." He asserts that the face, which Allah SWT has bestowed upon every human, carries distinct roles and functions. Although the facial structure is fundamentally the same in all humans, it possesses unique features that differentiate individuals. The face, in addition to its physical features, can convey traits such as gender and age, as well as emotions like intelligence, happiness, sorrow, anger, and others (Said Nursi, 2007a).

"All glory be to Him Who includes and inscribes endless features on the page of your face. Although they cannot be comprehended by reason and beheld with a superficial look, they are discerned through insight and can be perceived in detail by a careful look" (Said Nursi, 2007a)

According to Said Nursi, even though no words may be spoken, a person's face can convey a great deal to an attentive observer. With a deep and sincere gaze, one can discern the truth through facial expressions, which reflect the individual's nature, character, and heart. Emotions like smiles or anger are manifestations of this internal truth. This is seen as Allah SWT's decree in the cause-and-effect relationship, where the person's facial expressions are a reflection of their inner being.

"What is emitted from inside to outside is in accord with the will of that Source" (Said Nursi, 2007a)

According to Said Nursi, the expressions on our faces are shaped by our intentions. A sincere intention leads to a face reflecting sincerity and positive actions, while an insincere intention results in the opposite. Similarly, our deeds have two "faces": those performed to please God reveal a clear, transparent face, reflecting numerous manifestations, while actions lacking such intention create a dark, opaque face devoid of truth (Said Nursi, 2007a).

From another point of view, Said Nursi offered a different perspective, suggesting that a person's face reflects their inner character. Before a communicator even speaks, their face conveys an initial understanding. Therefore, the 'language' displayed on a communicator's face reflects their genuine devotion to God.

"The imprints of their worship are discerned in their lives, manners, and even on their faces."
(Said Nursi, 2007a)

In one account of Said Nursi's teaching, he was seen as very prudent when confronting a drunkard who was on his way to a brothel. He flashed a smile and greeted him with full of love and affection and advised the drunkard to return home, take a shower, repent and perform prayers (Norullisza et al., 2021; Said Nursi, 2013).

Said Nursi also emphasized that our facial expressions or body reflections do not have to be extreme. A Muslim communicator who is intellectually healthy does not overreact in responding to pleasure or disappointment, anger or complaint when going through a test.

"Know, o friend, that if your intellect is sound, you should not rejoice or grieve, be angry or complain, about anything you gain or lose here..." (Said Nursi, 2007a)

Apart from that, a smile is one of the facial reactions or facial expressions that is very important in non-verbal communication. Said Nursi was described by the one who often smiles. At one time, Said Nursi's students

offered him zakat or alms because he was eligible to receive zakat. Said Nursi was from the Asnaf and deserved to receive zakat. However, he rejected it, with a smile (Vahide, 2005).

Said Nursi's smile at this time was a signal that he was determined to reject other people's gifts, but in a good way. The smile was given as a sign of gratitude and a sign of appreciation for their intentions and kindness. Said Nursi's amusing dialogue with his brother explained that he would not accept any zakat or gifts so that it would not interfere with the sincerity of his da'wah struggle (in another account, Said Nursi clarified that he would never accept zakat, alms and gifts of others to him) (Vahide, 2005).

Body Gesture: Said Nursi emphasizes that every part of the body and each of our senses plays a crucial role in human social life, serving us with full trust. In Islam, this is the reason why every individual will be held accountable in the afterlife. The movements of the limbs and hands, such as gestures, signal the nature of a person's behavior, whether it's encouragement, prevention, aggression, and so on (Said Nursi, 2007c).

Said Nursi also emphasized the importance of body language when discussing prayer in the context of human relationships with God. He categorizes prayer into two types: verbal prayer (petitions) and physical actions (behavior). Sometimes, prayer expressed through body language (actions and effort) can yield results more quickly. This concept similarly applies to interpersonal relationships, where body language (actions) can often have a greater impact on others than verbal communication (Mustafa & Watson, 2017).

Said Nursi's character as a soldier during the Ottoman Empire's decline is highlighted by his active role in battle. As a religious functionary, he consistently showed bravery, refusing to stay hidden in trenches. Instead, he moved among the troops, boosting their morale by leading from the front and rarely retreating, even during difficult conditions (Vahide, 2005).

This action, carried out without verbal instructions, reflects Said Nursi's use of non-verbal communication through body language (such as gestures and posture) to convey a message of courage, fearlessness, enthusiasm, and perseverance in jihad. This approach is also emphasized in the life of the Prophet SAW. Many stories describe the prophet SAW acting without verbal instructions, but the prophet's gestures are enough to give a message to his followers. For example in the events of the Khandak war. The Prophet SAW also dug trenches to signal teamwork and leadership through example (Sariningsih et al., 2019).

In certain situations, 'stillness' or 'silence' (when the body remains motionless) can convey signals or messages. In the as-Sunnah teachings of Rasulullah SAW, this is referred to as takrir, which involves the Prophet's silence (without indicating agreement or disagreement) and also conveys an implicit message. This method of communication demonstrates that the Prophet SAW was cautious in addressing matters to avoid being misunderstood (Ike Nilawati et al., 2020).

Said Nursi explained the fact of 'silence' in the context of human communication today there are two types. One silence brings benefits, while the other silence carries negative signals and damage. For example, in the context of Amar makruf nahi mungkar, a person who is silent about sin and evil (does not want to prevent evil), then he gives a signal, which is either to ignore the sin or to conspire with the perpetrator of the sin. So this non-verbal action will cause damage to humans (Said Nursi, 2007a).

For example when Said Nursi answered a question about the tragedy of the earthquake, which gave a reward to those who committed sins and crimes, but at the same time also sacrificed the faithful and righteous Muslims. Answer Said Nursi:

"...Whether it be the injustices visited upon the poor, the corruption of politicians and businessmen, public promiscuity, or general disbelief, many people cooperate silently in such misdeeds in various ways. Whether by complacently ignoring the wrong, profiting from the wrongdoing in one way or another, passively putting up with it and doing nothing to stop it, or defending the rights of miscreants to carry out their offenses, guilt is more widespread than that for which a relatively small number of perpetrators is responsible." (Abu Rabi, 2016)

According to Said Nursi's explanation, remaining silent or failing to take action to stop an evil act committed by an individual, whether through words, physical actions, or by the heart, can also be considered a form of evil. This aligns with the meaning of the Prophet SAW's hadith, which encourages the prevention of evil in all its forms, whether verbal or non-verbal (Hadith narrated by Muslim, no. 49; Ahmad, no. 514; Abu Daud, no. 4345).

5. Conclusion

This study highlights the significant role that non-verbal communication plays in effective da'wah, focusing on how elements like eye contact, facial expressions, and body gestures reinforce the delivery of the message. Said Nursi's mastery of rhetorical and communication skills, both verbal and non-verbal, served as a model for preachers in both traditional and contemporary settings. His success shows that non-verbal communication should not be overlooked, as it plays a pivotal role in complementing verbal messages.

In addition, this research emphasizes the importance of managing both verbal and non-verbal communication in the context of da'wah. Said Nursi effectively managed his use of non-verbal cues to ensure clarity, engagement, and the proper flow of information, making his message more relatable and accessible to diverse audiences. By managing these elements, preachers can enhance their communication and ensure that their message resonates with different cultural and social contexts.

The findings of this study provide a valuable framework for today's Islamic preachers, who must navigate an increasingly complex and multicultural audience, ensuring that both verbal and non-verbal communication strategies are synchronized for maximum impact. The mastery of non-verbal communication techniques is thus not just a complementary tool but an essential component of da'wah management.

Theoretical and Contextual Contribution

This paper provides a theoretical contribution and contextual development to Islamic da'wah communication by emphasizing that Badiuzzaman Said Nursi employed non-verbal aspects of communication, such as eye contact, facial expressions, and body gestures, in innovative ways during his da'wah process. The paper widens the literature on da'wah by showcasing how non-verbal communication can facilitate more effective and relevant da'wah, especially in multicultural societies.

The study demonstrates that managing non-verbal cues can enhance da'wah efforts, allowing preachers to overcome language and cultural barriers, thus making their message more inclusive and relatable. Such insights are critical for modern-day da'i operating in diverse settings, particularly in multiracial and multicultural societies like Malaysia.

This contribution highlights the need for an integrative da'wah communication strategy that incorporates both verbal and non-verbal elements. By considering these factors, preachers can engage their audiences more effectively, ensuring that the core message of Islam is conveyed in a clear, impactful, and culturally appropriate manner.

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Depression, Anxiety, Stress and Its Association with Coping Strategies among Malaysian University Students

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Abstract: Malaysia is one of the countries transitioning from the pandemic phase to an endemic phase of Covid-19. The spread of Covid-19 had a significant impact on university students, affecting their mental health just as it did for many others. This study investigates depression, anxiety, and stress symptom levels among Malaysian university students and the coping strategies used to prevent or reduce these psychological distress symptoms. A web-based questionnaire was developed using Google Forms to collect data from students who were selected non-randomly from three public universities and one from a private university in Malaysia. Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7), and Perceived Stress Scales-10 (PSS-10) were used for measuring depression, anxiety, and stress respectively. The coping strategies were measured using five strategies: seeking social support for emotional reasons, seeking social support for instrumental reasons, acceptance, mental disengagement, and humanitarian. The study findings indicated that 60.7% had depression symptoms, 30.4% had anxiety symptoms, and 86.3% had stress symptoms at moderate-to-severe levels. Acceptance was the most preferred coping strategy among the students while seeking social support for instrumental reasons was the least preferred coping strategy. Students with severe depression levels used mental disengagement coping strategies more than those with mild symptoms. Mental disengagement coping strategy was associated with severe anxiety symptoms compared to mild and minimal symptoms. Seeking social support for emotional reasons was also associated with moderate anxiety symptoms compared to mild anxiety symptoms.

Keywords: *Depression, anxiety, stress, coping strategies, Covid-19 pandemic*

1. Introduction

In Malaysia, Covid-19 was first reported on 25th January 2020. The fifth wave which occurred from February to May 2022 due to the Delta variant followed by the Omicron variant was first detected in November 2021 (Yu et al., 2022). Malaysia announced the transition of COVID-19 from pandemic to endemic phase on 1st April 2022 (TheStar, 2022). The spread of COVID-19 can impact the mental health of people in different communities as COVID-19 not only causes physical health concerns but also results in several psychological disorders (Salari et al., 2020). This impact extends to university students, as it does to many others. Psychological disorders or distress such as depression, anxiety, and stress, can affect many people without being realized.

On the surface, depression, anxiety, and stress do share similarities, but there are distinct differences between them. Hysenbegasi et al. (2005) defined depression as a common disorder that affects an individual's ability to carry out daily activities, including those required by the workplace. From students' perspectives, academic performance is often seen as directly comparable to workplace performance (Hysenbegasi et al., 2005). Anxiety is an internalized arousal of fear that may be real or imaginary and it is an unconscious reaction to depressive tendencies which may turn into severe fear or panic (Asif et al., 2020). Stress is viewed as a threat that challenges people's well-being, leading to biological and psychological disturbances that may increase the risk of disease (Cohen et. al., 2016). Studies in India by Chaudhary et al. (2021) and Italy by Villani et al. (2021) among university students reported that 28.7% and 72.93% of students had depression symptoms while 51.5% and 35.33% had anxiety symptoms, respectively. In a sample of university students in Brazil by Lopes & Nihei (2021) was found to have anxiety of 52.5% which was higher than the earlier studies in India and Italy. The studies were all conducted during the Covid-19 pandemic. These findings suggest a negative impact of Covid-19 on students' mental health.

Coping is redefined as cognitive and behavioral efforts employed in response to external or internal demands that any individual deems to be threats to their well-being (Freire et al., 2020). In coping, different strategies and techniques were used to manage the situation. Coping is either problem-focused or emotion-focused. Problem-focused coping is aimed at problem-solving or doing something to alter the source of the stress while emotion-focused coping is aimed at reducing or managing the emotional distress that is associated with the situation (Carver et al., 1989). For the current study, five coping strategies were used; seek social support for emotional reasons, seek social support for instrumental reasons, acceptance, mental disengagement, and humanitarian. Seeking social support for emotional reasons refers to getting moral support, sympathy or understanding of a problem at hand while seeking social support for instrumental reasons refers to seeking advice, assistance or information on the problem at hand (Esia-Donkoh et al., 2011). Acceptance is accepting the reality of a stressful situation and mental disengagement refers to using alternative activities, such as games, exercises, and watching movies to take one's mind off a problem (Esia-Donkoh et al., 2011). Humanitarian coping refers to the efforts made by individuals to assist others who are experiencing psychosocial distress (Kamaludin et al., 2020).

To reduce or protect people from adverse psychological impacts during the pandemic, research-based data are needed for the development of intervention strategies. The first objective of this study was to assess the levels of depression, anxiety, and stress among the university student population in Malaysia. The second objective was to examine the coping strategies associated with depression, anxiety, and stress. It is hoped that the data from the study could be used particularly by the universities and the country to develop psychosocial interventions in addressing the psychological distress among students.

2. Literature Review

The COVID-19 pandemic has impacted the daily life and psychological distress of many people. Recent studies have increasingly focused on understanding the prevalence and impacts of depression, anxiety, and stress among university students especially in the context of the ongoing effects of the Covid-19 pandemic. Many research data findings such as Lopes & Nihei (2021), Chaudhary et al. (2021), Villani et al. (2021), Wong et al. (2023) and Fuzi et al. (2024) have shown that young people particularly among university students, were at greater risk for psychological distress during pandemic. These studies show that an increase in stress, anxiety, and depression was observed during the pandemic and particularly during the lockdown period.

A study by Wang et al. (2020) and Qiu et al. (2020) reported moderate to severe depressive symptoms, anxiety symptoms, and stress levels during Covid-19 among Chinese citizens during the epidemic phase of Covid-19 in China. The COVID-19 pandemic situation has produced emotional impact and important symptoms of anxiety, stress and depression in the general population of China, for which, 16.5%, 28.8%, and 8.1% were reported with moderate to severe depression, and anxiety, respectively. The student population was significantly associated with higher stress and anxiety as compared to the working population (Wang et al., 2020). In Spain, 21.3%, 34.2%, and 28.1% of respondents were reported experiencing moderate to extremely severe anxiety, depression, and stress, respectively, and university students presented higher scores in all measures compared to university staff (Odriozola-González et al., 2020). Zhao et al. (2023) found that the prevalence of psychological symptoms like anxiety, depression, insomnia and post-traumatic stress disorder (PTSD) among university students had risen significantly compared to pre-pandemic levels, with factors such as academic pressure, uncertainty about the future, and disruptions to social support systems contributing to these increases.

Carver & Connor-Smith (2010) defined coping as efforts to prevent or reduce threat, harm, or loss, or to lessen the associated psychological distress while Morales-Rodríguez & Pérez-Mármol (2019) defined efforts as to regulate emotions, behaviors, cognitions, psychophysiology, and environmental aspects in response to the stress of everyday events. During the COVID-19 pandemic, the effects of the pandemic crisis on the mental health of undergraduates can be reduced or increased according to the adopted coping strategies (Savitsky et al., 2020). Seeking social support, both emotional and instrumental, has been essential in reducing depression, anxiety and stress. Acceptance, mental disengagement, and humanitarian coping also play significant roles in helping students navigate during pandemic and post-pandemic complexities. A study by Esia-Donkoh et al. (2011) revealed that university students in Ghana used more emotion-focused strategies (acceptance, mental

disengagement, positive reinterpretation and growth, denial, and seeking social support for emotional reasons) than problem-focused strategies (seeking social support for instrumental reasons, active coping, planning, suppression of competing activities, and restraint coping) in managing stress. Acoba (2024) found that among the respondents, 61.3% who actively sought emotional support from friends, family, and significant others experienced a reduction in perceived stress, anxiety, and depression, along with an increase in positive affect. Likewise, Kamaludin et al. (2020), Ramadianto et al. (2022) and Alotaibi et al. (2024) found that students commonly seek emotional or social support to reduce depression. Furthermore, seeking social support for instrumental reasons like study aids, financial assistance, and academic guidance has mitigated stress and facilitated better academic performance. Brown et al. (2023) highlighted that instrumental support, such as practical assistance with academic tasks and logistical challenges, has been crucial for students during the pandemic. Besides seeking emotional support, acceptance is also included as one of the subcomponents of emotion-based coping strategies, with 93.1% in a study by Alotaibi et al. (2024). Similarly, Kamaludin et al. (2020) found that both seeking social support and employing acceptance as coping strategies were significantly associated with levels of anxiety. Additionally, Stronger resilience and usage of humor were associated with significantly lower anxiety levels, while mental disengagement was associated with higher anxiety levels (Savitsky et al., 2020).

Other coping strategies utilized self-management strategies by doing relaxing hobbies including physical exercise, enjoying streaming services and social media, playing with pets, journaling, listening to music, reading, and drawing (Son et al., 2020). A study by Irfan et al. (2021) reported that only 37% of students were aware of mental health support services provided by the universities. Some reasons given by students for not seeking help from tele-counselling services provided by the university during the pandemic; were the condition was not severe enough to seek the services, students felt uncomfortable interacting with unfamiliar people, not comfortable talking about mental health issues over the phone, and lack of trust in the counselling services (Son et al., 2020).

3. Methodology

Study Population, Sample and Sampling Techniques

A cross-sectional study was conducted in this study. The Raosoft sample size calculator was used to obtain an appropriate sample size for the survey study. A minimum of 201 samples was required for a 95% confidence interval and a 5% margin of error for the population distribution of 420 students at 50% response distribution. With this reference, the study used 300 as the sample size. Students studying in diploma and bachelor's degree levels from three selected public universities and one private university in Malaysia were included in the survey study. A purposive sampling technique was employed in this study. The purposive sampling technique is a non-random technique, also called judgment sampling, which is the deliberate choice of a participant due to the qualities the participant possesses, and it does not need underlying theories or a set number of participants. By knowledge or experience, the researcher decides on what needs to be known and sets out to find individuals who can provide the information required (Etikan, 2016).

Data Collection, Instruments and Data Analysis

Based on the previous literature on the psychological impact of the COVID-19 pandemic, the survey questions and the scales were selected. For this study, a questionnaire web-based form was developed using Google Docs Forms and was distributed to the students through WhatsApp from 3rd – 22nd January 2022. The questionnaire contained three sections, namely, a socio-demographic and academic profile section, a psychometric scale section that included the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001) for depression scale, Generalized Anxiety Order-7 (GAD-7) (Spitzer et al., 2006) for anxiety scale, and Perceived Stress Scale (PSS) (Chan & La Greca, 2013) for stress scale, and coping strategies items adapted from Esia-Donkoh et al. (2011) and Kamaludin et al. (2020). The obtained data was analyzed by using the software Statistical Package for Social Sciences (SPSS) Version 26.0.

PHQ-9 is a 9-item self-report scale that helps to interpret the individual's severity of depression. The responses are recorded on 4-point ordinal Likert scales from 0 to 3 (0 – not at all, 1 – several days, 2 – more than half the days, 3 – nearly every day). The total score ranges from 0 to 27. A score ≥ 10 signifies moderate to severe depression with significant clinical concern, whereas a score < 10 signifies minimal to mild depression. GAD-7

is a self-report scale developed to diagnose generalized anxiety disorder (GAD). The scale consists of 7 items. The participants' responses are recorded on 4-point ordinal Likert scales ranging from 0 – 3 (0 – not at all, 1 – several days, 2 – more than half the days, 3 – nearly every day). The score ranges from 0 to 21. Similar to PHQ-9, a score ≥ 10 interprets moderate to severe anxiety with significant clinical concern, whereas a score < 10 interprets minimal to mild anxiety. The PSS-10 is a classic stress assessment instrument. It was originally developed in 1983 and remains a popular choice to understand how different situations affect individuals' feelings and perceived stress. The scale consists of 10 items. The participants' responses are recorded on 5-point ordinal Likert scales ranging from 0 – 4 (0 – never, 1 – rarely, 2 – sometimes, 3 – fairly often, 4 – very often). The score ranges from 0 to 40. A score ≥ 14 interprets moderate to high perceived stress, whereas a score < 14 interprets low perceived stress. The analysis used was descriptive statistics for all these three psychometric scales.

For coping strategies, five coping strategies; seeking social support for emotional reasons, seeking social support for instrumental reasons, acceptance, mental disengagement, and humanitarian were assessed. The items of these strategies are measured on a scale of 1 to 4; 1 = never/rarely, 2 = sometimes, 3 = often and 4 = very often/always. For each coping strategy, mean scores for respective items were computed, where higher scores implied a higher level of usage. The analysis used were descriptive statistics and univariate general linear model (univariate GLM) procedures.

4. Results and Discussion

Students' demographic analysis

This study received 300 responses from public and private universities in Malaysia. Table 1 presents the socio-demographic and academic backgrounds of the respondents.

Table 1: Characterization of the socio-demographic and academic of the respondents

Variable	Categories	Frequency	%
Gender	Male	132	44.0
	Female	168	56.0
Age group	18 – 21 years	182	60.7
	22 – 24 years	108	36.0
	25 years and above	10	3.3
Ethnicity	Malay	241	80.3
	Chinese	25	8.3
	Indians	26	8.7
	Bumiputera Sabah/Sarawak	8	2.7
Living arrangement	Alone/friends	70	29.3
	Parents/family	230	70.7
Household income group	Less or equal to RM4,850 (B40)	197	65.7
	RM4,851 or equal to RM10,970 (M40)	88	29.3
	RM10,971 or above (T20)	15	5.0
Household size	1 – 3 people	46	15.3
	4 – 5 people	109	36.3
	6 people and more	145	48.3
Type of university	Private	30	10.0
	Public	270	90.0
Area of Study	Arts/communication/accounting/ business management (Non-science)	107	35.7
	Computer science/engineering/ Science (Science)	193	64.3
Level of study	Diploma	105	35.0
	Bachelor degree	195	65.0

Variable	Categories	Frequency	%
Year of Study	1	132	44.0
	2	117	39.0
	3	37	12.3
	4 and higher	14	4.6
Are you a final-year student?	No	252	84.0
	Yes	48	16.0
Previous education background	Sijil Pelajaran Malaysia (SPM)	109	36.3
	Diploma	96	32.0
	Sijil Tinggi Pelajaran Malaysia (STPM)	46	15.3
	Matriculation/Foundation	49	16.3

Depression, anxiety and stress levels among students

Descriptive statistics were examined for all three psychometric scales to understand the impact of the COVID-19 pandemic on the mental health of university students who participated in this study. Average scores for depression (PHQ-9), anxiety (GAD-7), and stress (PSS-10) were 11.58, 7.20, and 19.26 respectively, indicating depression and stress were at moderate levels, whereas anxiety was at mild levels as illustrated in Table 2. The findings also indicated that symptoms of depression and anxiety were more prevalent than stress during the Covid-19 pandemic.

Table 2: Descriptive statistics and Cronbach's alpha coefficient of the PHQ-7, GAD-7, and PSS-10 among diploma and undergraduate students in Malaysia

				Descriptive statistics				
Psychometric scales	**Interval of scale**	**Severity level**	**%**	**Mean**	**Median**	**SD**	**Range**	**Cronbach's Alpha**
PHQ-9	0 – 4	Normal	13.3	11.58 (Moderate)	10	6.582	27 Min = 0 Max = 27	0.891
	5 – 9	Mild	26.0					
	10 – 14	Moderate	29.7					
	15 – 19	Moderately severe	16.0					
	20 – 27	Severe	15.0					
GAD-7	0 – 4	Normal	37.3	7.20 (Mild)	7	5.886	21 Min = 0 Max = 21	0.935
	5 – 9	Mild	32.3					
	10 – 14	Moderate	16.7					
	15 – 21	Severe	13.7					
PSS-10	0 – 13	Low stress	13.7	19.26 (Moderate)	19	6.122	36 Min = 3 Max = 39	0.866
	14 – 26	Moderate stress	73.0					
	27 – 40	High perceived stress	13.3					

The median scores of the PHQ-9, GAD-7, and PSS-10 were found to be 10 (range 0 – 27), 7 (range 0 – 21)), and 19 (range 3 – 39), respectively. The median scores obtained in PHQ-9 and PSS-10 subscales were equal to or higher than the cut-off scores 10 and 14 respectively, indicating a higher percentage of students with high scores of PHQ-9 and PSS-10. This study shows that the mental health state among university students was alarming due to the impact of the Covid-19 pandemic along with Movement Control Order (MCO) periods and online learning process, with 60.7% having moderate to severe depression, 30.4% having moderate to severe anxiety, and 86.3% having moderate to high perceived stress. In the current study, the PHQ-9, GAD-7, and PSS-10 scales showed good to excellent internal consistencies, with Cronbach's alpha values of 0.891, 0.935, and 0.866 respectively as shown in Table 2.

Coping strategies used

For this study, five coping strategies were brought into focus; seek social support for emotional reasons, seek social support for instrumental reasons, acceptance, mental disengagement, and humanitarian. Seek social support for emotional reasons, seek social support for instrumental reasons, and acceptance were classified as adaptive copings while mental disengagement and humanitarian were classified as maladaptive copings. Among these copings, the most often used as acceptance (67.7%), followed by mental disengagement (48.3%), humanitarian (39.3%), seeking social support for instrumental reasons (25.0%), and seeking social support for

emotional reasons (22.3%). It can be concluded that most students did not prefer to seek social support but rather to accept or disengage their minds with social media, watching television, or watching videos. This is probably because students think that their psychological conditions are not as serious as seeking social advice or sharing it with other people.

Table 3: Descriptive statistics and the interpretation of coping strategies used

Coping strategy	Mean total usage	SD	Median	Minimum	Maximum	Interpretation
Seek social support for emotional reasons	2.15	0.811	2.00	1.00	4.00	Sometimes
Seek social support for instrumental reasons	2.14	0.865	2.00	1.00	4.00	Sometimes
Acceptance	3.03	0.810	3.00	1.00	4.00	Often
Mental disengagement	2.71	0.690	2.67	1.00	4.00	Sometimes
Humanitarian	2.41	1.032	2.00	1.00	4.00	Sometimes

Table 3 shows descriptive statistics of coping strategies used by the students. High mean scores indicate a higher level of usage of the coping strategy. The range for the scores is from 1 to 4. The results indicated that the coping strategy that is often used by students was acceptance while mental disengagement, humanitarian, seeking social support for emotional reasons, and seeking social support for instrumental reasons were sometimes used as shown in Table 3.

Coping strategies associated with depression, anxiety, and stress

The associations between coping strategies used and levels of depression, anxiety, and stress were tested using univariate general linear model (univariate GLM) procedures. In the analyses, the variances were similar. The results are presented in Table 4.

Table 4: Depression, anxiety and stress and coping strategies

Psychometric scales	Category	N	Coping strategy: Seek social support for emotional reasons. Mean	SD	Seek social support for instrumental reasons Mean	SD	Acceptance Mean	SD	Mental disengagement Mean	SD	Humanitarian Mean	SD
Depression	Normal	40	2.05	0.914	2.08	0.995	3.14	0.940	2.67	0.867	2.30	1.091
	Mild	78	2.03	0.783	2.07	0.772	3.01	0.853	2.56	0.687	2.42	1.038
	Moderate	89	2.21	0.688	2.16	0.747	2.95	0.739	2.70	0.593	2.39	0.900
	Severe	93	2.23	0.890	2.21	0.983	3.09	0.782	2.86	0.669	2.46	1.128
	F(3, 296)		1.166		0.415		0.684		2.967*		0.241	
	Sig		0.323		0.742		0.562		0.032		0.867	
	Partial eta square		0.012		0.004		0.007		0.029		0.002	
	Multiple comparisons								Severe > mild*			
	Sig								0.018			
Anxiety	Normal	112	2.01	0.835	2.00	0.861	3.05	0.881	2.63	0.755	2.36	1.073
	Mild	97	2.13	0.766	2.16	0.808	2.95	0.772	2.64	0.654	2.40	0.920
	Moderate	50	2.37	0.692	2.31	0.824	3.09	0.754	2.78	0.566	2.48	1.092
	Severe	41	2.29	0.920	2.28	1.011	3.11	0.771	2.99	0.656	2.49	1.121
	F(3, 296)		2.880*		1.978		0.579		3.333		0.252	
	Sig		0.036		0.117		0.629		0.020		0.860	
	Partial eta square		0.028		0.020		0.006		0.033		0.003	
									Severe > normal*			

Psychometric scales	Category	N	Coping strategy: Seek social support for emotional reasons. Mean	SD	Seek social support for instrumental reasons Mean	SD	Acceptance Mean	SD	Mental disengagement Mean	SD	Humanitarian Mean	SD
	Multiple comparisons		Moderate > normal*						Severe > mild*			
	Sig		0.040						0.022			
									0.029			
Stress	Low	41	2.30	0.846	2.32	0.799	3.32	0.812	2.85	0.731	2.44	1.050
	Moderate	219	2.15	0.786	2.13	0.843	3.00	0.810	2.67	0.687	2.45	1.001
	High	40	1.99	0.898	2.04	1.027	2.95	0.766	2.78	0.647	2.15	1.167
	F(2, 297)		1.476		1.147		3.007		1.321		1.472	
	Sig		0.230		0.319		0.051		0.269		0.231	
	Partial eta square		0.010		0.008		0.020		0.009		0.010	

* $p < 0.05$ level

Out of the five coping strategies, only mental disengagement was significantly ($F(3, 296) = 2.967$, $p < 0.05$) associated with the level of depression. The usage of mental disengagement coping strategy was higher in the severe depression group compared to the mild group. Seeking social support for emotional reasons ($F(3, 296) = 2.880$, $p < 0.05$) and mental disengagement ($F(3, 296) = 3.333$, $p < 0.05$) coping strategies were significantly associated with the level of anxiety. Students with moderate levels of anxiety used to seek social support for emotional reasons more than normal levels of anxiety students. Meanwhile, the usage of mental disengagement coping strategy was higher in the severe anxiety group compared to the normal and mild groups. Out of five coping strategies, none were significantly associated with the level of stress. Table 4 shows the results. It is concluded that the mental disengagement coping strategy was used by students with severe levels of depression and anxiety while seeking social support for emotional reasons coping strategy was used by students with moderate anxiety levels.

Responses from participants showed that the acceptance coping strategy recorded the highest mean for depression, anxiety, and stress while the lowest was recorded for seeking social support for instrumental reasons strategy for all three psychological distress. It could therefore be inferred from the results that the coping strategies most used by students were acceptance, followed by mental disengagement, humanitarian, social support for emotional reasons, and social support for instrumental reasons. Seeking social support was the least preferred coping strategy by students which was in line with Kamaludin et al. (2020) and Baloch et al. (2021).

Table 5: Correlations between depression, anxiety, stress, and coping strategies

	Depression	Anxiety	Stress	Seek social support for emotional reasons	Seek social support for instrumental reasons	Acceptance	Mental disengagement	Humanitarian
Depression	1	0.807**	0.696**	0.115*	0.084	0.025	0.154**	0.061
Anxiety		1	0.669**	0.146*	0.129*	0.019	0.146*	0.054
Stress			1	-0.066	-0.082	-0.121*	-0.007	-0.092
Seek social support for emotional reasons.				1	0.844**	0.332**	0.454**	0.468**
Seek social support for instrumental reasons.					1	0.289**	0.409**	0.436**
Acceptance						1	0.681**	0.422**

Mental disengagement	1	0.512**
Humanitarian		1

* p < 0.05 level ** p < 0.01 level

The correlations between depression, anxiety, stress, and coping strategies used were tested using Pearson's correlation coefficient (r). Table 5 indicates the correlation between depression, anxiety, stress, and coping strategies. All the depression, anxiety, and stress had strong significant positive correlations with each other. The correlation coefficient between depression and anxiety was 0.807 ($p < 0.01$), the correlation between depression and stress was 0.696 ($p < 0.01$), and the correlation between anxiety and stress was 0.669 ($p < 0.05$). This means depression, anxiety, and stress are strongly positively correlated to each other. As far as coping strategies were concerned, depression and anxiety had significant weak positive correlations with seeking social support for emotional reasons and mental disengagement. Results also revealed that seeking social support for instrumental reasons had a significantly weak positive correlation with anxiety while acceptance had a significantly weak negative correlation with stress. These results concluded that acceptance was associated with significantly lower stress levels while seeking social support for emotional reasons and mental disengagement with significantly higher depression and anxiety levels. Moreover, seeking social support for instrumental reasons was significantly associated with higher anxiety levels. No significant correlation was found between humanitarian and any depression, anxiety, and stress as indicated in Table 5.

Other coping strategies used

The seeking social support strategy either for emotional or instrumental reasons seemed to be unpopular among students. This is further proven by the response of seeking social help from e-counselling services provided by the universities. Only 141 (47%) students knew about the e-counselling services provided by their universities. However, out of 141 students only 23 (16.3%) students seek social support from e-counselling provided by the universities. Results revealed that there was a clear indication that students who knew about the existence of e-counselling support services provided by the universities and sought help from the service were shown to have lower depression, anxiety, and stress symptoms levels compared to students who knew about the existence but did not seek help and students who were not sure and did not seek help. However, the differences were insignificant as shown in Table 6.

When doing physical exercises such as jogging, cycling, strolling, and/or indoor light exercises, results showed that students who often or very often did physical activities significantly ($F(3, 296) = 3.639$, $p < 0.05$) experienced lower stress level compared to students who never or sometimes did physical exercises (Table 6). Nevertheless, there were insignificant differences for depression and anxiety even though depression and anxiety were much reduced for students who often or very often did physical exercises. The result indicates that the stress level can be reduced by regularly doing physical exercises.

Table 6: Depression, anxiety, and stress difference for other coping strategies used

Coping strategy	Categories	Depression				Anxiety				Stress			
		Mean score	SD	F	Sig	Mean score	SD	F	Sig	Mean score	SD	F	Sig
E-counselling support service	Not sure and not seeking help	12.21	6.533	2.186	0.114	7.56	6.194	0.910	0.404	19.67	6.136	1.027	0.359
	Yes, but not seeking help	11.14	6.604			6.96	5.506			18.96	6.172		
	Yes, and seek help	9.48	6.473			5.96	5.596			17.96	5.733		
Do physical exercises such as	Never	12.51	7.047	1.841	0.140	7.56	5.908	1.230	0.299	20.85	6.540	3.639*	0.013
	Sometimes	11.87	6.419			7.51	5.964			19.59	5.792		
	Often	10.54	6.804			6.25	5.825			17.31	6.022		

jogging, cycling, strolling, and indoor light exercises.	Very often	8.60	6.104		5.20	4.663		16.80	7.794

* $p < 0.05$ level

5. Conclusion, Recommendations and Future Research

According to a study by Rehman et al. (2021), different professionals such as students, healthcare professionals, university staff, and non-university staff were found to experience depression, anxiety, and stress more than others. The result from this present study further confirms that university students represent a vulnerable population for common mental health disorders even during the fifth wave of the Covid-19 pandemic before the transition to the endemic phase. From the findings, it is very clear that a high proportion of students showed moderate to severe levels of depression, anxiety, and stress symptoms during the fifth wave of the Covid-19 pandemic. All of the depression, anxiety, and stress had strong significant positive correlations with each other. It is suggested that the mental health of Malaysian university students should be closely monitored not only during the pandemic but also during non-pandemic periods.

In terms of coping strategies, the usage of seeking social support for emotional reasons and mental disengagement was associated with significantly higher depression and anxiety levels, while seeking social support for instrumental reasons with higher anxiety levels. A significant association of mental disengagement with higher anxiety levels concurred with the study by Savitsky et al. (2020) among nursing students during the COVID-19 pandemic. Acceptance coping strategy was associated with significantly lower stress levels. There were also other coping strategies studies namely e-counselling support services provided by the universities and doing physical exercises. Results showed that e-counselling support services provided by the universities were not popular among students. Hence, it is recommended e-counselling services should be strengthened by having social support groups that consist of lecturers and students so that supportive skills, such as talking and sharing, can be developed and students may then become very comfortable to let out their feelings (Esia-Donkoh et al., 2011). Doing physical exercises was shown to help cope the stress levels but not depression and anxiety which agreed with Villani et al. (2021) and Cheung et al. (2016). Above all, psychological interventions and online telepsychiatry should be strengthened as they could prove to be useful tools in managing psychological distress (Kassim et al., 2022).

Students' backgrounds such as their socio-demographic and academic profiles can be taken into account for future studies to identify the causes of their physiological symptoms and later take action to help them overcome those symptoms with appropriate coping strategies. Therefore, further research can be done with highlighted details about the different symptoms of depression, anxiety, and stress according to socio-demographic, academic, and COVID-19 characteristics as well as different coping strategies concerning socio-demographic and academic characteristics.

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Sentiment Analysis on Social Media: Investigating Users' Perceptions of MRT and LRTTransportation Services

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Abstract: Providing excellent public transportation in response to the passenger's complaints and recommendations results in long-term improvements to the service. This study investigates public perceptions of the MRT and LRT rail transportation services within the Klang Valley Integrated Transit System, operated by Rapid KL, through sentiment analysis in X. With 4.4 million users in Malaysia as of January 2022, X (previously Twitter) media social serves as a significant platform for public discourse. However, analyzing these perceptions poses challenges due to the limited platforms for analysis, and seeking from X is even more challenging due to the unstructured and noisy nature of the tweets. Therefore,this study aims to develop a sentiment analysis model that organizes tweets into structured data, utilizing machine learning techniques for sentiment classification into positive, neutral, and negative categories. Following the model implementation, the data are collected, translated, cleaned, labeled, analyzed, and classified using a Support Vector Machine before being deployed in a web system for ease of access. Analysis results revealed that user sentiment is predominantly neutral, with a significant focus on MRT services and topic finding related to scheduling. The model scored good accuracy 80% without a kernel and84% with a Linear kernel, with evaluation metrics demonstrating strong performance on all three sentiment categories. Future enhancements will include label refining and applying more hyperparametertuning to improve analysis accuracy.

Keywords: *Public transportation, X media social, Sentiment analysis, Machine learning, Support Vector Machine, Evaluation metrics, Label refining, Improved analysis accuracy.*

1. Introduction

Public transportation plays a crucial role in providing ease and convenience for individuals to travel from one location to another. Rail transportation, in particular, offers a viable alternative to mitigate heavy traffic congestion, especially during peak hours, while also being more cost-effective, energy-efficient, and time-saving compared to private vehicles. In the Klang Valley Integrated Transit System, the Mass Rapid Transit (MRT) and Light Rapid Transit (LRT) are one of the services operated by Rapid KL, a subsidiary of Prasarana Berhad. These rail services recorded substantial ridership, serving over 15 million passengers in 2021 (Malaysian Ministry of Transport, 2022). Given this high usage, discussions surrounding these services have become prevalent on social media platforms such as X (previously Twitter). Since its launch in 2006, Twitter has emerged as one of the most widely utilized social media platforms globally, largely due to its accessibility and user-friendly interface (Tiwari et al., 2023). On July 31, 2023, Twitter was renamed to "X" which became the huge conversation amongst Twitter users around that time. However, despite therename, the features inside are still the same. The platform enables users to share feedback, complaints, and suggestions regarding various events, and interactions with businesses, organizations, and even government entities. As of January 2022, Malaysia had approximately 4.4 million X users (Statista, 2023), making it a significant platform for public discourse. X has grown through time to enable users to tweet about events and incidents and express their thoughts, ideas, and sentiments (Quazi & Srivastava, 2023). The nature of tweets, reflecting both satisfaction and dissatisfaction, can significantly influence perceptions of service performance.

However, analyzing perceptions of transportation services presents challenges due to the limited analytical platforms available. Therefore, users often turn to X as a primary medium for expressing their views. WhileX provides a rich source of opinion, manually analyzing sentiments from tweets can be time-consuming, particularly given the unstructured, large volume, and noisy nature of the data. The solution for these problems is to design an automated process of gauging user perceptions called sentiment analysis.Sentiment analysis, in general, is about studying a feeling of people toward an event. It focuses on discovering techniques to unravel the hidden sentiments in reviews or opinion text comments that are being posted online (Khan & Junejo, 2020).

By employing sentiment analysis techniques, this study aims to systematically retrieve and classify tweets related to MRT and LRT services into three sentiment categories:

Positive, neutral, and negative, using the Support Vector Machine method and identifying the topic findings in the words. The objectives of this study are to: design a sentiment analysis system on the services' related tweets and classify them into positive, negative and neutral; develop a sentiment analysis system of services' related tweets using a Support Vector Machine and visualize the results; and test the accuracy and functionality of the developed system. Ultimately, this study seeks to provide deep down into user perceptions of the services, enhancing valuable insights into public sentiment toward these vital transportation options.

To address the gaps in understanding user perceptions of MRT and LRT transportation services on social media, existing literature has advised using a variety of viewpoints in sentiment analysis studies concerning rail public transportation services to close these gaps. It emphasizes how critical it is to improvesentiment analysis and machine learning techniques to enhance performance accuracy. The reviewpurpose is to overview the sentiment of public transportation, providing different data collection, cleaning and analysis methods for effectively capturing the complexities of user perceptions on media socialplatforms from X. The results are based on the accuracy of model performance. By drawing on recent studies related to transportation services, the review aims to highlight inadequately examined areas and provide actionable insights for stakeholders to enhance service quality and user experience in the context of sustainable transportation. The review's significance is to assess the service's performance. Consequently, Rapid KL can monitor the public's opinion of the service to help Prasarana Berhad maintain and improve its performance in response to passenger complaints and recommendations.

2. Literature Review

The emergence of the COVID-19 pandemic significantly impacted commuter behaviors in Indonesia, which compelled many users to stay home because of the lockdown cause leading to significant disruptions in the sector (I. C. Sari & Ruldeviyani, 2020). The review aims to analyze Twitter sentiments regarding commuterline usage at the onset of the pandemic in March 2020, highlighting public concerns and attitudes during this critical period. A total of 340 X tweets were collected using specific keywords, followed by pre-processing and classification through machine learning models of Naïve Bayes and Decision Tree, employing k-fold cross-validation to ensure robust results (I. C. Sari & Ruldeviyani, 2020). The findings revealed that Naïv e Bayes outperformed the Decision Tree, achieving an accuracy of 74.37% with 15-fold validation compared to 58.24% with 10-fold validation. Notably, the Naïve Bayes model demonstrated superior sentiment classification across positive, neutral, and negative categories in each validation fold. This effectiveness of Naïv e Bayes can be attributed to its foundation in Bayes' theorem, which incorporates the concept of conditional probability and having attributes with a high degree of independence (Nandan et al., 2022). It is one of the most straightforward and effective classification models that helps to build quickmodels with rapid prediction capabilities and higher accuracy than any other models (Mandloi & Patel, 2020). Incontrast, the Decision Tree employs a tree structure as a predictive model, with the leaves of the tree serving asthe conclusions or results and the node serving as the various observations or conditions (Gupta et al., 2019).However, complex tree structures, particularly those with numerous features as nodes make not easy to generalize and visualization (Gupta et al., 2019).

Motorcycle taxi services, which provide motorcycle-based transportation, are a relatively new phenomenon in Indonesia, presenting a unique opportunity to assess public sentiment toward their use, which is crucialfor understanding consumer behavior and improving service quality (Jaman & Abdulrohman, 2019). The review aims to analyze customer sentiment regarding online motorcycle taxi services in Indonesia, specifically focusing on Gojek and Grab ID. A total of 1,183 X tweets were collected using specific keywords,followed by pre-processing and feature extraction using Term Frequency-Inverse Document Frequency (TF-IDF) before classifying the sentiment through a machine learning model of Support Vector Machine. To evaluate the effectiveness of sentiment classification, various kernel functions including linear, polynomial, radial basis function, and sigmoid were tested, serving as benchmarks for determining the highest accuracyfor each dataset (Jaman & Abdulrohman, 2019). The analysis indicated that negative sentiment predominated, particularly for Gojek, while positive and neutral sentiments were more associated with Grab. Importantly, all kernel functions achieved satisfactory accuracy levels, surpassing 50%. Among these,the linear and sigmoid kernels performed

exceptionally well, achieving an accuracy of 80%. This high level of accuracy reflects a strong alignment between the model's predictions and the actual sentiments expressed in the tweets, underscoring the efficacy of the Support Vector Machine model for sentiment classification in this context.

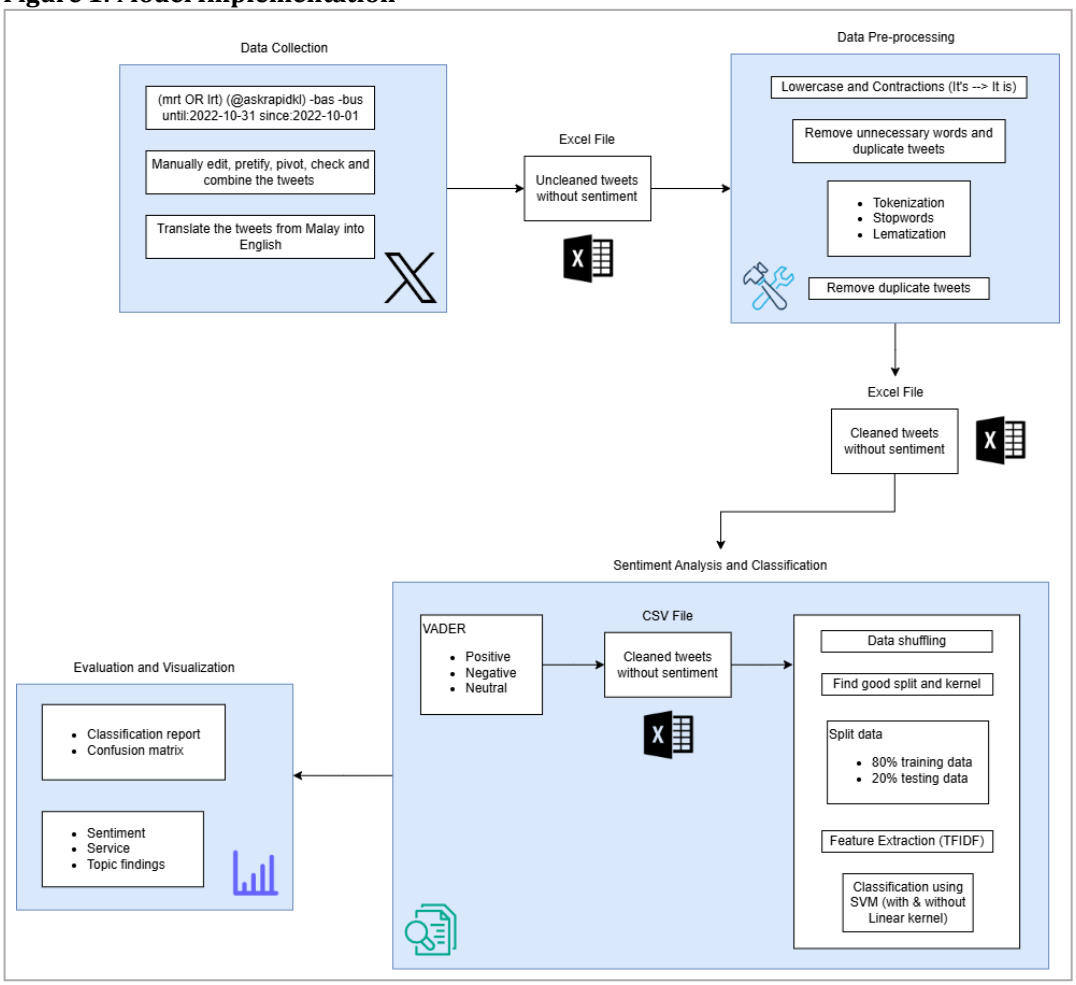
Malaysia's public transportation system, which encompasses the MRT and LRT transit, KL Monorail, and KTM commuter rail, is designed to meet the diverse needs of its users and enhance overall customer satisfaction cause the demand for efficient and reliable public transport services has become important (Wan Fen et al., 2020). This review investigates user perceptions of these transportation modes, analyzing a total of 1,236 tweets collected through the annotation "@". After pre-processing, the sentiment polarity of the tweets was assessed using the Syuzhet, Bing, and Afinn lexicons, implemented through machine learning models such as Support Vector Machine, Random Forest, and Decision Tree. The findings revealed that the Afinn lexicon outperformed the others, achieving accuracy rates of 77%, 75%, and 72% for the respective models. Evaluation metrics, including precision, recall, and F1 score, indicated that the SVM model excelled in precision and F1 score, while the Decision Tree performed best in the recall, with Random Forest showing lower effectiveness. This strong performance of the Support Vector Machine can be attributed to its problem-solving in classification and regression which can identify the hyperplane that differs between the two classes (J. & U., 2022). Overall, the sentiment analysis utilizing the Afinn lexicon indicated that positive sentiment was most prevalent, followed by neutral and negative sentiments, highlighting the importance of using various models in conjunction with sentiment lexicons to accurately capture user sentiments toward Malaysia's public transportation system.

The literature review provides essential context and insights for understanding user perceptions of MRT and LRT public transportation services. The examination of the impact of the COVID-19 pandemic on commuter behavior in Indonesia (I. C. Sari & Ruldeviyani, 2020) underscores the critical importance of sentiment analysis in capturing public attitudes during significant disruptions. Moreover, sentiment analysis of motorcycle taxi services of Gojek and Grab ID (Jaman & Abdulrohman, 2019) illustrated the efficacy of feature extraction and machine learning models to classify user sentiments across various kernels. Furthermore, sentiment analysis of Malaysia's public transportation system (Wan Fen et al., 2020) demonstrates that different sentiment lexicons can yield varying results, emphasizing the necessity for robust evaluation metrics to accurately assess user perceptions. By situating this study within the broader discourse of existing research, a deeper understanding of the complexities surrounding user sentiment in the transportation sector was gained. This literature not only serves as a foundational basis for this study but also guides the model implementation, allowing for meaningful and relevant conclusions to be drawn from the findings which may improve public transportation systems.

3. Model Implementation

Figure 1 shows the workflow for implementing the model, which encompasses data collection, data pre-processing, sentiment analysis and classification, and evaluation and visualization using Python in Jupyter Notebook.

Figure 1: Model Implementation



Data Collection: The target population for this study comprises all users who have posted about MRT andLRT services on X media social platform from October 1, 2022, to September 30, 2023. To gather relevant data, tweets were retrieved using a manual scraping technique over one year, specifically targeting posts that included keywords "mrt" and "art." This focused approach ensured that the dataset would consist of content directly related to the services under investigation. Additionally, tweets mentioning the Rapid KL service, denoted by the annotation “@rapidkl,” were also included to enrich the dataset and provide a more comprehensive view of public sentiment towards these transit options.However, given that Rapid KL also operates bus services, the tweets that referred to bus-related content need to be excluded. This meticulous filtering process helped maintain the focus on the services solely. After applying these criteria, a total of 6,035 unique tweets in both Malay and English were compiled. Given thatthe primary focus of this study is on English language content, it was necessary to translate the Malay tweets into English for analysis. This translation process involved careful consideration to maintain the original meaning and context of the tweets. The translation relied on personal observations and a list of Malay shorttext references from Dewan Bahasa dan Pustaka (Bahasa, 2008), ensuring accuracy while unchanged the specific terminology, such as the names of the trains to retain their meaning. This meticulous data collection and translation process not only enhanced the quality of the dataset but also ensured that it accurately reflected users' perceptions of MRT and LRT services over the specified period.

Data Pre-processing: Pre-processing the data is crucial when working with huge text datasets, like thosefrom Twitter (now X), as it helps to streamline the research process (Qi & Shabrina, 2023). Researchers gothrough several procedures, including cleaning and refining data to make sure the data that will be used is of high quality (Alhari et al., 2023). In this study, the preprocessing begins with converting all tweetsto lowercase, which helps

standardize the text. This is followed by the removal of unnecessary words and duplicates, as well as addressing contractions to ensure uniformity. The next step is tokenization, which breaks sentences into individual words, or tokens, facilitating a better understanding of the text by analyzing word sequences (Nandan et al., 2022). Following tokenization, stopwords—common words like"a," "the," and "in" that contribute little or no meaning to the overall sentiment—are removed. The final stepis lemmatization, which converts words to their dictionary forms using a lookup table and the context of the terms (Sham & Mohamed, 2022). By reducing words to their base forms, lemmatization ensures consistency in language processing and effectively eliminates redundant text that could skew analysis results. With duplicates removed, the 5,743 tweets are now well-prepared for further analysis and classification, setting the stage for meaningful insights into the data.

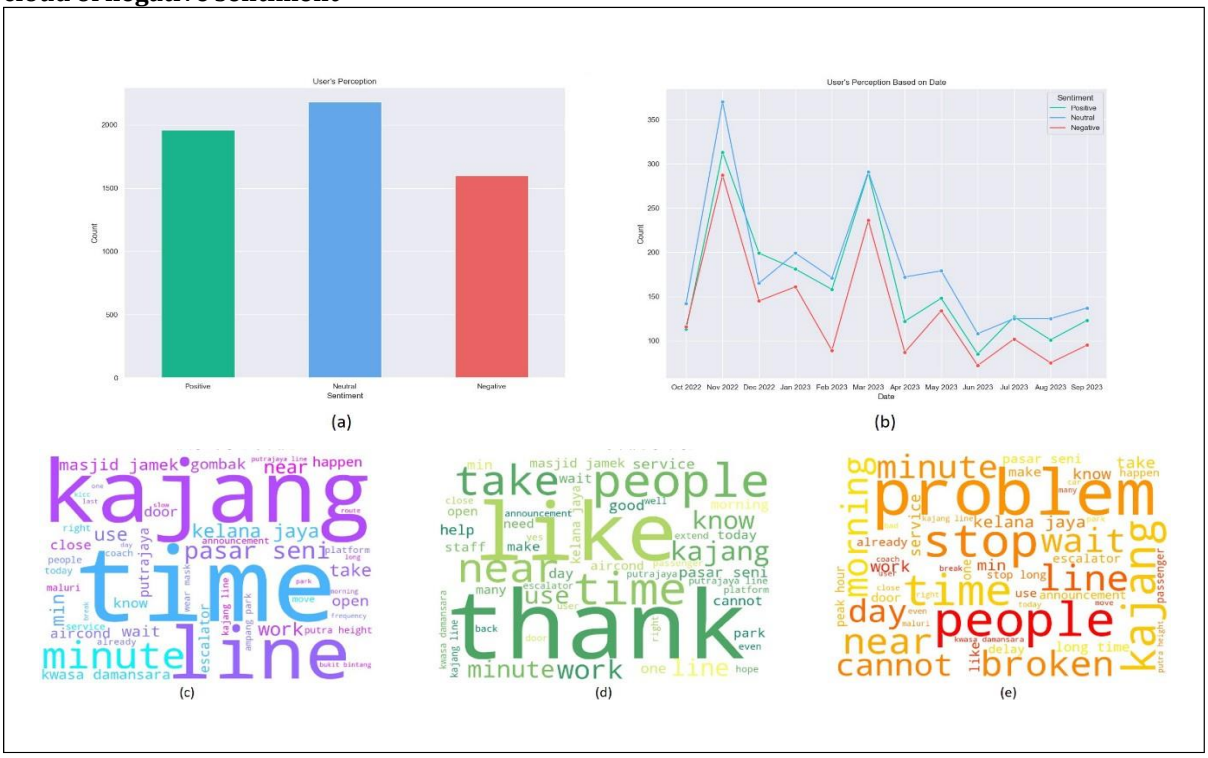
Sentiment Analysis and Classification: In this study, pre-processed tweets undergo sentiment analysis utilizing the VADER lexicon. Developed as a valence-based and generalizable tool, VADER is a human-validated, rule-based sentiment analysis method specifically tailored for social media platforms like Twitter (now X) (Sham & Mohamed, 2022). The analysis classifies tweets into positive, negative, or neutralsentiments based on their polarity scores: scores above 0 indicate positive sentiment, scores below 0 denote negative sentiment, and a score of 0 represents neutrality. To ensure a balanced representation of sentiment, the distribution of polarity scores is visualized. Following this, tweets are categorized into predefined classes using a machine learning model of Support Vector Machine. To enhance the model's performance, data shuffling and splitting are employed, allocating 80% for training and 20% for testing, following Hold-On partitioning. Feature extraction is conducted using Term Frequency-Inverse DocumentFrequency (TF-IDF) to convert tweets into numerical vectors, identifying frequently used terms (TF) whileconsidering their rarity (IDF) within the dataset (Adwan et al., 2020). As computers operate primarily withbinary and numerical data, this transformation is essential for enabling the model to effectively learn fromthe dataset.

Evaluation and Visualization: The model's effectiveness in predicting sentiments for both testing data and new datasets is rigorously evaluated using various metrics. These include a comprehensive classification report that encompasses Accuracy, Precision, Recall, and F1-score, along with a confusion matrix. The confusion matrix serves as a valuable diagnostic tool, providing insights into the model's performance by detailing the rates of true positive predictions, false positives, true negatives, and false negatives (E. Y. Sari et al., 2019). This breakdown enables a nuanced understanding of how well the modeldistinguishes between different sentiment categories. To complement the numerical evaluations, a varietyof visualizations—such as bar graphs, line charts, and pie charts—are employed to illustrate the distribution of sentiment across the dataset. These visual representations not only highlight trends and patterns but also enhance the interpretability of the findings. The visualizations encompass three key areas: sentiment, service, and topic findings. Sentiment focuses on the count of users' perceptions regarding the service, while service reveals the frequency of mentions related to specific services. Topic findings delve intothe keywords and phrases that contribute to users' sentiments, providing a deeper understanding of the factors influencing their opinions.

4. Results and Discussion

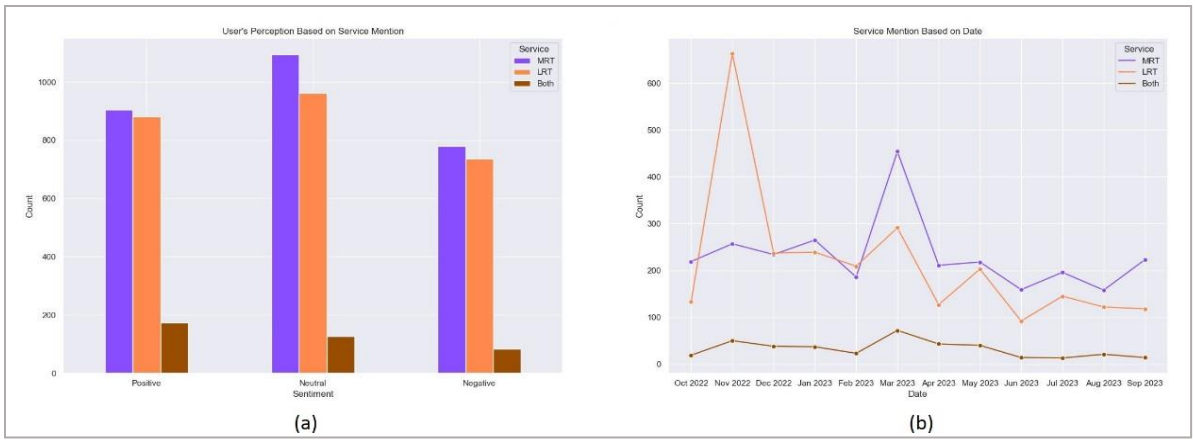
Visualization on Sentiment: The sentiment analysis was conducted on 5,743 cleaned tweets regarding MRT and LRT services. Figure 2 (a) shows that user perceptions are predominantly neutral, with 2,184 tweets (38%) classified as neutral, while positive sentiment accounts for 1,960 tweets (34%), and negative sentiment comprises 1,599 tweets (28%). Figure 2 (b) indicates that positive tweets peaked in December 2022 and July 2023, whereas the majority of tweets in other months were neutral, with negative tweets being infrequent. User engagement reached its highest in November 2022 and March 2023. A word cloud analysis highlighted the 50 most frequently used words in each sentiment category, while station names were kept as single entries. Figure 2 (c) shows that neutral sentiment focused on train timing. Users expressed not much reaction to the timing of the MRT Kajang. Figure 2 (d) reveals that positive sentiment emphasized appreciation for staff and service. Users expressed satisfaction with the service on the MRT Kajang Line, and the staff performed their jobs well. Furthermore, Figure 2 (e) illustrates that negative sentimentaddressed service and train issues. Users reported ongoing problems with the MRT Kajang Line and expressed dissatisfaction with broken facilities.

Figure 2: The result shows (a) a bar graph of sentiment count, (b) a multiple-line chart of sentiment count with date, (c) word cloud of neutral sentiment, (d) word cloud of positive sentiment, and (e) word cloud of negative sentiment



Visualization on Service: Figure 3 (a) shows the distribution of sentiment across different services, revealing that neutral sentiment has 1,095 mentions for MRT, 962 for LRT, and 127 for both services. Whenexamining positive sentiment, the figures show 905 mentions for MRT, 881 for LRT, and 174 for both services. Conversely, the data for negative sentiment indicates 780 mentions for MRT, 736 for LRT, and 83for both services. Overall, these findings imply that users predominantly maintain a neutral stance towardsthe services, yet the higher frequency of mentions for MRT may point to greater public engagement, not onneutral sentiment but for all sentiment categories. Even so, Figure 3 (b) indicates that tweets about LRT were concentrated in November 2022, December 2022, and February 2023. This spike in mentions duringthese months could be attributed to specific events, promotions, or changes in service that captured user attention. Interestingly, mentions of both services were relatively rare in other months.

Figure 3: The result shows (a) a multiple bar graph of service mention count, and (b) a multiple line chart of service mention count with the date



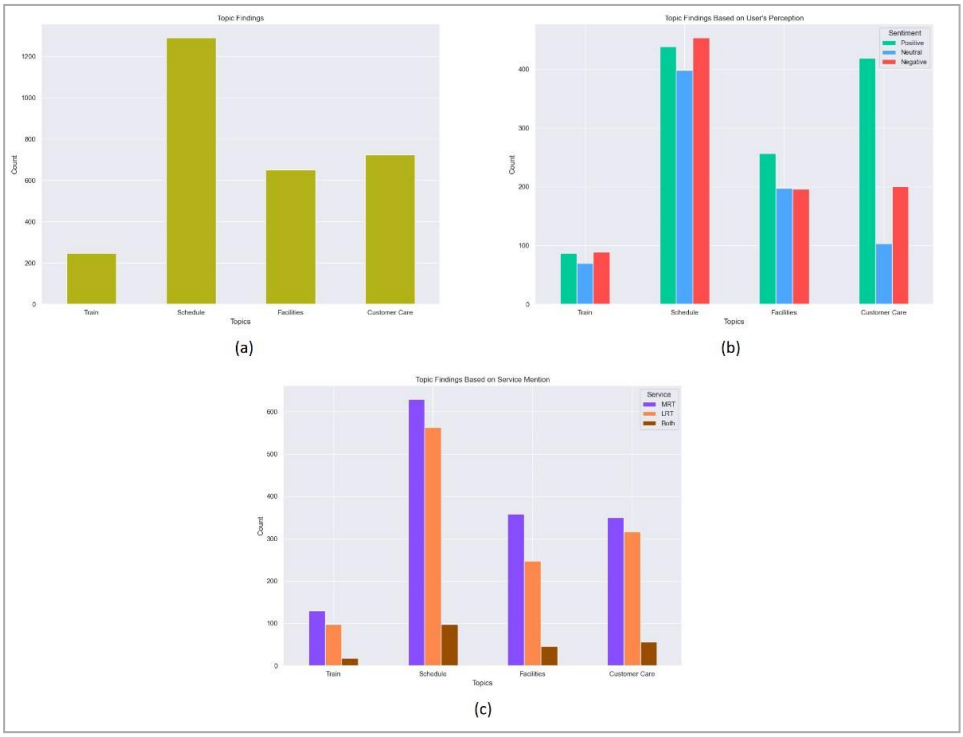
Visualization on Topic Findings: Analyzing the keywords used in tweets provides valuable insights into the specific topics users discuss regarding the services and their corresponding sentiments—positive, negative, or neutral. To identify prevalent topic findings, calculations were performed on the most frequently occurring one- and two-word combinations in the tweets using n-gram. Table 1 shows the fourmain topics findings emerged, along with their keywords.

Table 1: Topic findings with its keywords

Topic Findings	Keywords
Facilities	"function", "safety", "operating", "maintenance", "woman_coach", "lady_coach", "Coach", "parking_lot", "escalator", "elevator", "lift", "machine", "surau", "CCTV", "staircase", "toilet", "stairs", "kiosk"
Train Schedule	"technical_problem", "service_disruption", "fare", "available", "pack", "crowd" "delay", "peak_hour", "rush_hour", "extend", "time", "minute", "hour", "frequency", "frequent"
Customer Care	"take_action", "response", "answer_question", "feedback", "help", "complaint", "complain", "assistance", "responsible", "listen", "hear", "good_job", "staff", "police", "rapidkl_team", "operator", "admin", "officer", "customer", "management", "prasarana", "worker", "assistant", "rapidly"

Combining the tweets that did not have specific topic findings, the total number of tweets analyzed reached 6,203. While there may be duplicate tweets, each tweet can feature different topic findings. Figure 4 (a) indicates that the Schedule topic received the highest number of mentions, totaling 1,291 tweets, followedby the Customer Care topic with 723 tweets, the Facilities topic with 651 tweets, and the Train topic with 246 tweets.This suggests that users are particularly focused on the schedules of the service. Figure 4 (b) reveals insights from the sentiment analysis, showing negative sentiment associated with the Train and Schedule topics, which had 89 and 454 negative tweets, respectively. In contrast, positive sentiment was recorded for the Facilities and Customer Care topics, with 257 and 419 positive tweets, respectively. Furthermore, Figure 4 (c) highlights that all topics also dominated sentiment discussions related to MRT, featuring 630 positive tweets on the Schedule topic, while the Train topic had the fewest mentions at 130.

Figure 4: The result shows (a) a bar graph of topic findings count, (b) a multiple bar graph of topic findings counts with the sentiment, and (c) a multiple bar graph of topic findings counts with service



A word cloud analysis of the 50 most frequently mentioned keywords for each topic based on sentiment was conducted, omitting train names and irrelevant terms. Figure 5 (a) shows that negative sentiment.

Related to the topic Train topic reflects users' frustrations with various train issues, indicating that users dislike when trains experience problems, leaving them waiting on the platform for extended periods, or when the air conditioning is inadequate inside the train. Figure 5 (b) illustrates that negative sentiment associated with the Schedule topic focuses on train arrival times. These terms suggest that users feel the train schedules are inadequate, resulting in long waits for trains, which many users find frustrating. In contrast, Figure 5 (c) demonstrates positive sentiment related to the Facilities topic, showcasing users' satisfaction with well-functioning amenities, which convey those users appreciate when these facilities areoperational and accessible. Finally, Figure 5 (d) highlights positive sentiment regarding Customer Care, emphasizing the helpfulness of staff assistance, suggesting that users feel supported by the staff, indicating that customer care services are effective and beneficial.

Figure 5: The result shows word cloud of (a) Train topic on negative sentiment, (b) Schedule topic on negative sentiment, (c) Facilities topic on positive sentiment, and (d) Customer Care topic on positive sentiment



Classification and Evaluation of Support Vector Machine: The implementation of the Support Vector Machine in this study demonstrated effective classification of user sentiments expressed in tweets about MRT and LRT services. To assess the model's performance, a series of accuracy tests were conducted on both the test dataset and new incoming data. The focus was on the model's ability to accurately predict three distinct sentiment classes: positive, negative, and neutral. This classification is crucial for understanding public opinion and identifying areas for improvement in services. Table 2 compares the optimal configuration for the model concerning data splitting, while Table 3 compares various configurations related to hyperparameters. The analysis indicated that an 80:20 training-to-testing ratio was the most effective, coupled with the use of a Linear kernel to achieve optimal results. The dataset consisted of 5,743 labeled tweets, with 4,594 allocated for training and 1,149 for testing. This division ensured that the model had sufficient data to learn effectively while also being challenged with a representative sample during the testing phase.

Table 2: Model configuration on data splitting

Ratio	Accuracy
90:10	80.87%
80:20	**84.68%**

70:30	82.01%
60:40	80.20%
50:50	79.63%

Table 3: Model configuration on hyperparameter

80:20 data splitting	
Kernel	Accuracy
Linear	**83.03%**
Polynomial	67.62%
Radial Basis Function (RBF)	80.24%
Sigmoid	82.94%

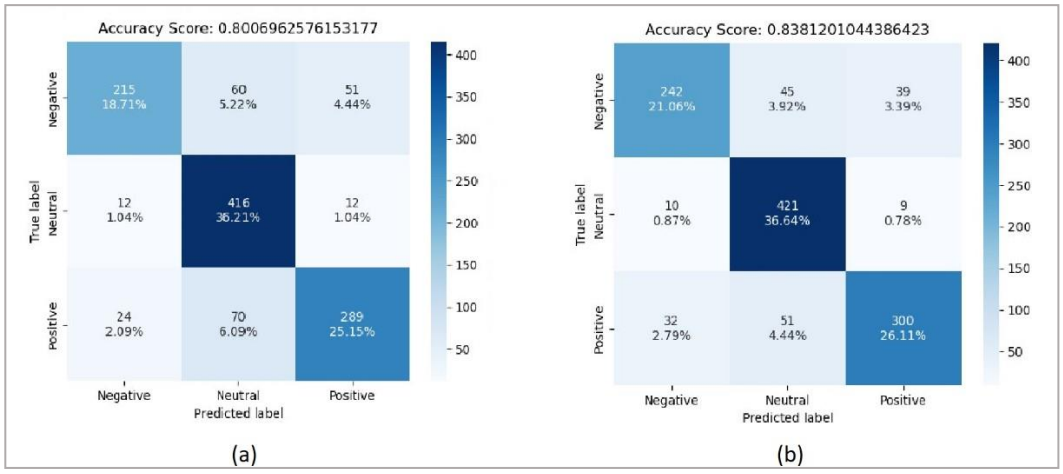
Feature extraction was conducted using Term Frequency-Inverse Document Frequency (TF-IDF) before classification. Table 3 shows the comparison of the classification report of the model with and without the Linear kernel. The model exhibited accuracies of 80% without a kernel and 84% with a Linear kernel. Performancemetrics, including precision, recall, and F1-score, were calculated for each sentiment category. The classification report for the model without a kernel indicated scores above 70%, with negative recall being the lowest at 66%. This means the model accurately identified only 66% of actual negative sentiments. In contrast, neutral recall was the highest at 95%, suggesting effective identification of neutral sentiments. Then, a linear kernel was injected to enhance model performance. Following this adjustment, the classification report improved to above 80%, with negative recall increasing to 74% and neutral recall reaching 96%. Nevertheless, the injection of the linear kernel into the model significantly enhanced the model's accuracy, particularly in the correct classification of negative sentiments.

Table 4: Comparison of classification report on the model without and with Linear kernel

	Without Linear kernel			**With Linear kernel**		
	Precision	Recall	F1-Score	Precision	Recall	F1-Score
Negative	0.86	0.66	0.75	0.85	0.74	0.79
Neutral	0.76	0.95	0.84	0.81	0.96	0.88
Positive	0.82	0.75	0.79	0.86	0.78	0.82
Accuracy			0.80			0.84

Figure 6 (a) presents the confusion matrix of the model without Linear kernel. The analysis reveals that thetrue label for negative sentiment exhibits the highest rate of misclassification by the model, followed closely by positive sentiment, while neutral sentiment shows the least amount of misclassification. This pattern suggests that negative and neutral sentiments are challenging for the model; specifically, the negative sentiment has the lowest percentage of Recall, indicating difficulty in accurately predicting true labels. Conversely, the neutral sentiment has the highest percentage in Recall, suggesting that the model is betterat identifying neutral cases. Then, a hyperparameter kernel was introduced into the model, aiming to improve the accuracy of the confusion matrix. Figure 6 (b) illustrates the confusion matrix of the model with Linear kernel. The misclassification rate for negative sentiment has been reduced. This improvementindicates that the adjustments made through the kernel have positively impacted the model's ability to correctly identify negative sentiment.

Figure 6: The result shows (a) the confusion matrix of SVM without a Linear kernel, and (b) the confusion matrix of SVM with a Linear kernel.



5. Conclusion and Recommendations

In summary, the sentiment analysis on collected, translated and cleaned X media social tweets has revealedthree key dimensions: sentiment, service, and topic findings. Users' perception generally expressed a neutral perception of both MRT and LRT services, followed by positive and negative perceptions. Insightsindicate that factors such as train timing, appreciation for staff and service quality, and service or train-related issues significantly influence user opinions. While MRT was mentioned more favorably overall, the increased discussion about LRT suggests that users have a balanced view of both services. The analysisof topics findings delved into keywords within the tweets, highlighting critical areas of user discourse, including Facilities, Train, Schedule, and Customer Care. Notably, topics about training and Schedule generated significant negative sentiment, while Facilities and Customer Care topics were viewed positively. Utilizing aSupport Vector Machine model with an 80% training set and 20% testing set, it was found that employinga linear kernel resulted in higher accuracy compared to a model without a kernel. Evaluation metrics suchas Precision, Recall, and F1-Score were reinforcing the model's effectiveness in accurately classifying user sentiment regarding these transportation services. All the results are then deployed in a web interface for easyaccess and visualization.

Engaging actively with users on social media platforms is crucial for collecting valuable feedback and improving service responsiveness. Continuous sentiment analysis will also play a key role in monitoring shifts in public perception and guiding ongoing improvements to MRT and LRT services. This prototype web system represents a significant asset for future research in sentiment analysis and Support Vector Machine classification. To enhance the system's effectiveness, several recommendations can be made. First,to improve the accuracy of the model, it is advisable to explore a wider range of hyperparameters, includinggamma, C, and degree. Optimizing these parameters can lead to better classification performance and morereliable results. Second, for more accurate data labeling, it is suggested to involve qualified individuals proficient in both Malay and English for translation tasks. Engaging experienced English teachers or lecturers can enhance the quality of translations, reducing the presence of untranslated Malay terms in the English text. This approach will facilitate more precise labeling by the Vader sentiment analysis tool, ultimately improving the overall performance of the system.

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Bibliometric Analysis on Mental Health of University Students

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Abstract: This study aimed to examine the research on mental health among university students through bibliometric analysis. The study was conducted using the Biblioshiny package in R-Studio. The study employs quantitative techniques and conceptual frameworks in knowledge discovery. On September 30, 2024, the screening process identified all references to "Mental Health," "University Students," and "Academic Performance" in the article titles inside the Web of Science (WOS). The analysis included 172 documents authored by 682 scholars in 133 journals published in the WOS database between 1996 and 2024. There were 476 affiliations between the universities or institutes where the authors served. However, more research is necessary to determine the effectiveness of interventions, such as setting-based strategies, and to identify risk factors and predictors of mental health among university students. By reviewing prior research, bibliometric analysis enables the researcher to identify the most significant author or article within their area of interest. It offers a comprehensive overview of the research field for academics and professionals interested in it. This study's cluster of mental health research will assist in directing future research areas through thematic maps, which serve as a tool for visualizing and categorizing research subjects based on trends in the literature. These maps assist researchers in comprehending the structure, evolution, and trends within the discipline by grouping similar topics, emphasizing main themes, and pinpointing emerging areas of interest. This will refine the selection and concentration of new research avenues with greater potential to advance the field of mental health studies considerably.

Keywords: *Biblioshiny, Conceptual structure, Mental Health cluster, University Students, Thematic map, Mental Health Bibliometric*

1. Introduction

Mental health, encompassing emotional, psychological, and social well-being, influences individuals' ability to manage stress and make informed health decisions (Cleverley et al., 2022; Hyseni Duraku et al., 2023; World Health Organization, 2002, 2015). Adolescents between 15 and 24 years are at the greatest risk for mental health issues, with half of all enduring mental disorders initiated by age 14 and three-fourths by the mid-20s (Hyseni Duraku et al., 2023; Kessler et al., 2007; World Health Organization, 2022). The decline of mental health impairs a youth's skill acquisition, social interactions, financial autonomy, and personal affairs, while also hindering their ability to effectively handle academic responsibilities (Antaramian, 2015; Hyseni Duraku et al., 2023; World Health Organization, 2002, 2022).

Over the years, researchers from both global and regional perspectives have conducted numerous studies on mental health, with a particular focus on university students. The Scopus database demonstrates the establishment of research on mental health among university students since 1996. Previous research indicates that the mental health and well-being of university students have shown consistent growth over recent decades, particularly since 2010, as evidenced by a bibliometric analysis spanning 1975-2020 (Hernandez-Torrano et al., 2020). Consequently, it can be asserted that the issue of mental health has been extensively examined for a considerable duration and is not a novel topic within the research domain.

The main objective of this research is to review Web of Science (WOS) publications about mental health among university students. The bibliometric analysis aimed to determine the bibliometric profile of mental health, encompassing its annual scientific output, research trends, and conceptual framework. This assessment will determine the extent of the study conducted on mental health (Ruslan & Abdul Rasool, 2024).

2. Literature Review History of Mental Health

Early mental health services in higher education began at Amherst College in 1861. Princeton University hired a psychiatrist in 1910 to help students develop their personalities and establish the first mental health program. Meanwhile, the 1920 American Student Health Association annual meeting deemed "mental hygiene" essential for college campuses. After Princeton's initiative, college campuses began offering mental health and psychological counseling 40 years later. The American College Health Association created a Mental Health Section in 1957 for mental health practitioners. By the late 20th century, most schools and universities had student-sized mental health and counseling departments (Kraft, 2011).

Current Trends

Since the early 2000s, there has been a notable rise in mental health issues among university students. A 2020 Insight Network survey involving students from 10 universities indicates that "1 in 5 students has a current mental health diagnosis" and that "almost half have experienced a serious psychological issue for which they felt they needed professional help," reflecting an increase from 1 in 3 in the 2018 survey (Campbell et al., 2022; Pereira et al., 2019). A UK cohort study indicates that psychological distress levels rise upon entering university (Bewick et al., 2010). Recent evidence shows an increasing prevalence of mental health issues among university students, including self-harm and suicide (Sivertsen et al., 2019; Storrie et al., 2010). This trend has led to heightened demand for mental health services, with some universities reporting a doubling in the number of students seeking support (Thorley, 2017). Consequently, inadequate mental health among youth has emerged as a global concern, especially in developing nations, where it represents the most prevalent and intricate psychological issue (Campbell et al., 2022; Pedrelli et al., 2015).

Furthermore, The Ministry of Health (MOH) conducted the National Health and Morbidity Survey (NHMS) in 2015 in Malaysia, revealing a 29.2% prevalence of mental health issues among those aged 16 and above. One in three Malaysians have mental health disorders, with the highest frequency observed among individuals aged 16 to 19 years and those from low-income families (Malaysian Ministry of Health, 2016). A previous study indicated that over half of the respondents (n=810) experienced moderate to high levels of psychological distress (68.9%), anxiety (72.7%), and depression (60.6%) (Arifin et al., 2023). The rise in the prevalence of mental disorders, especially anxiety and depression, has adversely impacted the quality of life among youths. This includes detrimental effects on academic performance, academic integrity, self-confidence, and interpersonal relationships, and may even result in thoughts of suicide (Babu et al., 2022; Duraku & Hoxha, 2022; Racine et al., 2021). The youth suicide rate has risen over the past six decades, making suicide the second leading cause of death in this demographic (Mowbray et al., 2006). Therefore, detecting and providing early deterrence of mental health issues among university students is essential (Shamsuddin et al., 2013). This issue warrants greater attention due to its potential negative implications, as university students are a crucial asset to the development of human capital in the country. Mental health is fundamental to university students' well-being and their capacity to navigate challenges both academically and in life (Pheng et al., 2019; Shahira et al., 2018).

Bibliometric Analysis

The volume of scientific research articles using Bibliometric analysis is rising quickly, making it more and more challenging to stay up to date with everything that is released. The bibliometric analysis process gathers and quantifies data on scientific publications and their citations. Researchers then use this data to assess research impact, identify patterns in the literature, and track the advancement of research (Ruslan & Abdul Rasool, 2024). Bibliometric analysis serves as a significant instrument across various domains, including academia, governmental bodies, and private research institutions. Bibliometric analysis is a quantitative approach that employs mathematical and statistical techniques to assess the interconnections and influences of publications, authors, institutions, and nations within a certain study domain (Donthu et al., 2021; Fu et al., 2023). By extracting and analyzing the metrics of each publication, such as author, institution, country, and keywords, bibliometric analysis can identify development trends and potential future research directions (Fu et al., 2023). Furthermore, employing diverse visualization techniques allows for the presentation of results in more intuitive and understandable formats. This facilitates a comprehensive overview, aids in pinpointing knowledge gaps, reveals emerging trends, and enables exploration of the intellectual framework within a particular field (Fu et al., 2023).

Bibliometrics provides a systematic, transparent, and reproducible evaluation procedure grounded in statistical measurements of research, scientists, or scientific activities (Ruslan & Abdul Rasool, 2024). Bibliometrics provides a more objective and reliable study compared to alternative approaches (Aria & Cuccurullo, 2017). The application of bibliometrics has broadened across various fields; however, bibliometric analysis is challenging due to the multiple processes that utilize diverse analytical and mapping software tools, which are generally accessible only through commercial licenses (Guler et al., 2016). This study advocates for the implementation of an open-source R program that follows a standardized, replicable logical bibliometric workflow. Researchers developed an R tool for executing thorough bibliometric analyses. This study employed R programming utilizing the Biblioshiny library package for the analysis and visualization of the state and trends in mental health research (Ruslan & Abdul Rasool, 2024). This package offers a collection of functions for data acquisition, cleansing, and analysis, encompassing bibliometric metrics, co-citation and co-work networks, co-authorship evaluation, and journal impact factors. Moreover, Biblioshiny enables users without programming expertise to do bibliometric analyses through a graphical user interface (Aria & Cuccurullo, 2017).

Bibliometrics in Mental Health

Prior researchers conducted a study on the mental health of university students, using metadata derived from 2,782 journal articles included in the Web of Science database from 1975 to 2020. This study employs bibliometric methods to delineate and visually illustrate the existing literature on mental health among university students, focusing on the growth trajectory, productivity, social structure, intellectual structure, and conceptual structure of the field over 45 years (Hernandez-Torrano et al., 2020). Furthermore, a detailed bibliometric analysis of 214 high-Scopus-indexed publications was done to examine worldwide cooperation and emerging trends in mental health research among higher education students. The primary aims were to identify the most productive contributors at the national, institutional, and author levels, and to reveal collaborations among them. The study aimed to identify significant themes and emerging trends in mental health research by keyword and citation analysis (Mohd Beta et al., 2024).

3. Method

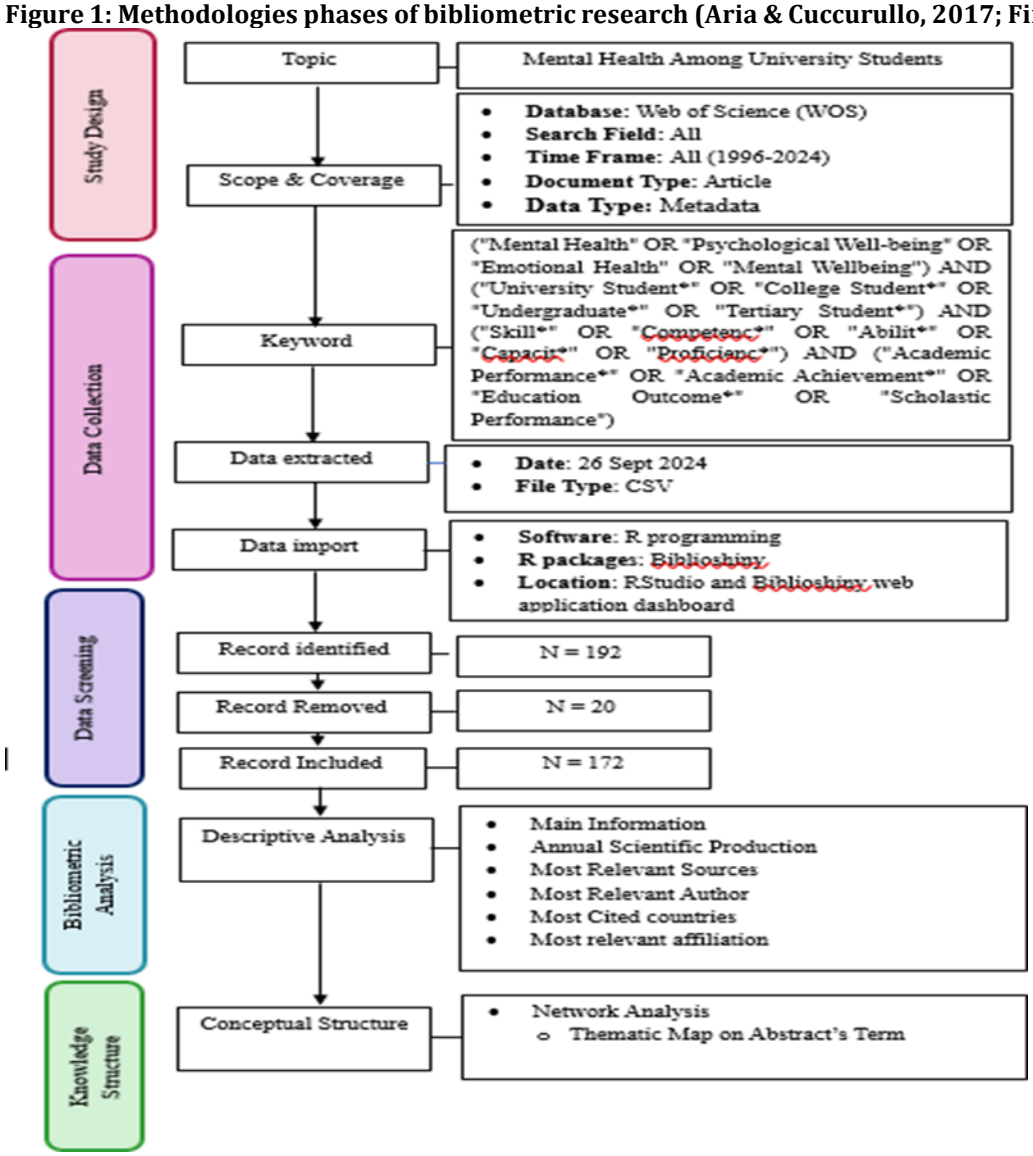
This study aims to investigate the status, trends, and conceptual framework of mental health research. The process consisted of five phases: Study Design, Data Collection, Data Screening, Bibliometric Analysis, and Knowledge Discoveries. All relevant keywords about mental health were meticulously examined (Ruslan & Abdul Rasool, 2024). The Web of Science (WOS) core collection database was utilized to retrieve and extract articles on mental health for bibliometric analysis. Moreover, WOS enables researchers to collect extensive bibliometric data by conducting searches for publications on topics using keywords, subject categories, authors, institutions, and other relevant criteria. Moreover, it can also obtain comprehensive metadata for each publication, encompassing authors, affiliations, citations, references, and abstracts, as well as exporting extensive datasets of bibliographic records for subsequent analysis. WOS facilitates diverse citation analyses, including the monitoring of citations accrued by publications, authors, or journals over time. It also can identify highly cited papers and authors within a field, along with the analysis of citation networks and patterns among publications. WOS can analyze collaboration patterns, identify research trends, and conduct journal and source analysis. WOS through bibliometric analysis could do visualization such as networks of co-authorship, co-citation networks, and maps illustrating the co-occurrence of keywords and distribution of research across geographical regions (Azanedo et al., 2022; Huang et al., 2022).

Following extensive deliberation, the terms ("Mental Health" OR "Psychological Well-being" OR "Emotional Health" OR "Mental Wellbeing") AND ("University Student*" OR "College Student*" OR "Undergraduate*" OR "Tertiary Student*") AND ("Skill*" OR "Competenc*" OR "Abilit*" OR "Capacit*" OR "Proficiency*") AND ("Academic Performance*" OR "Academic Achievement*" OR "Education Outcome*" OR "Scholastic Performance") were selected as keywords, with the Boolean operator OR utilized between the two keywords for metadata extraction. The operator OR was employed due to the existence of two distinct spellings of these sentences in the database. In constructing effective search queries for academic research, Boolean operators and wildcard symbols play a critical role in refining search results. Boolean operators such as “AND,” “OR,” and “NOT” enable researchers to combine or exclude keywords to enhance the relevance of their search results. In this query, “OR” is used to group synonymous terms related to mental health, such as “Mental Health,” “Psychological Well-being,” “Emotional Health,” and “Mental Well-being,” allowing for a broader search that

captures varied expressions of the concept. The "AND" operator is then utilized to combine this mental health category with phrases concerning university and college students, including "University Student*," "College Student*," "Undergraduate*," and "Tertiary Student*." Here, the asterisk () serves as a wildcard that expands the search to include any variation of the root word, such as "student," "students," or "students."

Additionally, the inclusion of terms like "Skill," "Competence*," "Ability*," "Capacity*," and "Proficiency*" demonstrates the searcher's intention to encompass various competencies and skills, thereby enhancing the search's breadth. Finally, the query concludes by targeting educational outcomes through terms like "Academic Performance*," "Academic Achievement*," "Education Outcome*," and "Scholastic Performance," thus ensuring that the search captures a range of literature related to the academic achievements of students about their mental health. Overall, the strategic use of Boolean operators and wildcards enables a comprehensive exploration of the interplay between mental health, student demographics, skills, and academic performance (Bates, 1989). Integrating the research associated with these keywords is beneficial. The Biblioshiny library package utilized in R programming was employed for bibliometric analysis and knowledge discovery (Ruslan & Abdul Rasool, 2024), concentrating on the conceptual structure of mental health. Figure 1 depicts the study's progression, aiming to enhance comprehension.

Figure 1: Methodologies phases of bibliometric research (Aria & Cuccurullo, 2017; Firdaus et al., 2019)



4. Findings

Descriptive Analysis-Main Information

Table 1 illustrates Biblioshiny's primary characteristics of WOS-loaded articles. Documents from 1996 to 2024 are included. The table shows the number of periodicals, books and others from which the papers were obtained. The dataset contains 172 documents. Collection growth averages 9.28% annually. Documents published around the current year are an average of 4.37 years old. Each document averages 20.15 citations. All collection papers cite a total of 8,390 references.

Table 1: Main Information of Retrieved Articles

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1996:2024
Sources (Journals, Books, etc)	133
Documents	172
Annual Growth Rate %	9.28
Document Average Age	4.37
Average citations per doc	20.15
References	8390
DOCUMENT CONTENTS	
Keywords Plus (ID)	479
Author's Keywords (DE)	515
AUTHORS	
Authors	682
Authors of single-authored docs	13
AUTHORS COLLABORATION	
Single-authored docs	14
Co-Authors per Doc	4.08
International co-authorships %	21.51
DOCUMENT TYPES	
article	159
article; book chapter	1
article; early access	12

The table also includes the works of 682 authors, yet only 13 of them have released single-authored pieces. The collection has 14 single-author documents. Meanwhile, the average number of co-authors in a document is 4.08, and approximately 21.51% of these documents involve international collaboration. 159 articles, or most of the documents, fall under the term document classification. 1 document is both an article and a book chapter, and 12 are early access articles.

Annual Scientific Production

Figure 2 demonstrates annual scientific production for a mental health article with % growth.

Figure 2: Annual Scientific Production on Mental Health Research

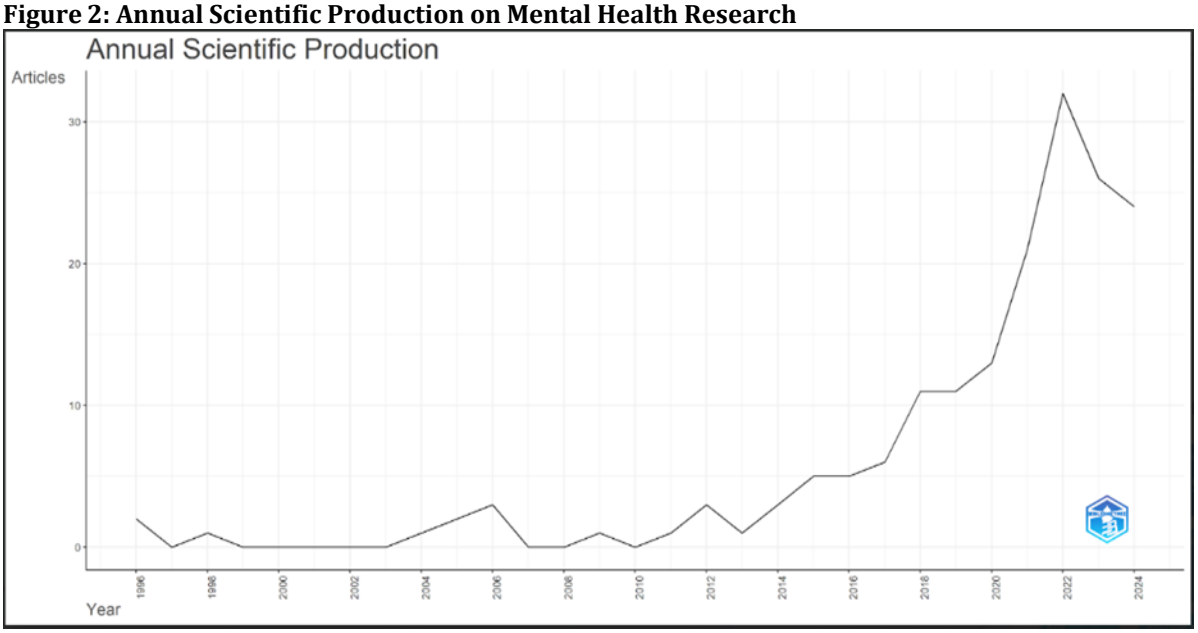
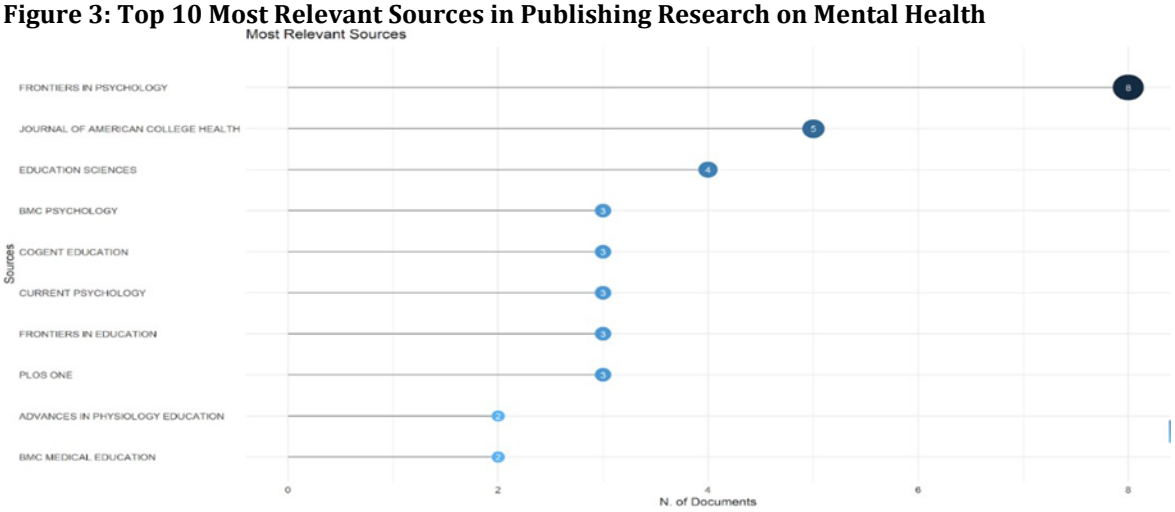


Figure 2 illustrates that the annual scientific production in the field of mental health was minimal, with certain years exhibiting no output. There are only a few years with notable publications: 1996 with 2 articles, 2006 with 3 articles, and 2012 with 3 articles. There is a consistent increase in publications from 2011 to 2018, reflecting a heightened emphasis on research. Since 2019, scientific production has experienced exponential growth, peaking in 2022 with 32 articles, followed by a modest decline in 2023 and 2024.

The COVID-19 pandemic's impact on mental health led to the publication of most papers in 2022, spurring further research and discussions. Students felt isolated, academically disrupted, and concerned about the future due to the pandemic. University students develop anxiety, depression, and stress due to these conditions. Researchers worldwide studied the pandemic's impact on student mental health, increasing research output.

Most Relevant Sources

Figure 3: Top 10 Most Relevant Sources in Publishing Research on Mental Health

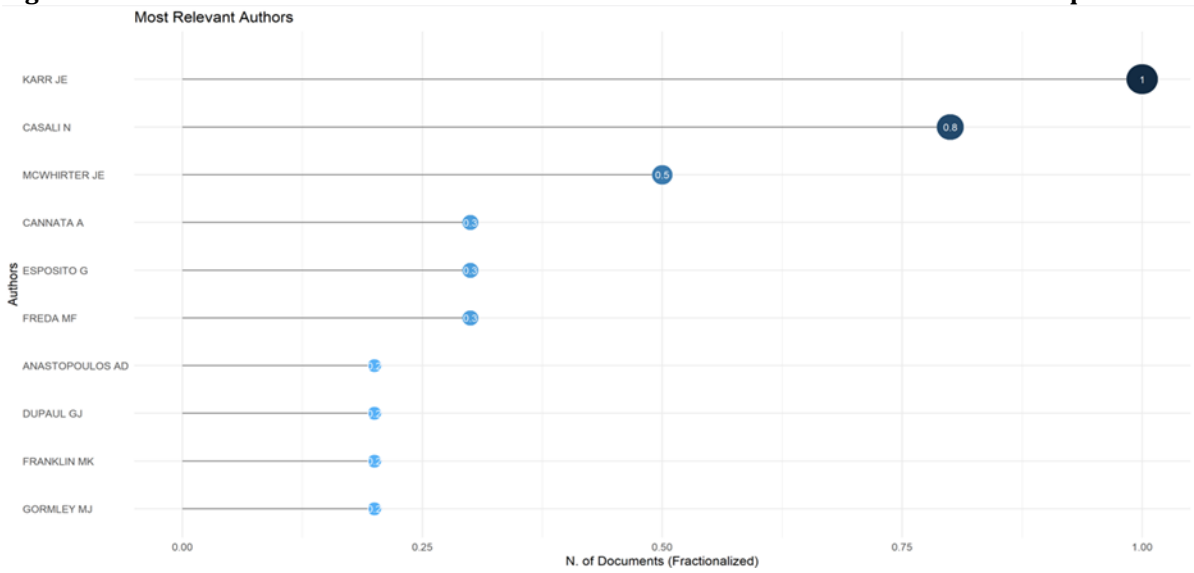


This graph illustrates the "Most Relevant Sources" for documents, showcasing the number of university student mental health publications in each source. The most prolific source is Frontiers in Psychology, with 8 related articles published between 1996 and 2024. The Journal of American College Health followed with 5 articles. Education Sciences, BMC Psychology, Cogent Education, Current Psychology, and Frontiers in Education also published 3 articles. PLOS ONE, Advances in Physiology Education, and BMC Medical Education also contributed 2 separate articles. The graph indicates a wide range of sources contributing to the research, with a focus on psychology, education, and health journals.

Most Relevant Author

Figure 4 displays the most relevant authors, identified by Biblioshiny according to the quantity of authored papers, derived from the comprehensive data analysis.

Figure 4: Most Relevant Author in Mental Health Research in terms of fractionalized frequencies

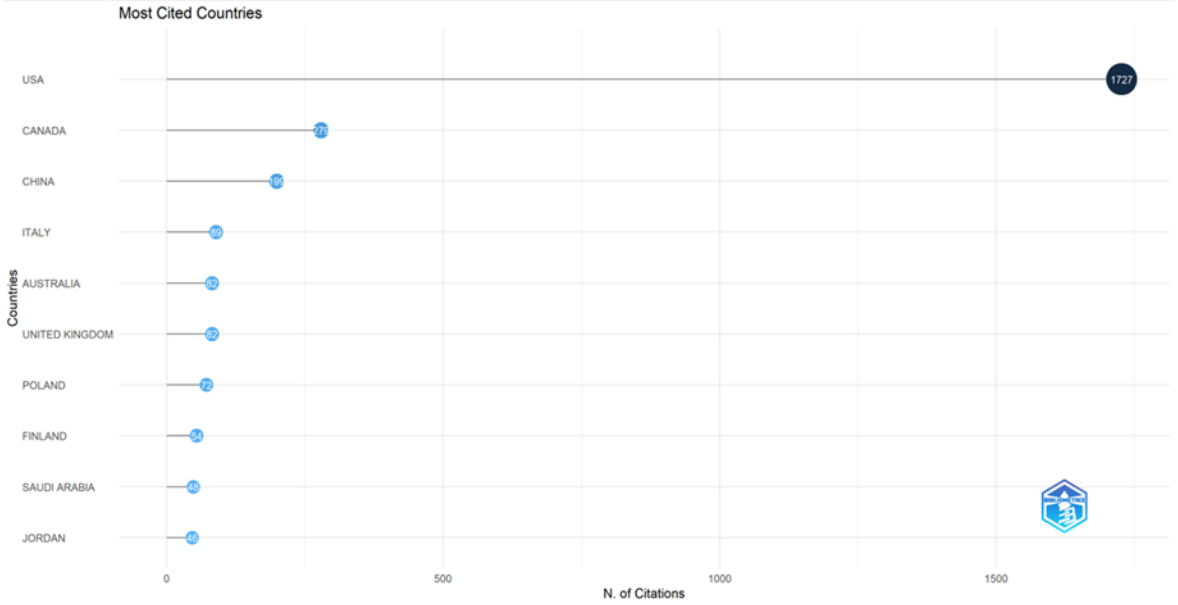


According to previous researchers, Biblioshiny produced fractionalized frequencies by dividing the total number of written articles by the total number of co-authors (Aria & Cuccurullo, 2017). A total of 682 authors contributed to 172 publications on mental health. KARR JE is the most relevant author, having provided the equivalent of 1 fractionalized article. Subsequently, Casali N provided 0.8 articles, while Mcwhirter Je, Cannata A, Esposito G, and Freda MF each contributed 0.3 articles. Anastopoulos Ad, Dupaul GJ, Franklin MK, and Gormley MJ made lesser contributions, each providing 0.2 papers. The fractionalized article count suggests that these authors may have collaborated with others, distributing credit proportionately.

Most Cited Countries

Figure 5, "Most Cited Countries," illustrates the number of citations received for research contributions from different countries.

Figure 5: Most Cited Countries

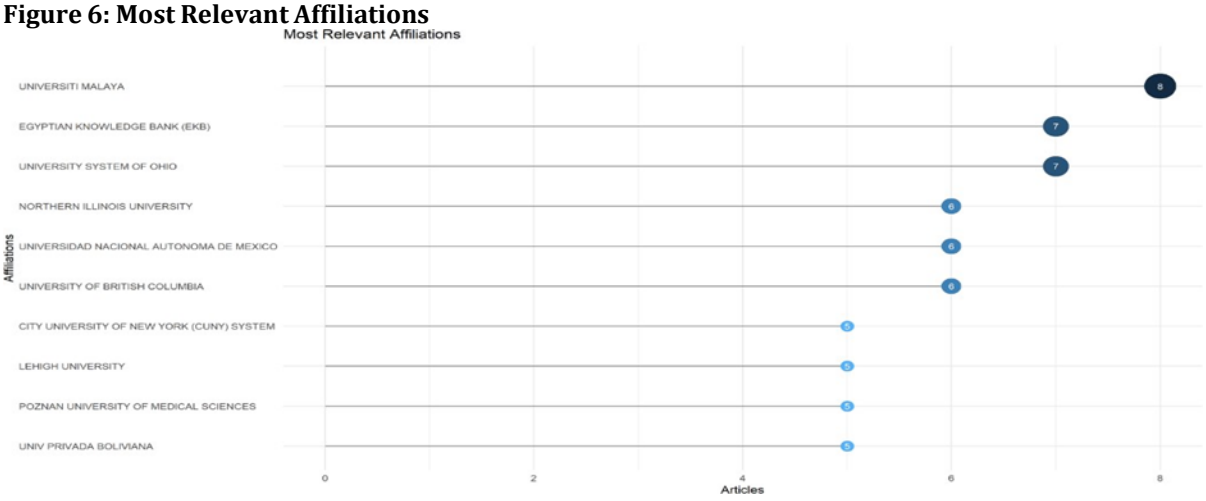


With 1,727 citations, the United States is by far the most cited country. This suggested that, in the field or study area under consideration, the USA has had the biggest influence. This demonstrated that the United States of America is a leader in this field of study, having produced the most significant and extensively cited research. With 279 citations, Canada is the second-most cited nation. Despite having slightly fewer citations than the USA, Canada still maintains a significant presence in the scientific community. With 199 citations, China is the third most referenced nation, a sign of its expanding stature in international research. Additional noteworthy nations are Poland with 72 citations, Australia and the United Kingdom with 82 citations, and Italy with 89 citations. Although Jordan, Finland, and Saudi Arabia have fewer citations—54, 48, and 46, respectively—they nevertheless have a significant impact.

Most Relevant Affiliations

Figure 5 illustrates the "Most Relevant Affiliations" according to the number of articles linked to each institution. Universiti Malaya is the leading contributor, with 8 articles.

Figure 6: Most Relevant Affiliations

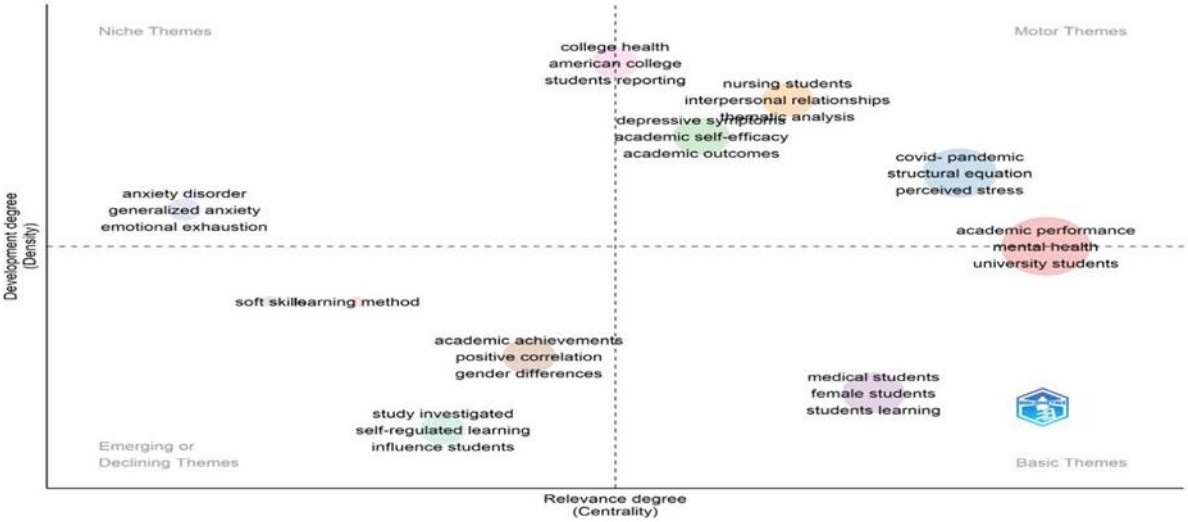


The Egyptian Knowledge Bank (EKB) followed, with the University System of Ohio contributing 7 papers. Northern Illinois University, Universidad Nacional Autonoma de Mexico (UNAM), and the University of British Columbia collectively submitted 6 articles. Meanwhile, the four lowest-ranked institutions—City University of New York (CUNY) System, Lehigh University, Poznan University of Medical Sciences, and Universidad Privada Boliviana—each produced 5 publications.

Thematic Map

Figure 7 illustrates the various themes associated with the specified domain. The themes were identified based on their relevance and development. This illustrates a thematic map commonly employed in bibliometric analysis to categorize research themes into four quadrants. This also presents the mapping of the network cluster into four thematic quadrants: Motor Themes, Niche Themes, Emerging or Declining Themes, and Basic Themes (Cobo et al., 2011).

Figure 7: Thematic Maps



The themes were identified according to their relevance and development. The Upper-Right Quadrant, also known as the Motor Theme, stands out for its centrality and well-developed nature, underscoring its significance and establishment in the field of mental health research among university students. The relationship between academic performance and mental health among university students is a well-established area of research, indicating its centrality in academic discourse. Related themes such as perceived stress, the COVID-19 pandemic, and structural equation modeling indicate a significant emphasis on the impact of stressors, particularly during the pandemic, on students' mental health and academic performance. This category includes themes like "nursing students" and "interpersonal relationships," indicating a thorough examination of specific student groups and their interpersonal dynamics about their impact on mental health.

The Upper-Left Quadrant, referred to as Niche Themes, comprises well-developed nevertheless peripheral research areas in mental health. These themes represent specialized domains that lack broad applicability or integration with mainstream research. This quadrant categorizes anxiety disorder, generalized anxiety, and emotional exhaustion. Despite extensive research, anxiety-related themes remain a more specialized area within the broader context of mental health among university students, not serving as the central focus of wider research efforts. The terms "college health" and "American college students" indicate specificity to particular geographic or institutional contexts, rendering them less central but significant within their respective domains.

The Lower-Right Quadrant, referred to as the Basic Theme, encompasses concepts that are central to the research field but are still underdeveloped, indicating their essential nature despite limited exploration. The categories of "medical students," "female students," and "students learning" highlight important populations in mental health research that require further study for comprehensive integration into the wider research

framework. The identified themes underscore the need for focused research on the mental health of medical and female students, areas that are critical yet have not received enough attention.

Lower-Left Quadrant classified as either Emerging or Declining The research domain does not prominently feature or thoroughly explore the themes, suggesting their potential emergence or decline. The quadrant presents themes such as "soft skills," "learning method," and "self-regulated learning," implying that these concepts are either gaining prominence in the field or losing relevance in the broader discourse. Despite their relevance to students' learning and academic success, mental health may not have received extensive investigation in these areas.

5. Discussion and Conclusion

This study constitutes a bibliometric analysis of mental health publications from its inception in 1996 to the present, utilizing Biblioshiny. This study aims to comprehend and tackle the escalating issues related to students' mental health. It also emphasizes monitoring the progression of research that clarifies the growth of mental health understanding among university students throughout time. This study analyzes and describes the evolution of research subjects concerning mental health and its associated notions in the literature through bibliometric approaches and techniques. Researchers acquired bibliographic data from the WOS database for 192 papers authored by 682 published researchers, sourced from the metadata of the Web of Science (WOS) database. There were 476 affiliations among the universities or institutes where the authors were employed.

This study provides multiple contributions that facilitate the tracking of research topic evolution. Thematic maps enable researchers to analyze the temporal evolution of specific themes. This study contributes to understanding research priorities and gaps by mapping the centrality and density of themes. The thematic maps highlight well-researched areas and those that are underexplored. Themes concerning medical students' mental health and gender differences suggest that these are significant yet underexplored areas, highlighting the necessity for further investigation. This is essential for directing future research initiatives and ensuring that important subjects, such as the mental health of student demographics, receive adequate attention. Thematic maps also help universities, policymakers, and mental health practitioners in making the right decisions regarding resource allocation for research and intervention programs. For instance, if academic stress is a primary concern, universities may focus on establishing stress-relief programs or counseling services for students.

Additionally, the relationship between mental health and academic achievement is evident and crucial for comprehending the well-being of university students. The emergence of niche themes like anxiety disorders suggests an examination of more specialized mental health issues, but their integral linkage to broader academic discourse may not be evident. Research is emerging in the domains of self-regulated learning and pedagogical methods, potentially connecting these learning characteristics to mental health, but requiring further investigation. This thematic map presents a visual overview of the main research themes concerning university student mental health, organized by their current development and significance. The emphasis on academic achievement, stress, and the effects of the epidemic have served as drivers for the present research focus.

Future Research and Limitations

The current literature on mental health among university students is a growing area of study. However, more research is necessary to determine the effectiveness of various interventions, such as comprehensive setting-based strategies that address the university environment, technology-mediated interventions like web-based and mobile applications, and preventive measures implemented before students' university enrollment (Osborn et al., 2022). Moreover, further research is required to ascertain risk variables and predictors, including elements that predispose students to mental health disorders and early indicators of declining mental health (Campbell et al., 2022; Limone & Toto, 2022).

This study's exclusive sourcing of data from the WOS database presents a limitation. It would be significantly beneficial for additional researchers to perform bibliometric analyses of mental health by integrating data from Dimensions, PubMed, Scopus, the Cochrane Library, or alternative databases. Additionally, the study would

benefit from incorporating Author and Source Impact, Lotka's Law, Bradford's Law, and other bibliometric elements for a more comprehensive descriptive analysis. The focus of this study was solely on the conceptual structure of knowledge about identifying invisible trends. It would be significantly more advantageousto also consider the psychological and social frameworks of knowledge (Ruslan & Abdul Rasool, 2024).

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The Impact of Job Design Factors on Job Satisfaction: A Study of Job Rotation, Enlargement and Enrichment in the Malaysian Public Sector

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Abstract: This study investigates the interrelationships among job rotation, job enlargement, job enrichment, and job satisfaction within the Malaysian public sector. Although these job design elements have been explored in various contexts, their specific interactions within the Malaysian public sector remain under-examined. Employing a non-probability convenience sampling method, the study analyzed data from 180 employees drawn from a total population of 389. A quantitative research methodology was utilized, with data subjected to correlation and multiple regression analyses. The findings indicate significant relationships among job rotation, job enlargement, job enrichment, and job satisfaction, with job rotation identified as the most substantial predictor of job satisfaction. These results provide valuable insights for public sector leaders, emphasizing the role of effective job design in enhancing employee satisfaction. Furthermore, the study underscores the importance of these variables in shaping positive work experiences and overall job satisfaction among employees in the public sector.

Keywords: *Job rotation, job enlargement, job enrichment, job satisfaction, Malaysia, public sector*

1. Introduction

The caliber of government representatives is essential for an organization's capacity to fulfill its vision and mission in the context of globalization. Both public and private organizations face intense competition in delivering services to the community, necessitating the need for excellence to meet rapidly changing circumstances. To stay competitive, organizations must rely on government employees who are highly skilled in their respective fields. The importance of a well-defined vision and mission is not limited to private enterprises; research indicates that public sector organizations also benefit significantly from aligning employee efforts with their strategic objectives. Employees' familiarity with an organization's mission and vision can positively impact job satisfaction and commitment (Dobrinić and Fabac, 2021).

Government employees must not be viewed solely as individuals but as members of a collective organizational environment, where attitudes, values, and behaviors vary both at the individual and group levels. This diversity, or human resource heterogeneity, requires effective management to motivate employees to perform their duties efficiently, thereby enhancing job satisfaction. Job satisfaction is a personal experience, influenced by whether employees feel valued in their workplace. Workers tend to view their jobs as opportunities to socialize, use their knowledge, earn money, and gain recognition (Zamiri, Heidari, Askari & Makvandi, 2020). Recent studies have shown that when employees understand the purpose of their organization through a clear mission, they are better able to engage with the strategy, improving both satisfaction and performance (Silva, Moreira & Mota, 2023).

Job satisfaction continues to be a critical area of research in organizational management due to its direct link to performance and efficiency (Imran, Ismail, Hussain & Zeb, 2021). Numerous management studies emphasize the significant correlation between job satisfaction and productivity. A report from the Society for Human Resource Management (SHRM) indicates that in 2015, 88% of employees in the United States expressed satisfaction with their jobs, with 37% categorizing themselves as "very satisfied." This pattern of increasing job satisfaction has been evident since 2013, suggesting a positive trend in employee sentiment toward their work. However, a significant portion of employees reported only moderate satisfaction, suggesting opportunities for further improvement (Gurchiek, 2016).

In Malaysia, efforts such as the reintroduction of the "Hot Job Rotation" system under the National Key Result Areas (NKRA) against corruption aim to address potential unethical behavior within government agencies. The

system encourages regular rotation in key enforcement departments, reducing opportunities for unethical relationships to develop (Nik Mahmod, 2013). Managing government employees, therefore, involves addressing critical factors like job satisfaction and implementing systemic changes to ensure transparency and accountability (Kim, 2023).

Research gap and purpose

Job satisfaction is a critical factor influencing both employees and organizational performance. It is a widely researched topic in various business settings. According to the SHRM, providing employees with diverse opportunities to engage in different activities and develop various skills can significantly enhance job satisfaction (Gurchiek, 2016). Conversely, low job satisfaction often results in high turnover rates, absenteeism, and substandard performance, which increase organizational costs and decrease profitability (Soeprapto, Tawil, Naim, Buamonabot & Thahrim 2024).

In government organizations, low job satisfaction can be a symptom of broader systemic issues such as poor performance, high absenteeism, and employee turnover. The factors leading to job dissatisfaction include low pay, unfavorable working conditions, conflicts with supervisors or colleagues, and unclear organizational policies. Employees with higher levels of job satisfaction tend to perform better and view their roles as engaging and fulfilling, unlike their less satisfied counterparts, who may find their jobs monotonous and exhausting. This disparity affects overall organizational productivity (Putra, Ma'ruf, Yunus, Harmen & Amin, 2023).

Recent studies support the notion that government agencies must closely monitor employee satisfaction levels and address factors contributing to dissatisfaction. Failure to bridge the gap between employees' needs and organizational policies can lead to a decline in morale and productivity (Loo, Wider, Lajuma, Jiang, Kenikasahmanworakhun, Tanucan & Ahmad Khadri, 2024). Moreover, research on job satisfaction has shown that compensation is not the sole driver of employee happiness. Naseer, Ahmad, Bano, Mehmood, and Ali (2021) revealed that employees were unhappy due to an unchallenging workload or poor organizational support. Furthermore, respondents reported high satisfaction, driven by treating uncomplicated with full professional sovereignty.

Ultimately, government employers must address working conditions and job satisfaction comprehensively. Poor work environments can lead to a decline in productivity and overall organizational performance (Akinwale, & George, 2020). Public servants who lack job satisfaction are also likely to experience reduced quality of work-life, which further affects organizational outcomes (Ameen, Al-Ali, Isaac & Mohammed, 2020). Therefore, comprehending the factors that affect job satisfaction—namely job rotation, job enlargement, and job enrichment—is crucial for enhancing employee morale and retention.

This study seeks to fill a significant gap in the current literature by exploring the unique relationships between job rotation, job enlargement, job enrichment, and job satisfaction specifically within the context of the Malaysian public sector. These variables were recognized as interdependent constructs, essential for promoting excellence in public sector management. By integrating job rotation, enlargement, and enrichment, the research highlights their impact on employee job satisfaction. This holistic approach can guide management in optimizing employee performance and engagement, offering a clearer understanding of how these factors predict job satisfaction. The study's findings offer practical insights to improve public sector operations and employee well-being, setting the foundation for the research questions.

2. Literature Review

Job Rotation: Job rotation refers to the organized process of shifting employees among various roles or responsibilities within a company (Tarus, 2014; Padula, Comper, Sparer & Dennerlein, 2017). This practice serves as a development tool for both managers and non-managers, promoting the acquisition of diverse skills and knowledge (Mohan & Gomathi, 2015). By rotating employees through various positions, organizations can enhance employee engagement, motivation, and overall job satisfaction among civil service employees (Ramdani, Barokah, Wulandari & Nurfalah, 2024).

Job rotation fosters a stimulating work environment by alleviating boredom and preventing burnout. It encourages multitasking and continuous training, allowing employees to develop a broader understanding of organizational operations. Research indicates that job rotation significantly enhances employee motivation, job performance, and satisfaction (Alaflaq, Aloqab & Al-Dakhli, 2024). Management can identify employees' strengths, optimizing their placement within the organization. However, it also incurs training costs and may require time for employees to adjust to new roles (Idris & Wahyudi, 2021). According to Sebt and Ghasemi (2021), job rotation contributes to learning, critical thinking skills, and ultimately enhancing human capital. They identify key factors to consider for effective job rotation, including system, development strategy, and schedule. The practice is associated with higher job satisfaction, as it enables workers to acquire new skills that keep them competitive in the job market.

Job rotation positively influences organizational commitment and job satisfaction, as supported by various studies showing its role in enhancing employee engagement and performance (Khan, Rasli, Yusoff, Ahmed, Rehman & Khan, 2014; Suleman, Bingab, Boakye & Sam-Mensah, 2022). A well-structured job rotation program can significantly enhance employee satisfaction, thereby strengthening the organization's competitive edge (Majd, Bell, Davoodi & Nasirifar, 2024). Although job rotation offers various advantages, it is not widely implemented across all organizations. A survey revealed that more than half (56%) of companies do not actively encourage job rotation, despite recognizing its benefits. The key advantages cited by respondents included gaining experience in different areas of the business (23%) and obtaining new insights into current roles (23%) (Goretsky, 2024).

In summary, job rotation serves as an effective strategy that can improve employee engagement, satisfaction, and overall organizational success. By promoting skill enhancement and cultivating a learning-oriented environment, companies can attract and keep high-performing talent. While there are challenges associated with its implementation, the advantages of job rotation make it a worthwhile approach for organizations looking to succeed in a competitive market.

Job Enlargement: Job enlargement refers to the process of broadening an employee's responsibilities by incorporating additional tasks into their role. This approach is associated with enhanced job satisfaction, increased motivation, and stronger organizational commitment (Aminu, 2022). Studies show that employees who experience job enlargement benefit from increased opportunities to demonstrate their abilities and gain job satisfaction (Harbani, Hidayat & Fauzi, 2022). Furthermore, job enlargement satisfies employees' lower-order needs, as outlined by Maslow's hierarchy, by providing job security and reducing monotony (Gichuki & Munjuri, 2018). However, excessive workload due to job enlargement can decrease social interaction, resulting in reduced motivation and overall job satisfaction (Yusof, Zainudin, Rawi & Isa, 2023).

Task variety is a crucial component of job enlargement that enhances employee motivation and prevents workplace boredom. Providing diverse responsibilities allows employees to utilize their full skill set, improving their engagement and performance (Linggawati, Harsasi & Maharani, 2023). Management should carefully structure job enlargement so that tasks do not become overwhelming or repetitive, ensuring that employees view them as manageable challenges (Tumi, Hasan & Khalid, 2022).

Job enlargement provides several advantages, such as enhanced productivity, better utilization of employee skills, and diminished monotony. When employees take on a wider variety of tasks, they tend to feel more appreciated and engaged in their work, resulting in increased job satisfaction (Tantua, 2022). Moreover, organizations can experience improvements in employee retention and engagement when job enlargement is effectively implemented. However, if not executed well, job enlargement may lead to employee burnout and a decline in performance due to excessive workloads (Njeri & Mary, 2020).

In summary, job enlargement is an effective tool to enhance employee satisfaction and organizational commitment when balanced correctly. By increasing task variety and leveraging employees' skills, organizations can foster a more engaged and productive workforce. However, careful planning is essential to prevent negative outcomes such as overwork and demotivation.

Job Enrichment: Job enrichment refers to broadening an employee's role by increasing their control, responsibility, and chances for personal development, ultimately boosting job satisfaction. This approach aims to enable employees to utilize their complete range of skills, granting them greater autonomy and authority in their decision-making processes (Davoudi, 2013; Choudhary, 2016). Studies show that organizations can enrich jobs by involving employees in key decision-making processes, offering greater responsibility and giving them the ability to self-evaluate their performance (Adeyemo, Sehoole & Cueno2015; Ruiz-Palomo, León-Gómez & García-Lopera, 2020). This approach increases engagement and transforms routine tasks into more fulfilling experiences; hence, it increases job satisfaction (Marta, Supartha, Dewi & Wibawa, 2021; Kavya, 2024).

Job enrichment significantly influences employee motivation and performance. Enabling employees to leverage their skills and participate in meaningful activities, enhances their self-satisfaction, self-efficacy, and overall job effectiveness. When employees are trusted with additional responsibility and decision-making, they are more likely to feel motivated and driven towards higher performance goals (Marta, Supartha, Dewi & Wibawa, 2021; Tumi, Hasan & Khalid, 2022). Studies conducted in government sectors have shown that enriched job roles lead to greater job satisfaction and directly contribute to improved organizational performance (Hijazi, 2020; Demircioglu, 2021; Tumi, Hasan & Khalid, 2022).

There is strong evidence linking job enrichment to increased job satisfaction. According to Hijazi (2020), the implementation of good governance principles—including transparency, fairness, equality, accountability, participation, and integrity—resulted in higher job satisfaction levels among employees in Jordan's public sector. Additionally, Demircioglu (2021) emphasizes that job enrichment encourages both innovation and autonomy. This includes top-down innovations, which originate from senior leadership, and bottom-up innovations, which arise from employee teams, both of which positively impact job satisfaction. This increased sense of ownership over tasks provides opportunities for achievement and growth, expands motivation, leads to long-term employee satisfaction, and therefore results in organizational success (Tumi, Hasan & Khalid, 2022).

However, the impact of job enrichment can vary based on job type and employee demographics. Cimini, Lagorio and Gaiardelli (2023) discovered that while job enrichment had a positive effect on both knowledge workers and manufacturing systems, operators, and knowledge workers benefitted more significantly in terms of job satisfaction and performance. Additionally, García, Gonzales-Miranda, Gallo and Roman-Calderon (2019) noted that age and career stage may influence how workers respond to enriched job roles, suggesting that the millennial generation may be more receptive to increased responsibilities, while older employees might prioritize job stability over role enrichment.

In conclusion, job enrichment is an effective strategy for improving job satisfaction, motivation, and performance. When organizations give employees more control and responsibility, they create opportunities for personal growth and fulfillment, ultimately enhancing organizational outcomes. However, organizations must consider contextual factors such as employee demographics and job types to optimize the benefits of job enrichment.

Job Satisfaction: Job satisfaction is a vital issue in the public service sector because of its direct impact on organizational performance and effectiveness (Steijn & Van der Voet, 2019; Ng, Franken, Nguyen & Teo, 2023). It has a strong correlation with individual productivity and overall success (Memon, Khahro, Memon, Memon & Mustafa, 2023). Defined as a positive emotional state arising from job experiences, job satisfaction includes the satisfaction of personal needs and expectations related to job roles and workplace settings (Thompson & Phua, 2012; Niebuhr, Borle, Börner-Zobel & Voelter-Mahlknecht, 2022). It is a multifaceted construct influenced by factors such as rewards, recognition, and the work environment (Akinwale & George, 2020; Basalamah, 2021). Busque-Carrier, Ratelle and Le Corff (2022) emphasize that job satisfaction emerges when employees' basic needs are met, fostering workplace happiness and commitment.

In today's diverse workforce, demographic factors like gender, age, and nationality significantly influence job satisfaction (Adamopoulos, 2022). Leaders must recognize these impacts and tailor reward systems to address the varied needs of employees (Akinwale & George, 2020; Basalamah, 2021). Aligning job satisfaction with demographic needs can enhance productivity and employee engagement (García-Rodríguez, Dorta-Afonso &

González-De-la-Rosa, 2020; Adamopoulos, 2022). Effective management of diversity is essential; leaders who embrace best HR practices tend to improve overall job satisfaction (Belias, Rossidis, Papademetriou & Mantas, 2022).

Recent data from Malaysia shows an increase in job satisfaction, with 75% of employees expressing contentment, particularly in the chemical manufacturing sector at 88% (Randstad, 2016). There are notable differences in job satisfaction levels between the public and private sectors. Public sector employees frequently report greater satisfaction linked to their organizational commitment compared to their private sector counterparts (Agarwal & Sajid, 2017). Conversely, private sector employees tend to express higher satisfaction regarding aspects such as management hiring practices, the exchange of opinions and feedback, and rewards, in comparison to those in the public sector (Chaudhary, Vemuri, Cavaliere, Verma, Manoharan & Bharti, 2024).

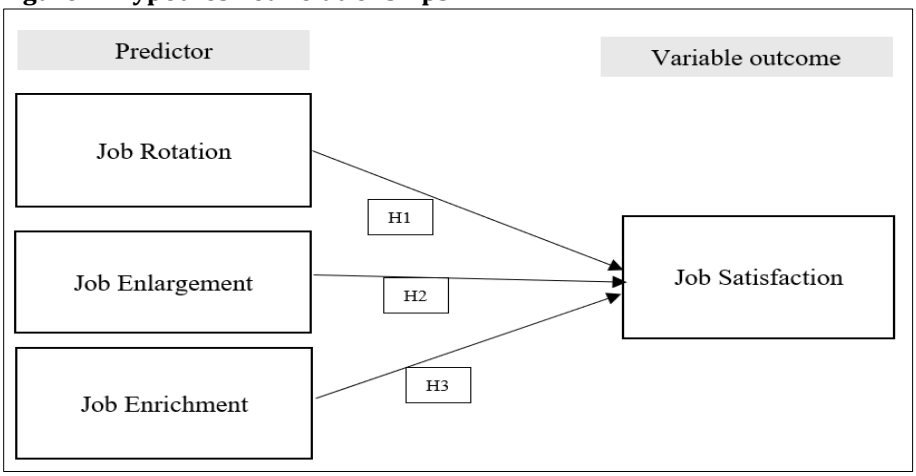
In conclusion, grasping the concept of job satisfaction demands a comprehensive perspective that takes into account differences across sectors and the dynamics of the workforce. Ongoing research is vital for creating effective methods to improve employee job satisfaction and productivity, particularly within the public sector.

Hypotheses development

This study outlines and examines three research hypotheses, with a discussion of their formulation following this introduction.

Job rotation, job enlargement, job enrichment, and job satisfaction are critical elements of organizational dynamics that significantly impact both individual and collective outcomes and behaviors (Harbani et al., 2022). Previous research indicates that increasing opportunities for job rotation, job enlargement, and job enrichment in the workplace can enhance employee motivation and performance. This suggests a strong link between these practices and job satisfaction (Suleman et al., 2022; Tantua, 2022; Tumi et al., 2022). A visual representation of the hypotheses is provided in Figure 1.

Figure 1: Hypothesized relationships



H1: There is a significant relationship between job rotation and job satisfaction.
H2: There is a significant relationship between job enlargement and job satisfaction.
H3: There is a significant relationship between job enrichment and job satisfaction.

3. Method

Research method: In this study, existing questionnaires that assess job rotation, job enlargement, job enrichment, and job satisfaction were adapted to suit the research context. To maximize respondent participation, data collection was carried out using paper-based surveys distributed by fieldworkers to the chosen sample. The collected data was subjected to thorough statistical analysis. Descriptive statistics, including frequency distributions, were used to summarize the data, while inferential statistics such as

correlation and regression analyses were applied to explore the relationships and predictive capabilities among the variables: job rotation, job enlargement, job enrichment, and job satisfaction. These analyses provided insights into the strength and direction of the associations, allowing for robust conclusions to be drawn regarding their interrelationships.

Population: The study included participants who held permanent positions within various public sector departments, meeting the defined inclusion criteria. The departments represented in the sample were: Commissioner of Buildings, One-Stop Centre, Management Services, Internal Audit, Building, Engineering, Health, Corporate Communication and Community, Valuation and Property Services, Town Planning and Landscape, Finance, as well as Laws, Licensing, and Enforcement. A total of 389 public sector employees (N = 389) participated in the study, ensuring a broad representation of different functional areas within the public sector.

Sampling: The research utilized a non-probability convenience sampling method to collect data from participants who were easily accessible to the researcher. The sample comprised only permanent employees from selected public sector departments, excluding temporary and part-time workers. This approach aimed to create a sample representative of the overall population. From a total population of N = 389 employees, G*Power software was used to calculate a minimum sample size of n = 77. The power analysis for multiple regression, which included three predictors, was carried out with an alpha level (α) of 0.05, statistical power of 0.80, and a medium effect size (f^2 = 0.15), following the recommendations of Erdfelder et al. (1996). To mitigate potential non-responses and other logistical challenges related to time and budget, the study adhered to the guidelines proposed by Bartlett et al. (2001) by increasing the minimum sample size by 10% to 30%. Consequently, this adjustment led to a targeted minimum sample size of 100 respondents. Table 1 provides a detailed demographic overview of the respondents.

Table 1: Demographic profiling of respondents

Variables		Frequency (N)	Percentage (%)
Gender	Male	128	71.1
	Female	52	28.9
Age	18 - 29	57	31.7
	30 - 39	55	30.6
	40 - 49	37	20.6
	> 50	31	17.2
	Total	180	100.0
Marital status	Single	66	36.7
	Married	114	63.3
	Divorced	-	-
	Total	180	100.0
Academic qualification	High school qualifications	79	43.9
	Pre-university qualification	42	23.3
	Certificate qualification	29	16.1
	Diploma	27	15.0
	Bachelor's degree	3	1.7
	Others	-	-
	Total	180	100.0
Department	Commissioner of Buildings	4	2.2

	One Stop Centre	3	1.7
	Management Services	12	6.7
	Internal Auditor	2	1.1
	Building	5	2.8
	Engineering	20	11.1
	Health	30	16.7
	Corporate Communication & Community	5	2.8
	Valuation & Property Services	12	6.7
	Town Planning and Landscape	30	16.7
	Finance	32	17.8
	Laws	2	1.1
	Licensing & Enforcement	23	12.8
	Total	180	100.0
Duration of service (years)	<1	19	10.6
	1 - 5	38	21.1
	6 – 10	26	14.4
	11 – 15	24	13.3
	16 – 20	17	9.4
	21 - 25	14	7.8
	26 – 30	2	1.1
	>31	40	22.2
	Total	180	100.0

Research Approach

The research methodology describes the strategy adopted by the researcher to achieve the research objectives, ensuring that the selected methods are suitable for the specific research questions posed (Kothari & Garg, 2019). This investigation utilized a quantitative research design and relied on a structured survey as the main data collection technique. A questionnaire was distributed to gather information from participants for statistical analysis, allowing the collected data to be quantified and generalized. By adopting a survey-based approach, the research aimed to systematically gather and analyze numerical data to explore patterns and relationships within the targeted population. This method is particularly effective for addressing research questions that require empirical data collection and statistical testing (Pathiranage, Jayatilake & Abeysekera, 2020).

Research design: The research design acts as a framework that outlines the methodology of the study, ensuring a systematic approach for the researcher to meet the research objectives (Creswell, 2018). In this study, a non-experimental design was utilized, which is typically applied to evaluate, forecast, and clarify the relationships among variables without direct manipulation (Sekaran & Bougie, 2016). More specifically, a correlational research design was used to explore two primary aims: first, to ascertain if a statistically significant relationship exists among job rotation, job enlargement, job enrichment, and job satisfaction; and second, to evaluate the strength and direction of these relationships within the target population (Saunders, Lewis & Thornhill, 2019).

Research instrument: The research utilized instruments to assess job rotation, job enlargement, job enrichment, and job satisfaction, enabling effective and economic data collection from a diverse group of respondents. This approach facilitated the gathering of information while minimizing any pressure on the

participants (Saunders et al., 2019). Before adopting the questionnaire, a thorough evaluation of the advantages and disadvantages of paper-based data collection was conducted. The benefits of paper-based questionnaires were found to outweigh the drawbacks, particularly in terms of generating higher response rates and enabling the collection of completed responses promptly. Moreover, the use of paper surveys facilitated real-time clarification of any ambiguities during the survey process, thus enhancing data accuracy. This method also provided an opportunity for the researcher to introduce the research topic personally, fostering a trusting environment that encouraged respondents to provide honest and thoughtful responses (Zikmund, Carr, Babin & Griffin, 2013).

The research used four adapted questionnaires initially designed by Tsuma and Omondi (2015) to investigate how job design influences job satisfaction among university staff. These questionnaires included 24 items that focused on job rotation, job enlargement, job enrichment, and job satisfaction. A five-point Likert scale was utilized to gauge participants' views and attitudes, ranging from 1 (strongly disagree) to 5 (strongly agree). To validate the instrument, a pilot test was carried out with 20 permanently employed public sector workers to evaluate face validity. For content validity, the questionnaires were reviewed by a public service practitioner and academic experts with doctoral qualifications in statistics and business management. This rigorous validation process ensured the robustness and accuracy of the data collection instrument, enhancing its methodological rigor and reliability (Saunders et al., 2019).

Data collection procedure: To streamline data collection, the study adopted a survey research approach, using a structured questionnaire as the primary instrument to collect standardized data from all participants. The questionnaire was administered to a representative group of employees in the Malaysian public sector. With 180 participants, the study secured a diverse and adequate sample size, improving the reliability and generalizability of the findings.

Data analysis: The survey data were first organized and visualized using Microsoft Excel. For a more detailed statistical analysis, SPSS version 28 was utilized. Correlation analysis was performed to explore the relationships between job rotation, job enlargement, job enrichment, and job satisfaction, with Pearson's correlation coefficient used to measure the strength and direction of these connections. Additionally, multiple regression analysis was applied to assess how job rotation, job enlargement, and job enrichment predict job satisfaction, offering a deeper insight into how these factors affect employee satisfaction levels.

4. Results

In this study, Cohen's guidelines for interpreting Pearson's correlation coefficient (r) were applied to assess the effect sizes of relationships between the variables. Specifically, a correlation of 0.1 was considered to represent a small effect, 0.3 indicated a moderate effect, and 0.5 or higher suggested a large effect, in line with the interpretations by Schober, Boer and Schwarte (2018). The Pearson correlation coefficients were calculated at a significance level of 0.01 (two-tailed) to measure the strength and direction of the relationships among the key variables: job rotation, job enlargement, job enrichment, and job satisfaction. These statistical measures provided a rigorous assessment of the degree to which the independent variables predicted variations in job satisfaction.

Descriptive statistics: Descriptive statistics were employed to display the data in table format, showing the frequencies and percentages of various demographic characteristics. A total of 180 participants (N = 180) took part in the study, as summarized in Table 1. The demographic information covered factors such as gender, age range, marital status, educational background, department, and length of service with the organization.

The results indicated that most respondents in the public sector were aged between 18 and 39, with 71.1% being male and 28.9% female participants. The respondents were asked to specify their departmental affiliations, which indicated that the largest representation came from the finance department (17.8%), followed closely by the health department and the town planning and landscape (16.7%), with licensing and enforcement (12.8%) and engineering (11.1%) also represented.

Moreover, a large proportion of the respondents (71%) indicated that they had been employed in the government sector for a period ranging from 5 to over 31 years. This extensive experience suggests that the participants had a thorough grasp of the research objectives and the significance of the questionnaire. This insight suggests that the public sector is prioritizing effective job design practices, particularly among its more experienced employees.

Reliability analysis: The Cronbach's alpha coefficients for sections B, C, D, and E of the questionnaire were computed to assess internal consistency and reliability. The results demonstrated excellent internal consistency, with all coefficients exceeding the acceptable threshold of $\alpha = 0.60$ (Hair, Celsi, Ortinau & Bush, 2010). Specifically, the reliability coefficients were as follows: job rotation scale ($\alpha = 0.656$), job enlargement scale ($\alpha = 0.796$), job enrichment scale ($\alpha = 0.728$), and job satisfaction scale ($\alpha = 0.776$). The results suggest that the scales applied in the questionnaire effectively and consistently measure the constructs under evaluation.

Correlation analysis: The analysis of correlations between job rotation, job enlargement, job enrichment, and job satisfaction showed coefficient values ranging from 0.225 to 0.816. Table 2 highlights that the correlation between job rotation and job satisfaction was particularly strong, with a coefficient of 0.816, indicating a strong positive relationship. In contrast, job enlargement had a much lower correlation of 0.225 with job satisfaction, pointing to a weak association. Additionally, a moderate correlation of 0.385 was found between job enrichment and job satisfaction. These results indicate varying degrees of relationships among the constructs, with correlations categorized as small (0.225), moderate (0.385), and large (0.816).

Table 2: Correlation analysis of job rotation, job enlargement, job enrichment and job satisfaction

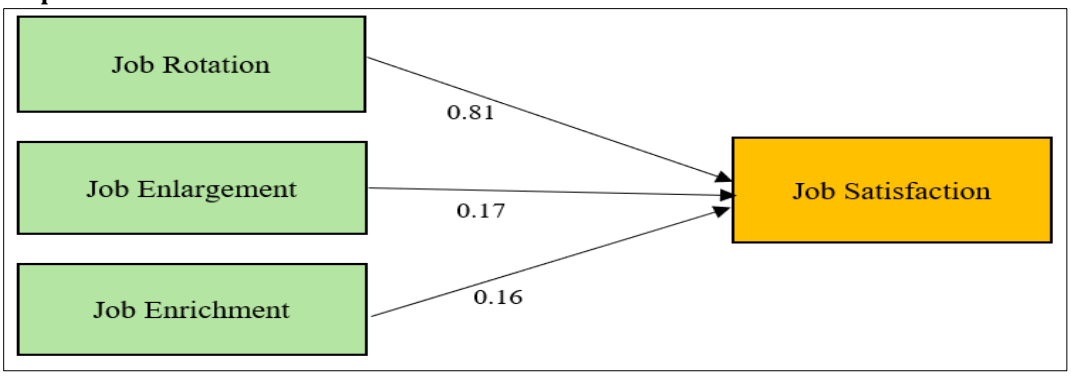
Variable		Job Satisfaction	Job Rotation	Job Enlargement	Job Enrichment
Job Satisfaction	Pearson Correlation	1	0.816**	0.225**	0.385**
	Sig. (2-tailed)		0.000	0.002	0.000
	N	180	180	180	180

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

Multiple regression analysis: In quantitative research, regression analysis is used to estimate the value of a dependent variable by analyzing one or more independent variables. This study utilizes multiple regression analysis to investigate how job rotation, job enlargement, and job enrichment, as independent variables, predict job satisfaction as the dependent variable (Hair et al., 2010).

The multiple linear regression results show that the independent variables explain 68% of the variation in job satisfaction, indicating a substantial effect size. The overall model is statistically significant, with an F-statistic of 83.02 ($p < 0.001$). Figure 2 highlights the notable relationships between job rotation, job enlargement, job enrichment, and job satisfaction. Additionally, the regression analysis confirms that job rotation ($B = 0.806$; $p = 0.000$), job enlargement ($B = 0.171$; $p = 0.007$), and job enrichment ($B = 0.159$; $p = 0.017$) are all significant predictors of job satisfaction.

Figure 2: Framework for job rotation, job enlargement, job enrichment and job satisfaction in the Malaysian public sector



The analysis of the relationships between job rotation, job enlargement, job enrichment, and job satisfaction confirms the hypotheses presented in Table 3. These results indicate that all the proposed hypotheses were accepted, suggesting a robust connection between the various dimensions of job design and employee satisfaction.

Table 3: Hypotheses accepted/rejected.

No.	Hypothesis	Result
H1	There is a significant relationship between job rotation and job satisfaction.	Accepted
H2	There is a significant relationship between job enlargement and job satisfaction.	Accepted
H3	There is a significant relationship between job enrichment and job satisfaction.	Accepted

Discussion of findings

A considerable amount of research has been carried out globally on job rotation, job enlargement, job enrichment, and job satisfaction. However, few studies have explored the interconnections between these four key constructs and how they influence one another (Suleman et al., 2022; Tantua, 2022; Tumi et al., 2022). Furthermore, the majority of existing literature pertains to various sectors outside of the public domain, leaving a noticeable gap in the exploration of these constructs within the public sector context. In particular, the Malaysian public sector has not been the focus of such investigations, resulting in a lack of benchmarks for this research (Alias, Othman, Hamid, Salwey, Romaiha, Samad & Masdek, 2018; Yusof, Zainudin, Rawi & Isa, 2023; Loo et al., 2024).

This study aims to achieve three main objectives: first, to determine if there is a relationship among job rotation, job enlargement, job enrichment, and job satisfaction; second, to analyze how well job rotation, job enlargement, and job enrichment predict job satisfaction in the Malaysian public sector; and third, to establish which of these factors—job rotation, job enlargement, or job enrichment—acts as the most significant predictor of job satisfaction in this context.

Determine if there are significant relationships between job rotation, job enlargement, job enrichment and job satisfaction.

The findings reveal a spectrum of relationships ranging from small to large, suggesting that each of these job design practices contributes to overall employee satisfaction. These results align with previous research, which has similarly identified connections among job rotation, job enlargement, job enrichment, and job satisfaction (Suleman et al., 2022; Tantua, 2022; Tumi et al., 2022).

The acceptance of the hypotheses posited in this study underscores the vital role that job design practices play in shaping employee perceptions of job satisfaction. This research emphasizes the necessity for organizations to integrate these job design strategies into their human resource management (HRM) frameworks. By doing so, organizations can enhance employee satisfaction and engagement, ultimately leading to improved performance and retention. The findings suggest that a comprehensive approach to job design is essential for fostering a productive work environment and achieving organizational goals.

Determine which job rotation, job enlargement, or job enrichment is the strongest predictor of job satisfaction in the Malaysian public sector.

The analysis conducted through multiple regression revealed that job rotation, job enlargement, and job enrichment collectively predicted job satisfaction within the Malaysian public sector. Notably, prior research has established that these three constructs are significant predictors of job satisfaction (Suleman et al., 2022; Tantua, 2022; Tumi et al., 2022; Alias, Othman, Hamid, Salwey, Romaiha, Samad & Masdek, 2018; Yusof, Zainudin, Rawi & Isa, 2023; Loo et al., 2024).

Job rotation has been identified as the most influential factor affecting job satisfaction among the predictors studied. This highlights the importance for organizations to focus on incorporating job rotation into their job design approaches. Meanwhile, it is essential to further investigate the effects of job enlargement and job enrichment on employee satisfaction. Overall, these findings emphasize the vital role that job design elements play in enhancing employee satisfaction, suggesting that organizations should consider these practices in their HRM strategies. Future studies should delve into the specific effects of job enlargement and job enrichment on

job satisfaction to gain a deeper understanding of how these elements interact within the organizational context.

Determine if job rotation, job enlargement, and job enrichment predict job satisfaction in the Malaysian public sector.
The results of this study, based on a multiple regression analysis, reveal that job rotation is the most significant predictor of job satisfaction for employees in the Malaysian public sector. This finding is consistent with earlier studies that have shown that job rotation, job enlargement, and job enrichment individually influence job satisfaction. However, it is important to note that there is a lack of literature that simultaneously investigates the important relationships between job rotation, job enlargement, job enrichment, and job satisfaction within the public sector context (Alias et al., 2018).

This study contributes uniquely to the existing body of knowledge by addressing this gap, highlighting the importance of job design elements in enhancing employee satisfaction. By focusing on these three constructs, the research underscores the need for public sector organizations to strategically implement job rotation, enlargement, and enrichment as part of their HRM practices to foster higher levels of job satisfaction among their employees. Future studies should further explore these dynamics to refine understanding and practical applications within the organizational framework.

Practical implications: The results of this study emphasize the important impact of job rotation on job satisfaction, as well as the predictive potential of job enlargement and job enrichment. These findings are vital for management and leadership in the public sector, as they point to the need for collaborative policies that enable employees to take an active role in designing their job roles and responsibilities. By reducing monotony and repetitive tasks, organizations can enhance employee engagement and satisfaction, which are essential for optimal performance.

Furthermore, the findings of this research go beyond just job design; they offer important insights for employees involved in strategic planning and forecasting. Considering the diverse challenges related to employee and customer behaviors in the public sector, it is essential to create a more engaging and fulfilling work environment. This strategy not only enhances individual job satisfaction but also improves overall organizational performance, effectively meeting the intricate demands of public sector stakeholders. Future studies should further investigate these aspects to deepen our comprehension of job design and its effects on employee outcomes (Suleman et al., 2022; Tantua, 2022; Tumi et al., 2022; Alias et al., 2018; Yusof, Zainudin, Rawi & Isa, 2023; Loo et al., 2024).

5. Conclusion and Recommendations

Limitations of the study: This research has an exploratory focus, and readers need to understand that the findings stem from a specific sample within the Malaysian public sector. As a result, these outcomes may not apply to other sectors, such as private businesses or nonprofit organizations in Malaysia. This limitation underscores the importance of being cautious when applying these conclusions to broader contexts or different organizational frameworks.

Recommendations: The insights gained from this study can guide strategic efforts to improve job rotation, job enlargement, job enrichment, and overall job satisfaction in the public sector. Organizations should look into implementing focused initiatives that resonate with these findings to cultivate a more engaged and satisfied workforce.

Future research: To expand on the current findings, future studies should conduct comparative analyses of effective management strategies for job design across various administrative contexts. Such investigations could deepen the understanding of best practices among public sector employees in Malaysia, ultimately enhancing job design frameworks aimed at boosting employee satisfaction and organizational effectiveness.

Conclusion: This study aimed to investigate the relationships between job rotation, job enlargement, job enrichment, and job satisfaction within the Malaysian public sector. Specifically, the study sought to determine

whether these job design elements not only correlate with job satisfaction but also predict it. Furthermore, the research aimed to identify which of these factors serves as the strongest predictor of job satisfaction. The research identified a notable gap in the existing literature regarding the relationships among job rotation, job enlargement, job enrichment, and job satisfaction within the public sector. This study helps fill that gap by providing robust evidence of how these factors interact. Importantly, the findings indicated that job rotation is the most significant predictor of job satisfaction among the variables analyzed. As a result, public sector organizations face the essential task of strengthening the links between job rotation, job enlargement, job enrichment, and job satisfaction. It is crucial for management to cultivate an environment that supports effective job design practices, allowing employees to rotate, enlarge, and enrich their roles and responsibilities. Implementing such strategies will not only improve job satisfaction but also enhance overall organizational performance and employee engagement.

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The Impact of Work-Related Stress on Employees' Performance: An Insight from the Malaysian Banking Sector

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Abstract: Work-related stress is inevitable especially in the service industry given the operational responsibilities and the nature of their work activities. This study examines the factors of work-related stress on employees' performance where the three components tested are work overload, role conflict, and monetary rewards. The survey was carried out from a sample of 70 employees from a banking company in Malaysia by using structured questionnaires and other secondary sources. The collected data was then empirically analyzed by using the Statistical Package for the Social Sciences (SPSS) software version 23. The findings revealed that work overload and monetary rewards, two of the three predictive variables, have a significant impact on an employee's performance. These findings were consistent with earlier studies conducted by several other scholars. Future research should consider including other predictors and investigating them in various industries or sectors.

Keywords: *Employees' performance, Work overload, Role Conflict, Monetary Rewards.*

1. Introduction

Employee performance is a crucial topic to be discussed as it directly impacts organizational success and goal achievement (Werdhiastutie, Suhariadi & Partiwi, 2020). Studies by Triansyah, Hejin and Stefania (2023), have found that effective performance leads to increased productivity and quality of work. Undeniably high-performing employees contribute to productivity, efficiency, and overall business growth, making their performance a key focus for management strategies. Nowadays, work-related stress is inevitable and can significantly affect employee performance and overall organizational success (Manurung & Triputra, 2024). Employees who experience high levels of occupational stress often exhibit lower results across various measures of organizational effectiveness, leading to decreased motivation and productivity. Banking staff, in particular, are a group known to experience a great deal of stress due to numerous stressors in their work environment, leading to decreased organizational performance, high error rates, poor work quality, high staff turnover, and absenteeism (Ajayi, 2018).

Stress is generated by the body's reaction to demands or challenges, which in turn triggers a series of physiological, psychological, and behavioral responses. As stated by Shahsavarani, Azad Marz Abadi, and Hakimi Kalkhoran (2015), stress can be defined as "a state of psychological and physiological imbalance resulting from the disparity between situational demand and the individual's ability and motivation to meet those needs. Work-related stress significantly impacts employee performance through both psychological and physiological mechanisms. Understanding these effects is crucial for organizations aiming to enhance productivity and employee well-being. For the psychological effects, Uba and Nuamah (2023) highlighted that excessive work-related stress causes cognitive dysfunction, diminishing overall performance. Despite these signs, stress can cause people to become less motivated at work and undermine their belief in career success (Putra & Pono, 2023). Work-related stress also triggers physiological changes, such as increased heart rate and pupillary response, indicating heightened stress levels during demanding tasks which lead to fatigue and decreased cognitive function, further impairing performance (Uba & Nuamah 2023).

Additionally, as competition grows, banking employees must cope with an extremely demanding work environment, which causes them to suffer from extreme stress due to various circumstances (Pandey, 2020). According to Mittal and Bakar (2018), excessive workloads can lead to burnout and decreased organizational commitment, as individuals struggle to meet the demands placed upon them. Moreover, employees' inability to

maintain a healthy balance between their work and family lives can also lead to work-family conflicts, which in turn cause stress and diminish their performance. According to empirical research, role conflict significantly negatively impacts employee performance, emphasizing that divergent expectations can result in lower motivation and productivity (Kamalia et al., 2022). On the other hand, Employee performance and monetary rewards have long been topics of interest, particularly in the banking industry (Jegatheeswari & Anandi, 2023). Numerous studies have delved into the nuances of this relationship, highlighting the various ways financial incentives can shape employee behavior and productivity.

Similarly, according to a study on the impact of rewards and recognition on employees' motivation and job performance, updated reward systems can significantly influence employee motivation and, in turn, positively impact the overall performance of the organization. It was discovered that financial incentives improve worker performance and increase their loyalty to the company (Mithunmita & Britto, 2021). Hence, insufficient pay will lead to the employee being demotivated thus dropping their performance. As stated by Ofosu-Adarkwa (2018), stress increases particularly for those working in the financial industry due to their job demand and security. Therefore, the correlation between work-related stress and employee performance is predominantly negative, with higher stress levels generally leading to lower performance (Lasminingrat, 2021). These stressors can create a disparity between the demands on employees and their ability to perform at their best, ultimately undermining the organization's overall performance. Consequently, it would be beneficial to investigate factors that significantly influence employees' performance in the banking sector.

2. Literature Review

Employee Performance: Employee performance is a critical factor in determining whether the organization achieves its goals. It refers to the outcomes individuals achieve in their roles, reflecting their ability to meet organizational goals through quality and quantity of work (Kuswati, 2020). It encompasses various factors, including work environment, leadership, and personal commitment. According to Iskamto (2021), employee performance is assessed based on the quality of work produced and the quantity of tasks completed within a specified timeframe. Hence, high performance is characterized by meeting or exceeding established standards and fulfilling their duties and responsibilities effectively and efficiently (Triansyah, Hejin & Stefania, 2023). As stated by Varun et al. (2023), improved employee performance is crucial for long-term viability since it improves productivity and raises standards of living, which stabilizes economies.

Work overload: Work overload, a common phenomenon in the modern workplace, can significantly impact an employee's performance, productivity, and overall well-being. Excessive workload coupled with long working hours and unrealistic expectations can lead to physical and emotional exhaustion, ultimately affecting an individual's ability to perform at their best (Li, 2016). Employees who are given more work than they can manage in a particular period are known as experiencing work overload, which can cause stress and potential decreases in performance. Numerous studies demonstrate that work overload has an extensive effect on employees' performance. As stated by Brailovskaia, Frahsek and Margraf (2022), an excessive workload can harm an organization's overall effectiveness by increasing job stress, causing burnout, and eventually lowering employee performance. Hence, this evidence indicates an excessive workload adversely affects employee performance (Siamsa and Aprilius, 2023).

Role Conflict: According to Anand and Vohra (2020), role conflict occurs when individuals have to deal with incompatible demands or expectations associated with a particular position in an organization. These conflicting demands can come from different sources, making it difficult to meet all expectations effectively. Role conflict emerges from competing expectations, scarce resources, and differing interests among team members (Pembi et al., 2023). As supported by Muspawi et al., (2023), it can hinder effective communication, leading to miscommunications and reduced collaboration among team members which impact individual performance. Studies by Hwang (2019), indicate that role conflict, particularly in healthcare settings, correlates with decreased organizational effectiveness and individual performance due to feelings of isolation and resource shortages. Thus, unresolved conflicts can result in unaccomplished goals and diminished overall performance, highlighting the need for effective conflict management strategies (Yıldız, 2021). Hence, this phenomenon is prevalent in organizational settings and can significantly impact productivity and employee satisfaction.

Monetary reward: The term "monetary rewards" describes financial or tangible benefits that are granted to employees in recognition of exceeding expectations or accomplishing goals, and which have a positive effect on their motivation and performance (Mithunmita & Britto, 2021). Undeniably reward is a strong motivator that significantly influences employees' performance since it can be used to measure an individual's productivity and inspire them to take responsibility for their work (Seng & Arumugam, 2017). Thus, effective reward systems, which include monetary incentives, are crucial for achieving organizational goals and retaining talent. Employee engagement and effectiveness in their jobs are therefore more likely to occur, which not only cultivates loyalty but also improves job performance (Satish et al., 2023). A significant positive relationship was established between monetary rewards and employee performance, emphasizing the need for competitive compensation practices whereas, poor implementation of the reward system will result in increased employee turnover and decreased performance (Ngwa et al., 2019).

3. Methodology

This study is cross-sectional, and the data was gathered by distributing a questionnaire to banking industry personnel. Upon the approval of the involved organizations, the respondents for this study were chosen at random from the obtained list of names using a formula from Microsoft Excel. A self-administered instrument was sent to the respondents via their institutional email addresses. The questionnaire was then analyzed using SPSS 23, and the association between the variables under this study and employee performance was investigated using multiple regression.

The measurements of the research instrument were adapted from the previous studies. *Employees' performance* construct was measured using the five dimensions adapted from Koopmans et al. (2014). Meanwhile, *workload* was measured adapted from Vijayan (2018), on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). The construct of *role conflict* was measured using 8 items adapted from Chin, You, and Chang (2012), and finally, the construct of *monetary* was measured using 8 items adapted from Sargana (2014) and Jelili (2016) on a five-point scale from 1 (strongly disagree) to 5 (strongly agree).

A total of 70 surveys were returned. Following an initial screening of the data, which included the assessment of outliers, straight-lining responses, and missing data, 70 responses in total were used as final responses. The results showed that 67.1% of the respondents were female, while the majority of respondents (98.6%) were Malay. Over half of those surveyed (55.7%) obtained a bachelor's degree.

4. Findings and Analysis

Internal Consistency: Cronbach's alpha was used in this study with a threshold value that should be 0.8 and above for Cronbach's alpha (Nunally & Bernstein, 1978). Table 1 illustrates the score values for Cronbach's alpha for constructing employees' performance, work overload, role conflict, and monetary rewards were 0.852, 0.787, 0.734 and 0.803, respectively. These values indicate that all constructs showed a high consistency and reliability.

Table 1: Mean, Standard Deviation and Latent Variable Correlation

	Mean	SD	EP	WO	RC	MR
Employees' performance	3.2589	.46883	**0.852**			
Work overload	2.8800	.58622	0.204	**0.787**		
Role conflict	2.5821	.53241	-0.037	0.590	**0.734**	
Monetary Rewards	3.0204	.58991	0.314	-0.011	-0.187	**0.803**

Note: EP = Employees' Performance; WO = Work Overload; RC = Role Conflict; MR = Monetary Rewards

Correlation analysis is used to determine the relationship between dependent and independent variables. Based on Pearson's analysis shown in Table 1, a relationship between the three predictors and employees' performance was examined. The study revealed no significant and positive correlation between work overload and employees' performance ($r = 0.204$, $p < 0.01$). Role conflict and employees' performance indicate a

significant and negative correlation ($r = -0.037$, $p < 0.01$). The remaining factor shows a significant and positive correlation between monetary rewards and employees' performance ($r = 0.314$, $p < 0.01$).

Multiple Regression Analysis: Multiple regression analysis was used to determine the linear relationship between independent variables and dependent variables. Additionally, this approach can also be used to determine which independent variable has the strongest influence on the dependent variable.

Table 2: Model Summary

Model	Beta (β)	Sig.
Work Overload	2.242	0.035
Role Conflict	-0.142	0.265
Monetary Rewards	0.228	0.016
R^2	0.158	
Adjusted R^2	0.119	
F-stat	4.120	
Significant value	0.000	

Table 2 indicates how the dependent variable can be explained by multiple regression analysis for this research. It can be seen that R^2 is 15.8%. This means that 15% of the variance in employees' performance is influenced by independent variables of this study which are work overload, role conflict and monetary rewards. Thus, another 84.2% of the variance can be explained by other factors that contribute to employees' performance. For this study, work overload is the major contributor to the employees' performance in the banking sector in Malaysia. Meanwhile, role conflict has the least contribution towards employees' performance. Thus, only H1 and H3 were therefore supported. For future studies, researchers can discover other variables in the banking field or other fields.

5. Conclusion and Recommendations

The findings suggest that the impact of work-related stress on performance is not straightforward, but rather is influenced by various factors. While high levels of stress can certainly harm performance, moderate levels of stress may enhance performance by challenging employees and motivating them to perform at their best. For instance, research has indicated that employees with higher levels of commitment and job experience are better able to manage the effects of stress and maintain high-performance levels (Herisma, Diantimala & Saputra, 2022). Conversely, employees with lower levels of commitment and experience are more likely to experience the negative effects of stress on their performance.

This underscores the importance of providing employees with the necessary resources and support to effectively manage work-related stress. The finding of the current research is similar to a previous study which found a positive and significant effect ($\beta=2.242$, $p=0.035$) between workload and employee performance, suggesting that a manageable workload can enhance performance (Miafara et al., 2023). As supported by Tilova (2024), employee performance is greatly impacted by workload, suggesting that optimal workload levels can result in better performance outcomes. Furthermore, statistical results of monetary rewards showed that the variable is significant in predicting the employees' performance. Elrayah and Semlali (2023), added monetary rewards are a strong motivator that increases employee performance and satisfaction. The study did note, however, that although financial incentives might encourage performance, businesses should carefully assess their incentive programs to make sure they complement overall goals and employee motivations.

Therefore, it is recommended for future researchers to replicate the study in other organizations by industries or sectors to enable a more comprehensive analysis and a larger sample size. Furthermore, as only 15.8% of the variance in employee performance was explained by the independent variables found in this study, other contributing factors should be selected for future research. Other methods should be used in future studies

considering the findings obtained were only dependent on the information gathered through the questionnaires that were distributed to the respondents.

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Integration of Big Data Analytics with Social Media: Theoretical Foundations, Applications and Implications

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Abstract: Big data and social media have become significant factors in shaping our modern society. Social media platforms offer a wealth of data, enabling corporations, scholars, and governments to gain valuable insights into human behavior, market trends, and social dynamics. The convergence of extensive data and social media has given rise to a fresh approach to making informed decisions and analyzing information. This paper explores the integration of big data analytics with social media platforms, focusing on the theoretical foundations, potential applications, and broader implications. By examining the synergy between real-time social media data and the analytical power of big data, this conceptual paper provides a comprehensive framework for understanding how integration can enhance business intelligence, decision-making, and innovation. Key areas of application, ethical considerations, technological challenges and future trends are discussed to offer valuable insights for both academic and practical contexts.

Keywords: *Big data, Big Data Analytics, Social Media*

1. Introduction

The creation of various channels and platforms in the current digital world has resulted in massive amounts of data being generated. This phenomenon has allowed organizations to obtain new insights and make sound decisions that were not accessible previously. Among the available channels, social media has prominently become a significant source of real-time data that depicts user behavior, preferences, and sentiments. Globally, billions of individuals generate a substantial amount of data on social media platforms daily where they share their interests, opinions and activities (Darwiesh et al., 2022a; Ghani et al., 2019a). The huge amount of data that was generated is called "big data" and it has been broadly studied recently.

"Big data" that have been collected either in structured, semi-structured and unstructured formats have been conducted in numerous research domains including health care, astronomy, social web and geoscience.(Hashem et al., 2015a). Social media content such as posts, tweets, and comments has considerably contributed to the generation of big data from various platform providers and websites (Ghani et al., 2019a; Kwon et al., 2014). Data analysis of social media will help people to understand societal events. At the same time, it also creates opportunities for organizations in terms of providing a competitive advantage. There's also the possibility of influencing political events or shaping the opinions of the public through this social media analysis. (Zachlod et al., 2022). In addition, the integration of big data analytics with social media offers a unique opportunity to improve knowledge-sharing practices, drive innovation, and improve overall performance.

From a conceptual perspective, this paper aims to explore the integration of big data with social media, providing a comprehensive framework that includes theoretical foundations, potential, applications and broader implications. This paper seeks to enhance academic literature and offer practical guidance for organizations by highlighting the key questions and identifying best practices.

2. Literature Review

Theoretical foundations

The theoretical foundation for this study on the integration of big data and social media can be established through several key concepts and theories. The first theory is big data theory. The core components of big data

analytics consist of 4 elements: Volume, Velocity, Variety and Veracity. Volume refers to huge quantity and variety refers to several types of data. Velocity indicates the rapid rate at which data is generated (Dubey et al., 2019). Veracity relates to data accuracy (Baig et al., 2019). These elements are of importance when examining the challenges and opportunities of using social media as a source of big data.

The second theory is the Social Network Theory. This theory looks at the relationships and interactions that happen among social entities, especially on platforms such as social media, where users connect and interact with each other. Big data analytics of social media may allow researchers to identify patterns of influence and information diffusion in such networks (Wasserman & Faust, 2014.).

The third theory is the Diffusion of Innovations Theory. This theory was developed by Rogers, (1962) describing the process of new ideas and technologies within societies. In that respect, social media platforms make the diffusing rate of innovations faster, and big data derived from them offer crucial cues on how innovations are adopted and disseminated (Ahmad Wani & Wajid Ali, 2015).

Social media

Social media are online platforms that facilitate interaction, allowing individuals to share and consume information with each other (Rahman & Reza, 2022). Social media applications use web-based technologies that facilitate the sharing of information, opinions and media among geographically dispersed and diverse groups (Saggi & Jain, 2018). Currently, there are several different categories of Social Media Applications. Applications such as MySpace and Facebook are widely considered traditional Social Media applications. This type of app allows users to exchange both private and public messages, post media, share opinions and connect with individuals and organizations. Over time other types of Social Media platforms began to appear, many of which were based on sharing media among users. Examples of this type of application include Pinterest, Flickr, Instagram, YouTube, and Snapchat. While each of these applications promotes the sharing of media between users (Oliverio, 2018).

When it comes to social media, some of the most common applications of big data include the discovery of trends, social media analytics, sentiment analysis, and opinion mining (Ghani et al., 2019a). Firms and organizations are adopting social media to acquire information from the users of social media websites to gain valuable insights for improving the quality of products, building brands, and increasing sales (Darwiesh et al., 2022a). Data collected from social media platforms enables practitioners to identify and segment key audiences, including influential social media users, while also enhancing the understanding of stakeholder perspectives and values (Wolf & Archer, 2018).

The extensive data set collected in structured, semi-structured, and unstructured formats has been extensively researched in various domains, including healthcare, astronomy, social web, and geoscience (Hashem et al., 2015). Additionally, organizations that deliberately include social media can cultivate transparent and genuine interactions with their audience. This aligns individual and collective behaviors with the organization's goals and objectives, hence fostering a healthy corporate culture (Mansour et al., 2024).

Integration of social media and big data

Social media has become increasingly significant in the realm of big data analytics. The integration of social media and big data represents a significant shift in how organizations acquire, process, and analyze data sourced from social media platforms. The integration of social media and big data is fundamentally supported by advanced technological infrastructure and sophisticated data analytical techniques.

Technological Infrastructure

Data collection tools, such as APIs and web scraping techniques, facilitate the efficient gathering of extensive data from social platforms by organizations. Storage technologies, including cloud computing and data lakes, effectively manage and store extensive datasets upon collection (Dewi et al., 2019). Frameworks like Hadoop and Apache Spark facilitate the management of complexity and scale associated with big data. This technology enables organizations to analyze substantial amounts of social media data efficiently, whether in real-time or through batch processing (Almajed et al., 2023).

Data types and Sources from social media

Big data analytics can profit from the vast amount of data available on social media. Textual data is one of the various sorts of text-based communication generated by users, and it includes status updates, tweets, comments, reviews, and other forms. This advancement allows us to better understand the public mood, user experiences, and new trends. Photographs, videos, and live broadcasts make up a major amount of the data acquired from social media platforms (Abu-Salih et al., 2021). With the increasing prevalence of visual content, brands and businesses can derive insights from user preferences, brand engagement, and trends in visual storytelling. Engagement metrics from social media platforms represent a significant type of data for big data analytics. This includes likes, shares, retweets, comments, and follower counts. Their perspectives address user engagement with content and its effects on the online environment (Ghani et al., 2019b; Hashem et al., 2015b).

Analytical methods

The data collected by various social media sites provides a different dataset for analytical purposes. As a result, numerous analyses, such as sentiment analysis and network analysis, as well as methodologies like data mining and machine learning, can be used to address the increased data generation on social media platforms (Darwiesh et al., 2022b). Techniques for sentiment analysis utilize natural language processing and algorithms derived from machine learning. This method offers a profound understanding of consumer perceptions and their emotional reactions. The acquisition of real-time feedback empowers brands to enhance their image and refine marketing strategies through the integration of sentiment analysis with social media analytics, thereby offering a thorough comprehension of consumer behavior (Rakibul Hasan Chowdhury, 2024).

Another approach is social network analysis. This technique models the dynamics and evolution of social networks by utilizing features such as network density and the locations of new node attachments to monitor commercial activities (Fan & Gordon, 2014a). Brands use social network analysis to identify key influencers and understand how information spreads.

3. Application of Big Data in Social Media

Social media big data analytics provide valuable insights into customer behavior, enabling companies to enhance their marketing strategies, promote innovation, and improve operational efficiencies. The applications of big data and social media encompass customer insights and market research, personalized marketing and advertising, product development and innovation, crisis management and public relations, as well as operational efficiencies.

Customer insights and market research

According to Lynn et al., (2015) Social media has evolved into a powerful platform that allows customers to search for and assess product reviews before making a purchase decision by using the platform. Advertising businesses can acquire valuable insights into how to present and prospective clients perceive their products in real-time by using data from social media sites. Companies are increasingly exploring the potential of big data to gain deeper insights into their customers, enhance their design processes, and deliver more personalized services (Tan & Zhan, 2017). Regarding big data analysis in marketing strategies, it is worth noting that every click made by a user while browsing the web generates a data stream. This data stream has the potential to contain valuable information about the user's preferences. By adopting data analysis techniques, companies can effectively identify trends in consumer preferences (Arena & Pau, 2020).

These benefits include the ability to create more accurate profiles of targeted customers and consumers, predict customer response to marketing messages and product/service offerings, personalize those messages, optimize production/service and distribution strategies, utilize more accurate assessment measures, and enhance digital marketing efforts. Gaining product/service insights, together with other tactics (Alshura et al.,2018).

For example, influencer profiling leverages social media to gain a comprehensive insight into users' backgrounds, preferences, and purchasing habits, thereby enhancing customer segmentation. Segmentation enables businesses to identify and target distinct groups, leveraging their differences to inform tailored strategies aimed at enhancing brand awareness and engagement for each segment. Influencer profiling aids in

pinpointing social community leaders or experts whose insights are crucial in product development and consumer-driven customer service. Methods for influencer profiling encompass social network analysis, topic modeling, and visual analytics. (Tan & Zhan, 2017).

Personalized marketing and advertising

User images can be efficiently generated using advanced data analysis. Organizations can create reliable user profiles by collecting and analyzing social media data on individuals' activities, interests, and consumption patterns. Besides age, gender, and location, these user images show their inner wants and psychological qualities. These graphics help companies reach their target clients and create tailored marketing plans to enhance their impact (Qin, 2024).

Big data analytics is also useful for evaluating marketing effectiveness. Businesses can gain a deeper understanding of the effectiveness and influence of marketing efforts by closely monitoring and analyzing key metrics such as advertisement click rate, conversion rate, and user satisfaction in real-time. This service assists companies in identifying marketing challenges, adjusting their strategy, optimizing budget allocation, and enhancing marketing efficiency. Ultimately, big data analytics can help companies anticipate market trends and analyze patterns. Enterprises can stay ahead of industry trends and anticipate future developments by closely monitoring and analyzing data from social media on popular subjects and events. This assists companies in identifying market opportunities, strategizing for the future, and developing innovative marketing plans (Qin, 2024).

Product development and innovation

The rise in data volume, when collected accurately, provides valuable insights that organizations can utilize to enhance product development. (Tan & Zhan, 2017). The extensive data available facilitates trend analysis and social media analytics, crucial for recognizing changes in customer preferences, behaviors, and sentiments. Organizations can leverage these tools to adjust and enhance product features in response to changing demands, while simultaneously positioning themselves for the creation of next-generation products or entirely new categories. This process enhances innovation by allowing designers to interact with both loyal and average customers, thereby deepening their understanding of market demands (Fan & Gordon, 2014b). These data-driven strategies promote informed and flexible product development.

Crisis management and public relations

When it comes to gathering and spreading information, social media is often seen as a more efficient and accessible option compared to traditional sources. It has features like searchability, easy sharing, real-time updates, and the ability for anyone to publish and reach a large audience (Fang et al., 2019). Social media platforms have proven to be essential instruments for information collection during emergencies, whether resulting from natural disasters or human-made events (Khatoon et al., 2021).

The first example of this particular use of social media relates to the 9/11 attacks in 2001. During the attack, both FEMA and the Red Cross used web-based applications to communicate with the external and internal public regarding the status of the relief effort (Jefferson, 2002; Reuter et al., 2018). As shown by previous research, social media data are used in public relations mainly for steering issues, managing crises, and enhancing customer relationship management. They also underpin the strategic communication planning, messaging, and evaluation activities central to today's data-informed public relations (Akter et al., 2016; Colleoni, 2012; Coursaria and van Osch, 2015; Zerfass and Volk, 2018). Analyzing social media data enables emergency responders to gain a comprehensive grasp of the on-site situation, pinpoint affected areas, and enhance the efficacy of relief activities (Imran et al., 2015). Emergency response authorities, law enforcement agencies, firefighters, non-governmental organizations, and the public can utilize this information to enhance real-time situational awareness, acquire a thorough understanding of user requirements, and make informed decisions to improve disaster response initiatives (Reuter et al., 2018).

4. Broader Implications

Ethical and privacy considerations

There are various ethical and privacy issues involved in the collection and analysis of social media users' data. Usually, social media users are required to fill in their details like their names, emails, and places for profile creation. The site can use this data to enhance its target users and influence the users' activity on the site. This information can however be used for more evil activities like scamming and stalking (Dhiman, 2023). According to (Beldad, de Jong, & Steehouder, 2011), the dangers associated with personal information sharing vary depending on the amount and type of information shared on Social Media Platforms. For example, Facebook collects data from all devices where it is installed or from which its services are accessible via a unique login ID. Depending on the permissions granted on Facebook, it can collect data such as device location via GPS, Bluetooth, or Wi-Fi signals (Kumar & Nanda, 2019).

For businesses to successfully leverage big data and social media, it is essential for them to successfully navigate the regulatory framework surrounding data privacy and protection as well. Several regulations, including the General Data Protection Regulation (GDPR), place stringent limitations on the collecting, processing, and storage of sensitive information. To avoid any legal ramifications and to establish confidence with their users, organizations have a responsibility to ensure that they comply with these standards. This includes implementing robust data protection measures and conducting regular audits (Paul, 2024).

Technological challenges

The technology presents a significant challenge for academics working with social media data, mostly due to the limited availability of relevant tools on the market. There is a growing need for Big Data tools and applications in the industry, emphasizing the significance of accessibility for both business users and data scientists. The spur of this movement is mostly fuelled by the growing utilization of unstructured social media data across several disciplines (Jeble et al., 2016). Organizations must invest in the necessary infrastructure and technologies to handle these challenges. This includes adopting scalable big data solutions, employing advanced data analytics techniques and integrating distinct data sources.

5. Future Trends

Numerous new trends are emerging in the realm of big data integration with social media, which is ongoing. Examples of these trends include the application of artificial intelligence (AI) and machine learning to enhance data analysis, the ubiquity of real-time analytics, and the increasing importance of data governance. Organizations must stay abreast of these changes to preserve their competitive advantage and capitalize on the opportunities offered by big data and social media. Included in these components are investments in artificial intelligence technologies, the enhancement of real-time analytics capabilities, and the implementation of stringent data governance protocols.

Conclusion

Big data analytics integrated with social media may bring a paradigm shift in enterprises, research, and policy-making. The large volume of real-time data generated through users of social media creates an opportunity to analyze human behavior, market dynamics, and social trends. This paper analyzed the theoretical basis and practical implementation of such integration, citing the ability of the integration to enhance decision-making, foster innovation, and lead to competitive advantage. However, there are challenges in terms of ethical considerations, privacy, and technological infrastructure that must be judiciously managed. Through the help of addressing such issues and using emerging trends, big data and social media can be exploited to the fullest by businesses.

Summary of findings

This research aims to explore the theoretical, conceptual, and practical implications, as well as broader impacts, of integrating big data analytics with social media. The amalgamation of different technologies creates great opportunities for knowledge sharing, innovation, and better organizational performance.

Implications for Practice

Organizations can leverage the insights presented in this article to build strategies for effectively integrating big data and social media. This entails the adoption of optimal methodologies for data acquisition and examination, the resolution of ethical and privacy issues, and the allocation of resources towards requisite technologies and infrastructure.

Future research Directions

Future research should investigate the practical uses of big data and social media integration using a range of different scenarios. This includes conducting empirical research to evaluate the models and frameworks supplied, investigating the long-term impact on organizational performance, and exploring new technologies and trends.

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Zakat Distribution in Healthcare Services: Proposed Model For Zakat Beneficiaries (Asnaf) in Malaysia

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Abstract: Recently, the cost of medical care and treatments has been increasing yearly, putting pressure on the patient, especially the poor and needy (asnaf). The availability of zakat fund provided to patients who cannot afford to pay their medical bills is minimal and the impact of zakat fund on the healthcare industry has not yet been fully acknowledged. Hence, this paper aims to discuss the role of the Zakat fund in providing healthcare services to Zakat beneficiaries and propose a Zakat distribution model as financial assistance in the healthcare services for Asnaf in Malaysia. To address the underlying problems and maximize the application of zakat funds in the healthcare industry, zakat institutions must be managed efficiently. The proposed model holds significance in improving zakat beneficiaries' access to healthcare services and could enhance the quality of life for Asnaf toward better well-being in Muslim society. Since this is a conceptual study only, no data is collected in this study. However, future research is required to verify the proposed model that could assist the zakat institutions in Malaysia to adopt alternative techniques in their zakat collection and distribution to be channeled in the healthcare sector.

Keywords: *Zakat, asnaf, healthcare, zakat distribution*

1. Introduction

Zakat is an act of socio-financial worship obligatory for every eligible Muslim based on the Quran, Hadith and Ijma. The literal meaning of Zakat means to purify or to grow whereas Zakat is considered as a purification of one's wealth and ensuring the wealth is being distributed to the eligible groups. The concept of Zakat emphasizes social justice and the responsibility of individuals to support those in need. Zakat is not only a religious duty but also a means of fostering community solidarity and reducing economic inequality. By redistributing wealth, Zakat helps to alleviate poverty, provide for the welfare of the less fortunate, and promote a more equitable society. Zakat highlights the significance of fairness and openness in allocating zakat contributions to the underprivileged as mentioned in Surah At-Tawbah verse 60 meaning:*"(Alms are for the poor and the needy, and those employed to administer the (funds); for those whose hearts have been (recently) reconciled (to Truth); for those in bondage and debt; in the cause of Allah and for the wayfarer: (thus is it) ordained by Allah, and Allah is full of knowledge and wisdom."*

Zakat acts as a financial tool for the needy and the poor to improve their living standards. Zakat strengthens social interactions between rich and poor, reduces injustice, solves social problems, transforms spirits, and mitigates societal conflict and disagreement (Majed and Redzuan, 2023; Akram and Afzal, 2014). In Malaysia, Zakat institutions play a crucial role in the collection, management, and distribution of Zakat funds. These institutions are primarily responsible for ensuring that the Zakat collected is efficiently distributed to eligible recipients according to Islamic principles. The method of Zakat distribution varies according to the needs of the eligible groups either in terms of direct financial assistance, educational support, healthcare assistance, economic empowerment programs, housing assistance or debt relief (Ab Rahman et al., 2023). Though the activities of Zakat distribution are being administered by the States, the payments of Zakat funds have yet to reach their full potential and some argue that it is not effectively distributed which results in negative perceptions of Zakat management if it is not addressed adequately (Johari, 2023; Hairunnizam and Radiah, 2010a).

Recently, the number of Zakat beneficiaries (or asnaf) who struggled financially has been increasing after post-pandemic Covid-19 which prevented them from receiving proper medical care. Many of these people live below the poverty line, making it hard to afford consultations, treatments, medications, and procedures. Shahrom et al. (2022) indicate that 32.7 million people who live in Malaysia confront several health issues and one major obstacle is the high expense of healthcare. This is especially true for vulnerable populations like the Asnafs, who are impoverished and have little financial resources. The COVID-19 pandemic in the country had a

significant impact on the country, with an estimated 32.8% of the total population having contracted the virus by the end of December 2021 (Jayaraj et al., 2022). Despite the availability of remedies, the exorbitant cost of healthcare continues to serve as a deterrent to access, as per Cao and Selvaratnam (2023). This includes nursing services, prescription medications, medical equipment, and consultations.

The change in current healthcare systems in Malaysia has resulted in the rise of medical costs both in public and private health facilities, as seen by the growing costs of prescription medications, doctor visits and consultation fees particularly for specialist treatments. These rising costs have a substantial influence on the private health sector as well as the government (Zin et al., 2023b). A study conducted in Selangor found that there are a growing number of people turning to zakat centers for financial assistance as a result of the spike in healthcare costs. The situation draws attention to the difficulties that lower-income patients have in receiving high-quality care at private facilities, particularly for chronic illnesses. It also highlights the necessity of sustainable financing models to guarantee equitable access to healthcare services for all facets of Malaysian society (Khalib, 2023). In addition, Abg Marzuki et al. (2021) found that lack of medical awareness worsens the asnaf's health. Preventive treatment and routine medical checks are unfamiliar to most Zakat beneficiaries. Ignorance can waste medical resources and misdiagnose minor health conditions as serious ones. Cultural and educational limitations may also make modern medical techniques harder to understand and trust. Consequently, maintaining good health and managing chronic illnesses requires continuous medical attention, which is difficult when one is financially unstable.

Hence, the primary objective of this paper is to discuss the role of the zakat fund in providing healthcare services to zakat beneficiaries and to propose a zakat distribution model as financial assistance in the healthcare services for asnaf in Malaysia. To guarantee the financial support and accessibility of zakat beneficiaries, the utilization of zakat funds in healthcare is considered essential in the pursuit of these objectives. Access to life-saving care should not be impeded by financial constraints; rather, zakat funds can be allocated to support treatments, medications, and diagnostic tests for individuals who are unable to afford them. Furthermore, private hospitals may allocate funds from zakat to individuals who are not financially stable and require access to the fundamental healthcare system for their health and well-being (Bayraktar and Sencal, 2022). As this paper exclusively concentrates on the conceptual paradigm of zakat distribution in healthcare services, no data has been collected to date. The proposed model serves as a valuable reference that can be used by all zakat institutions to improve the efficiency and effectiveness of zakat distribution, thereby enabling them to reach a greater number of asnaf in financing their healthcare services. The implication of this model could benefit the community in eradicating poverty and enhancing social well-being which could indirectly have a positive influence on the nation's economic growth.

The subsequent section of this paper delves into the literature regarding the roles of zakat in healthcare services. The next part explores on current practice of the zakat distribution method in the healthcare facilities available in Malaysia. Following that, this study proposed an effective zakat distribution model in healthcare services to be applied by all zakat institutions and the last part of this paper concludes the proposed model with some recommendations for future research.

2. Literature Review

Current Healthcare Services in Malaysia

Malaysia has a dual-tiered system of healthcare services a government-led and funded public sector, and a booming private sector creating a dichotomous public-private system of healthcare services since the 1980s (Quek, 2014). Private care services are primarily provided by private or general health clinics and hospitals, while public services are comprised of government-run public health clinics and hospitals. Public health services are administered by the Ministry of Health through its local, provincial, and district health offices (Jaafar, 2013). The federal government's general revenue and tax receipts are the primary sources of funding for the public health program. Consequently, patients are only required to pay nominal fees to obtain high-quality healthcare from hospitals and clinics. In contrast, the private health care system is funded by either the patients themselves or private health insurance (Jaafar, 2013). This dual-tiered healthcare system has been continued until today though there are a few suggestions to create a unified system to integrate fully public and private sectors that can be declared as a national healthcare policy offering universal access to every citizen.

However, as of today, the partnership between the public and private health sector is limited only to some critical illnesses of medical treatments and medical technology for the healthcare betterment of Malaysian citizens (Yeganeh, 2019).

According to the World Health Organization (2022), since the pandemic COVID 19 in 2020, the majority of world governments including Malaysia have extremely high spending in the healthcare sector with per capita public health expenditures hitting a record high across all income brackets. In contrast, individual and family out-of-pocket healthcare spending decreased in 2020, likely because fewer people were using medical services (World Health Organization, 2022). In 2020, low-income nations will get more money per person from international aid than in 2019. In keeping with the initial prevention, detection, and treatment demands of the pandemic, per capita spending surged dramatically for both preventive care (by 32%) and inpatient services (by 10%). Between 2019 and 2020, funding for governance and administration increased by 7%, medical goods by 3%, and outpatient care by 1% (World Health Organization, 2022). Employers, government officials, and other public agencies face budget constraints due to the rapid increase in healthcare expenditures worldwide.

Zakat Institutions in Malaysia

The state administration in Malaysia is the sole authority over Islamic affairs. The State Islamic Religious Council (SIRC) is the exclusive trustee of Muslim revenues, including waqf (endowment), zakat, and mal. In Malaysia, there are 14 states, each of which has an independent zakat institution that collects zakat from eligible Muslims and distributes it to zakat beneficiaries for social, educational, economic, and human development, as well as religious affairs (Wahyu & Anwar, 2020). Masruki (2020) examines a variety of zakat-funded initiatives that have generated numerous skillful entrepreneurs. The success stories of zakat distribution, including zakat for children of aṣnāf who excel in education, zakat to subsidize home construction, and zakat to subsidize medication costs for critical illnesses such as dialysis are frequently being published in prime news and social media. The zakat function of certain SIRCs has been corporatized to enhance its efficiency and mitigate negative public perceptions, as reported in local publications, in response to the high expectations of stakeholders of zakat institutions (Masruki et al., 2016). As of today, Malaysian zakat institutions are governed by at least two structures: i) non-corporatized, which means that the institution is directly under the SIRC or a separate entity that is still directly governed by the SIRC; and ii) corporatized, which means that the institution is either responsible for: a) both collection and distribution, or b) collection only (Masruki et al., 2021).

Table 1: presents the governance structures of zakat institutions in each state

Governance Structure	Zakat Institutions	State
Non - corporatized	Majlis Agama Islam & Adat Melayu Terengganu (MAIDAM)	Terengganu
	Majlis Agama Islam Kelantan (MAIK)	Kelantan
	Majlis Agama Islam dan Adat Istiadat Melayu Perlis (MAIPs)	Perlis
	Majlis Agama Islam Johor (MAIJ)	Johor
	Tabung Baitulmal Sarawak (TBS)	Sarawak
Corporatized	Lembaga Zakat Selangor (LZS)**	Selangor
	Perbadanan Baitulmal Negeri Sembilan (PBNS)**	Negeri Sembilan
	Lembaga Zakat Negeri Kedah (LZNK)**	Kedah
	Zakat Pulau Pinang (ZPP)**	Pulau Pinang
	Majlis Agama Islam dan Adat Melayu Perak (MAIPk)**	Perak
	Pusat Pungutan Zakat Wilayah Persekutuan (PPZ)*	Wilayah Persekutuan
	Pusat Kutipan Zakat Pahang (PKZP)*	Pahang
	Pusat Zakat Melaka (PZM)*	Melaka

**** Zakat Collection and Distribution, * Zakat Collection only**

(Source: Adapted from Masruki et al., 2021)

Role of Zakat in Healthcare Services

Zakat which is part of a fundamental aspect of Islam, serves as a mechanism for promoting fairness in wealth distribution and social welfare, encompassing the provision of essential needs like healthcare for the less fortunate in society (Al-Bawwab, 2023). The Quran and Hadith emphasize the importance of caring for the sick and vulnerable, highlighting values of equity and compassion. Through zakat contributions, Muslims extend support to individuals facing challenges including those lacking access to healthcare services, thereby fulfilling

a moral duty and upholding the principles of social justice and humanitarianism. This concept of zakat is consistent as mentioned in prior literature that Zakat is the main aspect of determining social welfare in healthcare, income and education at the better scale in ensuring a healthy life, securing education quality and reducing income inequalities (Sharofiddin, 2019; Hambari et al., 2020; Jastacia and Asyifa, 2022). The utilization of zakat funds for healthcare purposes during crises such as the COVID-19 pandemic underscores its role in addressing socio-economic disparities and ensuring the well-being of the community. This is supported by Akmal et al. (2021) review of the literature on the role of zakat from Southeast Asia either Muslim or non-Muslim countries, which found that zakat is being distributed for healthcare purposes and can support medical health, especially during pandemic crises since zakat is known to be an alternative form of human welfare. By incorporating zakat into healthcare services, these institutions uphold zakat's essence as an economic tool for social and economic justice, particularly during crises such as the Covid-19 pandemic, when zakat has been used to reduce poverty and address the socioeconomic needs of affected communities (Zainuddin and Rosmini, 2022). This integration not only fulfills the religious responsibility of zakat but also acts as a tool to develop community relationships and foster self-reliance, in line with Islamic teachings on charity and solidarity.

3. Current Zakat Distribution Practices in Healthcare Services in Malaysia

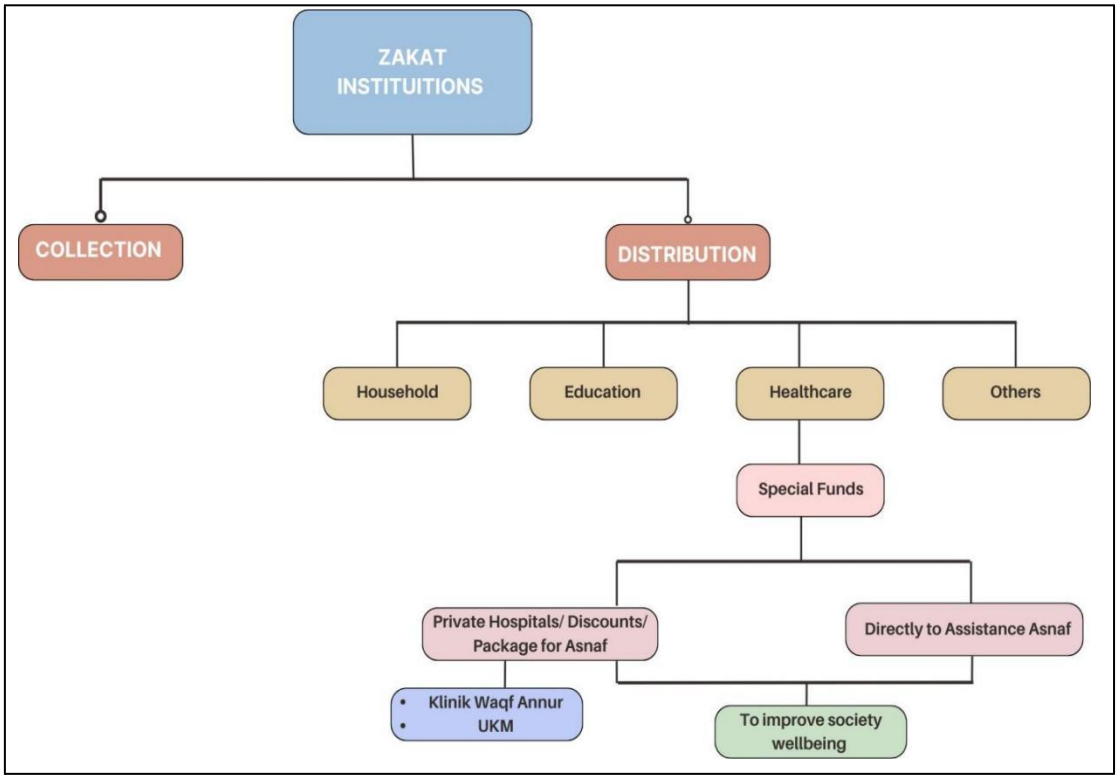
In Malaysia, the distribution of zakat is distributed to beneficiaries (asnaf) in a variety of methods, such as monthly financial aid, financing for small businesses and livestock, and assistance with medical expenses (Ab Rahman et al., 2023). Medical zakat specifically assists patients who are unable to pay for their care, to reduce the financial burden that the impoverished and needy face in both public and private healthcare facilities. Based on attributes of asnaf as per Lembaga Zakat Selangor, zakat for medical purposes is restricted to asnaf al-gharimin. Asnaf al-gharimin is Muslims unable to pay off debts incurred for fixing societal issues or fundamental necessities whereby the debt must be by Islamic law and be due for settlement (Lembaga Zakat Selangor, 2020). Further, Putra et al. (2023) suggested that the distribution of zakat funds may be utilized to start outreach programs and specialized clinics that serve disadvantaged populations such as low-income families, refugees, and poor communities. By doing preventive treatment and health education, these programs not only meet communities' immediate healthcare needs but also give them the tools they need to live healthy lives. Meanwhile, to enhance the efficiency of medical zakat distribution, Al-Bawwab (2023) mentioned that the zakat fund is being utilized to develop patient welfare programs that offer financial assistance to people who are unable to support themselves to treat their disease. This involves paying for necessary support to patients during their illness and recuperation, such as medical bills, transportation expenses, or necessities.

There are two primary examples of current zakat distribution practices in healthcare services are Waqaf An-Nur Hospital also known as KPJ Healthcare Berhad (private entity) and Hospital Canselor Tuanku Muhriz (HTMC) of UKM Hospital (public entity). To begin, Johor Corporation established Waqaf An-Nur to provide affordable healthcare in Malaysia, with a particular emphasis on low-income groups. This initiative is overseen by WANCorp and comprises a structured Waqaf An-Nur (KWAN) clinic system in addition to their mobile clinic service. The Waqaf An-Nur Hospital (KPJ hospital) in Johor, which operates 24/7, is a hospital concept that utilizes the waqf platform. The implementation of waqf healthcare is successful due to the reduction of the hospital's financial burden on the impoverished and its 24-hour operation (Daud and Rahman, 2017). The hospital charges minimal fees for all services and is supported by the waqf, baitulmal (zakat fund), and certain NGOs, ensuring that the quality of care provided is comparable to that of private or government facilities. Even though KWAN operates multiple dialysis centers, it is imperative to address significant health requirements in multiple locations. This form of comprehensive service alignment illustrates the potential of waqf to enhance health accessibility, promote social welfare, and promote better life conditions (Waqf An-Nur Corporation, 2023).

The second example is UKM Hospital, named Hospital Canselor Tuanku Muhriz (HCTM), through its Zakat Centre, which provides a comprehensive array of healthcare services that are specifically designed for Zakat beneficiaries. This initiative is designed to alleviate the financial burdens associated with medical care for the economically disadvantaged. Some of the key programs include “Bantuan Rawatan Perubatan” or Medical Treatment Aid, covering various medical treatment costs, and the Medical Treatment Aid, which provides necessary medical equipment such as wheelchairs and hearing aids. In emergencies, the “Bantuan Wang

Kecemasan" or Emergency Money delivers immediate financial aid to cover unexpected medical expenses, ensuring timely and essential care. Furthermore, the "Bantuan Musibah/Bencana Alam" or Natural Disaster Relief program assists individuals affected by natural disasters, ensuring they receive necessary medical support and supplies. The hospital's proactive approach also involves community outreach to raise awareness about available healthcare services and encourage eligible individuals to seek assistance (HCTM – Hospital Canselor Tuanku Muhriz UKM, 2020). This holistic integration of zakat into healthcare services not only addresses immediate medical needs but also promotes long-term health and well-being among vulnerable populations. UKM Hospital, HCTM exemplifies how Islamic social finance can enhance healthcare access, thereby improving the quality of life for those in need (Ab Rahman et al., 2023). Further study conducted by Ab Rahman et al., (2023) revealed a large number of asnaf are unaware of the existence of medical zakat money and the steps necessary to obtain it which resulted in the underutilization of resources. The study, which involved qualitative interviews with beneficiaries of asnaf al-gharimin at Hospital Canselor Tuanku Muhriz UKM (HCTM), found that although the medical zakat aids offered by HCTM-LZS were found to be beneficial, there is still a great need to raise asnaf's awareness of these services. Besides that, Majed and Harena (2023) identified there is a significant lack of educational programs for Asnaf focused on enhancing their health awareness. Without adequate education and awareness initiatives, the asnaf are less inclined to pursue medical attention or engage in preventive health care. The lack of advertising and public health education programs that inform these populations about the importance of regular medical examinations and healthy lifestyles leads to this deficiency.

Figure 1: Proposed Zakat Distribution Model in Healthcare Services



(Source: Author's Own)

Based on Figure 1, this model emphasizes the role of zakat institutions as a collection and distribution function to administer zakat funds. As the primary distribution agent of zakat funds, they can be specifically allocated to healthcare sectors. Zakat institutions have the option to directly provide monetary funds to healthcare facilities (whether public or private) by offering special package treatments for asnaf (such as health screenings or treatment for any illness) to improve the health of asnaf. Other than that, the distribution practice could also be conducted through the conventional method, which involves providing direct assistance to asnaf who

request medical aid from zakat institutions. In addition, zakat institutions may allocate funds to public hospitals to accommodate the necessary health facilities and equipment to facilitate the treatment and accessibility of zakat beneficiaries (asnaf) in light of the budget constraints imposed on public healthcare facilities. The general well-being of the society in Malaysia could be improved if this distribution practice is implemented efficiently and effectively.

The proposed zakat distribution model is of great importance to zakat beneficiaries, as the current high cost of healthcare is a primary obstacle to their access to healthcare services. The cost structure of the healthcare system in Malaysia has resulted in significant challenges for individuals with lesser incomes, such as the asnaf, even though it has improved (Khalib, 2023). According to a study conducted by Cao and Selvaratnam (2023), the expansion of healthcare coverage in Malaysia has resulted in an increase in healthcare expenditures due to the country's expanding economy and the increasing demand for medical services. Jayaraj et al (2022) discovered that Malaysia's healthcare system has been enhanced; however, the high cost continues to pose a challenge for the country's Asnaf population. Broad measures that enhance healthcare coverage and reduce financial barriers are required to resolve this issue and ensure equitable access for all. Furthermore, Firdaus et al. (2023) discovered that the accessibility and affordability of healthcare for Asnaf can be substantially improved by fortifying public-private partnerships. Financial incentives, innovative alternatives such as telemedicine, and private sector infrastructure expenditures can all contribute to an increase in service availability. Through collaborative methods, shared resources, and capacity-building initiatives, it is feasible to enhance the quality of care and efficiency. Although healthcare provides essential treatment in remote regions, technology such as digital health records can expedite the delivery of services. For example, Klinik Waqf An-Nur, which is affiliated with Majlis Agama Islam Negeri Johor and KPJ Healthcare Berhad, offers treatments to asnaf patients for an affordable price of RM10 (WANCorp, 2023). Through the implementation of transparent governance, ongoing evaluation, and long-term sustainability, this type of collaboration will ensure a fair and effective allocation of resources, thereby improving the Zakat healthcare service and reducing disparities for the underprivileged.

4. Conclusion and Future Research

In conclusion, this paper has emphasized the substantial potential of zakat funds to improve healthcare services for zakat beneficiaries, particularly those who are poor and needy (asnaf) who experience substantial financial challenges in seeking medical care. These challenges are further exacerbated by the rising costs of healthcare services, necessitating the development of effective mechanisms for the utilization of zakat funds to support comprehensive healthcare services, enhance accessibility, and provide financial assistance. The importance of effectively managing zakat institutions is further illustrated by a closer look at their function in the healthcare sector. Efficient management will guarantee that zakat contributions are distributed fairly and transparently, thereby enhancing public confidence in these institutions. Hence, this paper proposes a zakat distribution model for managing zakat funds, which includes collaborations with private healthcare providers to offer subsidized medical services to zakat beneficiaries. This approach aims to bridge the gap in healthcare accessibility and affordability for low-income individuals. The proposed model also holds significance in improving zakat beneficiaries' access to healthcare services and could enhance the quality of life for asnaf, thereby contributing to the well-being of Muslim society. Since this is a conceptual study only, no data is collected in this study. The significance of this study is to provide alternative methods for all zakat institutions in Malaysia to distribute zakat funds in healthcare services. This will ensure that the positive implications of medical zakat are widely recognized for the prosperity of the country as a whole. Nevertheless, future research is required to confirm the validity of the proposed model, ensuring that it can be implemented by all zakat institutions in Malaysia to allocate the zakat funds collected to the healthcare sector. Additionally, the prospective public-private partnership to enhance the quality and accessibility of healthcare services for underprivileged populations can provide a substantial improvement. The need for health education and preventive care programs funded by zakat institutions in both private and public health facilities can empower communities with the knowledge and resources to maintain better health, thus reducing the long-term financial burden on both the individuals and the healthcare system.

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Motivation in Game-Based Learning: A Study on Technical Analysis Education

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Abstract: Game-based learning is one of the current themes of the 21st century associated with digital natives. Nevertheless, most university educators do not routinely use gamification and game-based learning. This paper tries to link teaching innovation and game-based learning methodology via a game-based learning innovation in a non-game learning environment. This paper explores the students' motivation for using educational games as their learning medium. A survey on technical analysis students was undertaken specifically focusing on motivation factors as an initial study before proceeding further with full-scale research on game-based learning. This paper is one of the few papers that study game-based learning in finance, specifically the subject of technical analysis. The results indicate that the students have high motivation in game-based related activities and are very interested in using games for learning in the future. Future research can focus on expanding the study to explore other dimensions of the perception of technical analysis students on game-based learning methodology. The outcome of this study will assist educators in the field of finance to understand their students to better serve them specifically in game-based learning matters.

Keywords: *Game-based learning, Gamification, Motivation, Digital Society, Technical analysis.*

1. Introduction

The academic teaching and learning landscape is shifting. The digital revolution, technology enhancement, societal preferences, and not to mention the world crisis related to COVID-19 are shaping the new education industry at a swift pace. Prensky (2001) asserts that to be successful in the twenty-first century, the education industry needs to be reinvented based on the requirements, preferences, and orientations of digital natives. These groups of people were born and raised in the era of information technology, and it makes sense to use technology in their teaching and learning activities. Game-based learning (GBL) or digital game-based learning (DGBL) is one of the current themes of the 21st century (Hui & Mahmud, 2023) contemporary approach concerning digital natives. That could be useful in helping students gain 21st-century skills (Qian & Clark, 2016). The 4 Cs of game-based learning—critical thinking, collaboration, creativity, and communication— are the qualities of games that can be used to teach 21st-century skills through digital learning games.

GBL or 'gamification' describes 'the use of game elements to motivate players to engage in a task they otherwise would not find attractive' (Plass, Homer, & Kinzer 2015). Games can be physical or a more recent development in line with technology advancement creates digital games. It is an environment where game content and gameplay enhance knowledge and skills acquisition, where game activities involve problem-solving spaces and challenges that provide players/learners with a sense of achievement. In education, gamification is a way of playing creative games in the classroom without jeopardizing the scientific nature of a curriculum (Nolan & McBride, 2014) and supports individuals to acquire the potential to develop critical thinking and multi-tasking while training successful 21st-century digital natives (Prensky, 2001; Kapp 2012). Gamification makes learning more entertaining, increasing the motivation of students to learn and study (Muntean, 2011).

Nonetheless, the majority of university educators do not routinely use gamification and game-based learning in their teaching (Lester, Skulmoski, Fisher, Mehrotra, Lim, Lang, & Keogh, 2023). The finance-related course is not spared from this predicament. The motivation to pursue this study lies in the fact that conventional teaching methods in the finance-related Technical Analysis course rarely apply the in-the-trend game-based learning approach, leading us to develop an innovation within this backdrop. A Technical Analysis (TA) in-class innovation project was created for this purpose. Specifically catering to the digital-native audience, we add the elements of 'entertainment', 'competition', and 'incentives' to determine whether these dimensions help motivate learning at its best based on the present surroundings. The game was designed to cater to the initial theoretical part of the course before proceeding to applied-based learning in stock market charting analysis.

To the best of our knowledge, GBL study in the area of finance particularly the technical analysis subject is scarce and worth an exploration. Hence, this study tries to fill the gap in the previous research by presenting a preliminary work on GBL methodology in a technical analysis class for a Bachelor of Business Administration in Finance. We are particularly interested in finding out the 'motivation' factors that these students had on the game-based learning approach. Hence, the purpose of the study is to ascertain whether TA League as a game in a non-game learning setting has an effect from the perspective of technical analysis students. Specifically, it explores the technical analysis of students' motivation for using educational games as their learning medium. The questionnaire items were adapted from Ibrahim, Yusoff Mohamed-Omar & Jaafar (2011) and modified from Masrom (2006). The outcome of this study will assist educators in the field of finance to understand better their audience (students) to better serve them specifically in teaching and learning matters.

2. Game-Based Learning and Motivation Factor

Game-based Learning Theories

Game-based activities can be linked to several theories for instance game-based learning theory, constructivism theory, experiential learning theory, and the flow theory. According to the game-based learning theory, students are more likely to be fully engaged and immersed in an optimal experience when they actively participate in particular class activities. GBL offers excellent activities for learning purposes. Similarly, the constructivism hypothesis states that learning occurs most effectively when students actively create their knowledge through interactions and experiences (Fosnot, 2013). Students can experiment, investigate, and make decisions that affect the game's outcomes through games. This aids in the purposeful construction of their knowledge as well. On the other hand, according to the experiential learning theory, direct experience and reflection are crucial components of the learning process (Kolb & Kolb, 2017). Playing games gives students the chance to experience many situations and think back on their choices, which helps them comprehend the material they are learning more deeply. Lastly, the flow theory describes that when someone is fully absorbed in an activity, they can reach a level of deep engagement and satisfaction (Umirziyaev & Abdurakhmonov, 2022).

These theories emphasize the fun, experience, and engagement that come with game-based learning, which ignites motivation, one of the key components of game-based learning. The potential of game-based or gamified applications to leverage the motivational effect of games is what has led to their adoption. The most well-known theory of motivation is the self-determination hypothesis. Self-determination theory (SDT) takes a more comprehensive and holistic approach, incorporating both intrinsic and extrinsic motives (Altawalbeh, 2023). In contrast to extrinsic motivation, which is behavior carried out to obtain a reward or avoid punishment—that is, when a person seeks to earn something unrelated to the activity—intrinsic motivation, according to Kapp (2012), is when the rewards come from carrying out an activity rather than the result of the activity. Another model that looks at learners' motivation is Keller's four-factor model in determining motivation in games. According to the ARCS Model, for people to become and stay motivated, four fundamental variables must be met: Attention, Relevance, Confidence, and Satisfaction (Keller, 1987).

Motivation Factors

According to Prensky (2003), motivation is necessary for effective learning, and a driven student is impossible to stop! Playing ends and learning stops when there is no motivation. A motivated learner cannot be forced to cease "learning." It is the most important factor that drives learning (Gee, 2003). Hence, motivation plays a huge role in 'learning' and academic research-wise, motivation is one of the most frequently cited reasons to consider digital games for learning (Plass et al. 2015).

Numerous studies in different academic fields have been conducted in recent times. The majority discover that GBL or DGBL affects students' motivation in a good manner (see Nadeem, Oroszlanyova, & Farag, (2023) in engineering; Hui et al. (2023) in mathematics; Zahra, Neo & Hew (2023) in internet applications; Altawalbeh (2023) in humanities and scientific; Camacho-Sánchez, Rillo-Albert & Lavega-Burgués (2022) in education studies.

When compared to traditional online activities, GBL has a more favorable effect on student motivation and engagement in an engineering classroom, according to Nadeem et al. (2023). According to the research, including digital games in engineering classes can effectively inspire students and maintain their interest in the subject matter. Additionally, it was shown that using a scoreboard as a game feature had both positive and

negative impacts, encouraging some students while demotivating others. Hui et al. (2023) claim that the application of GBL in mathematics studies has had a positive effect on students' mathematical learning. It is composed of two categories of cognitive domain (knowledge and mathematical abilities) and five categories of domains (achievement, attitude, motivation, interest, and engagement). The study's findings would more successfully inspire teachers in the classroom.

Zahra et al. (2023) in internet applications introduce games in the online class to enhance students' motivation, engagement, and 21st-century skills. Students can interact with the material more effectively and work together to overcome mutual difficulty by entering the game as a team. The findings of the study showed that it enabled them to think deeply and comprehend the subject matter, which in turn helped them tackle the provided challenge more successfully. This factor ignited their motivation, causing them to become profoundly invested in the issue and devise a successful plan of action for its resolution. According to survey findings and comments, students can be effectively motivated and work together to solve common problems successfully when they use the educational online networks that are available and the games that are integrated into the learning process. Altawalbeh (2023) studied humanities and scientific students and discovered that Kahoot, a game-based learning promoted enjoyment, engagement, motivation, and usefulness for learning. Using Kahoot can help students meet their learning objectives and become more motivated and engaged in the process of learning enjoyably. Similar to Nadeem et al. (2023), striving to be in the top five on the leaderboard adds excitement and motivation to the gameplay. Another study on GBL in education studies was examined by Camacho-Sánchez, Rillo-Albert, and Lavega-Burgués (2022). According to the study's findings, motivation items received great marks from every participant. The study's findings validate the gamified GBL approach as a dynamic teaching tool that aligns with students' active learning and offers insightful, timely feedback on students' efforts, gains in academic achievement, and a high degree of motivation. Finally, Murillo-Zamorano, López, Godoy-Caballero, and Bueno (2021) engaged Business Administration and Management students and came to the conclusion that creating a co-creative, empowered, and gameful experience that supports students' overall value creation results in satisfactory active learning setups without sacrificing academic achievement and allows for the development of many skills that are particularly relevant for professionals in the twenty-first century.

Premise on the above, despite many GBL studies in the fields of engineering, mathematics education studies, internet applications, humanities, and education studies, GBL studies in the area of finance particularly the technical analysis subject are scarce and worth an exploration.

Technical Analysis League (TA League) Game

This study was conducted after a game-based competition in a technical analysis course enrolled by 50 so-called 'digital natives' population at Universiti Teknologi MARA, Melaka, Malaysia. The aim is to stimulate learning in the Technical Analysis course. The description of the technical analysis course is as follows:

Table 1: Course Content

TECHNICAL ANALYSIS COURSE DESCRIPTION	OBJECTIVES	NO OF CHAPTERS	TIME FRAME
The course will introduce to the students the concept and the application of technical analysis, the various technical indicators, and investment decisions using technical tools. It emphasizes various techniques and strategies used in technical analysis software employing both basic and advanced technical indicators in analyzing investment decisions of a single asset.	• Illustrate the various types of investment decisions with an emphasis on techniques and strategies used in technical analysis. • Build hands-on skills and knowledge through technical analysis software package(s).	10	14 weeks

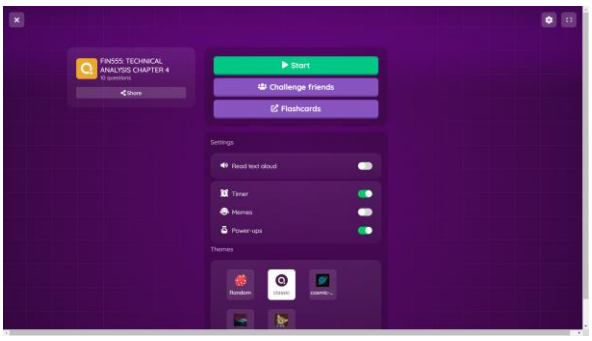
Unlike common finance courses dealing with numbers, this course deals with charts specifically stock market price movement charts, where theoretical knowledge, and charting skills coupled with common sense and intuition are blended to make up a good so-called technical analyst.

Innovation in Teaching and Learning

Applying the most popular free gamification application, Kahoot together with Quizizz, we proceeded to design a quiz competition named the Technical Analysis League (TA League), discounting the important theoretical chapters that build up the fundamentals of technical analysis. In this game, points are awarded to teams based on where they finish in each quiz. Adopting the F1 ranking methodology, the winner receives 25 points, the second-place finisher 18 points, with 15, 12, 10, 8, 6, 4, 2 and 1 points for positions 3 through 10, respectively. The winner is the team with the most points.

Figure 1: Screenshots from the games





Ten chapters were included in a time frame of 10 weeks out of the 14-week course period, and the game was scheduled to be played weekly, in line with the course lesson plan. These activities augment the present lesson design, consistent with the course learning outcomes. As a result, finishing these tasks will assist pupils in meeting the learning objectives. Part of the incentives is to reward the winners with cash prizes, as well as a certificate of award to recognize the individual's achievement, suited well to strengthen the students' resumes.

Table 2: TA League List of Activities

Game Round	Week	Platform	Topic	No of Questions
1	1	Kahoot	Introduction to Technical Analysis	10
2	2	Kahoot	Financial Market	10
3	3	Kahoot	Dow Theory	10
4	4	Kahoot	Intermediate Trend	10
5	5	Kahoot	Support & Resistance	10
6	6	Quizizz	Trendline	10
7	7	Quizizz	Volume	10
8	8	Quizizz	Classic Price Patterns	10
9	9	Quizizz	Small Price Patterns	10
10	10	Quizizz	Moving Average	10

3. Methodology

Data Collection and Analysis Procedures: In this empirical study, we measure players' feedback upon participation in the TA League game, adopting the items developed by Ibrahim et al. (2011), modified from Masrom (2006) as cited in the literature. The survey consists of a set of questionnaires within a motivation construct.

Table 3: Survey questions

Number	Description
Question 1	I think this activity gives me lots of benefits.
Question 2	I prefer to answer questions this way compared to using books or paper.
Question 3	I am very interested in using games for learning in the future.
Question 4	I prefer to do quizzes using games rather than physical quizzes (manual) during class.
Question 5	The usage of games makes this subject more interesting.

These questionnaires serve as a preliminary study before proceeding with a full-scale survey of the topic under review. Therefore, the scope of research and discussion revolves around this construct.

Data Analysis: The poll was created using Google Forms, and students responded online in 2023. Students' responses were rated on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Similar to Ibrahim et al. (2011) we deployed a descriptive analysis using SPSS Version 23, to analyze the players' motivation. The findings are based on a descriptive study of demographics and items designed to assess player motivation (percentage, mean, and standard deviation-SD). Table 4 shows the mean score interpretation adapted from Alkharusi (2022).

Table 4: Interpretation of the Mean Score

Level	Mean score	Interpretation
Strongly Disagree	1.00 to 1.80	Very low
Disagree	1.81 to 2.61	Low
Neutral	2.62 to 3.42	Moderate
Agree	3.43 to 4.23	High
Strongly Agree	4.24 to 5.00	Very high

4. Results and Discussion

Demographics of Respondents: The sample consisted of 30 females (60.0%) and 20 males (40.0%), Bachelor of Business Administration (Finance) students from Universiti Teknologi MARA, Melaka, Malaysia. These students enrolled in the FIN555 Introduction to Technical Analysis class as part of their core subject requirement for the semester. The respondents' age ranges from 20-22: 15/30%; age 23-25: 35/ 70%; and 25-30: 0%.

Descriptive Analysis: Table 5 shows the findings for the means and SD values of each component. Overall, the total means for the motivation component was between 4.18 and 4.56, while the total SD was between 0.49 and 0.98. For these five components, 1, 2, 3, 4, and 5, the mean values (with corresponding standard deviations in parentheses) were 4.36 (0.52), 4.28 (0.66), 4.56 (0.53), 4.18 (0.98) and 4.48 (0.49) respectively.

Table 5: Means and Standard Deviations of Students' Motivation of Using Game-based Learning

Questions	SD (%)	D (%)	M (%)	A (%)	SA (%)	Total N	Mean	Std. Dev.	Level
1. I think this activity gives me lots of benefits.	0 -	0 -	1 2%	30 60%	19 38%	50	4.36	0.52	Very High
2. I prefer to answer questions this way compared to using books or paper.	0 -	0 -	6 12%	24 48%	20 40%	50	4.28	0.66	Very High
3. I am very interested in using games for learning in the future.	0 -	0 -	1 2%	20 40%	29 58%	50	4.56	0.53	Very High
4. I prefer to do quizzes using games rather than physical quizzes during class.	1 2%	2 4%	4 8%	22 44%	21 42%	50	4.18	0.98	High
5. The usage of games makes this subject more interesting.	0 -	0 -	0 -	26 52%	24 48%	50	4.48	0.49	Very High
Total							4.37	0..68	Very High

Note: Strongly Disagree (SD); Disagree (D); Moderate (M); Agree (A); Strongly Agree (SA).

Generally, all data register above 80% mean value, suggesting a high degree of agreement towards the questions posted. The average mean for the Motivation construct of 4.37 indicates a very high perception of motivation. Interestingly, all items in the motivation construct, with a mean ranging from 4.18 to 4.56, are above 4 or 80%

in line with the results of Ibrahim et al. (2011). Hence, it gives a clear idea that all the students are motivated to use and learn technical analysis subjects via games. Generally, the motivation to use games as a learning tool remains as high as a decade ago, again highlighting the promising future of game-based learning. The positive reaction that students have shown to digital game-based learning activities suggests that including such games in instruction can increase student engagement while also making learning pleasurable.

The motivation component shows that item 3 (I am very interested in using games for learning in the future) has the highest score (mean 4.56) indicating students' high interest in the game-based learning approach. High motivation to use games was particularly because games make the subject more interesting. Although the method of gamification via Kahoot and Quizzizz is simple, the approach has captured the students' interest to learn more repeatedly. Such a situation implies a good demand and indirectly suggests future potentials of a game-based approach to learning. As indicated by Gee (2003), game-based learning provides an experience that the students enjoy and want to continue doing. Perhaps the students appreciate the engagement and as indicated by Nadeem et al. (2023), successful engagement may also encourage students to remain motivated in the future.

The 2nd highest is item 5 (The usage of games makes this subject more interesting) with a mean of 4.48 indicating the students' high interest in using games because the game itself makes the subject more interesting (Ibrahim et al. 2011). In this context, the incentive elements provided by this game such as scores, leaderboard, cash reward, and certificate of award motivate the students to try their level best to perform better than others. Such behavior is especially true when competing with rivals in class. This is consistent with the study of Nadeem et al. (2023) who found out that the incorporation of a leaderboard as a game element, although sometimes mistakenly judged, forms an initial path leading to learning. Learning in this case may be subconscious without the students realizing that they are actually in the process of learning. Such positive results should stimulate students' interest in learning technical analysis subject.

This is followed by item 1 (I think this activity gives me lots of benefits) with a mean of 4.36, item 2 (I prefer to answer questions this way compared to using books or paper) with a mean of 4,28, and finally item 4 (I prefer to do quizzes using games rather than physical quizzes (manual) during class) with a mean of 4.18. Perhaps items 1, 2, and 4 can be attributed to Keller's four-factor model. The participants start to realize the good content and get interested in it (Attention). Next, the participants gather new knowledge (Relevance); the students feel that they can achieve success and are subsequently motivated to learn more (Confidence), and finally, the learners feel that the learning has value and is worth the continued effort (Satisfaction).

5. Conclusion

Overall, the level of motivation of the technical analysis students towards the GBL approach is at a very high level sparking demand on the part of the users. This preliminary study, although limited to the motivation construct only, can be a good basis to explore further the topic under study. Notwithstanding the foregoing, we must acknowledge that the study's findings might not be representative of other student bodies studying technical analysis because it was conducted at a single university with a small sample size. Nevertheless, this is a small effort to explore the motivation factor for using game-based learning on a different group of learners which was rarely experimented with. The results presented herein may provide a good starting point for those interested in game-based learning studies.

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Bibliometric Analysis on Stimulus-Organism-Response Framework in the Area of E-Commerce and Social Commerce

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Abstract: This study aims to identify the trends of the publications and research topics. The areas covered are in the field of e-commerce and social commerce that use stimulus-organism-response as the framework. The study was conducted using bibliometric analysis and VOSviewer to visually represent the findings. Scopus was the database for the research and related keywords were constructed based on the study area. 267 publications from 2008 until 2024 were examined. The results revealed that the number of publications is increasing from year to year and the research topics were varied but still within the study area. The research gap between the topics was also identified in this study.

Keywords: *Stimulus-organism-response, E-commerce, Social commerce, Bibliometric analysis, VOSviewer.*

1. Introduction

The current trend of e-commerce allows sellers to perform live streaming on any e-commerce platform to promote and market their products to customers. Live streaming permits the sellers to describe the products more effectively by delivering the information together with the product demonstration. During the live streaming, customers could also ask the sellers questions directly. The interaction between these two parties would encourage engagement and gain trust, thus influencing the customers to buy the products. Research that had been done by (Ling *et al.*, 2024) Interpersonal interaction is comprised of consumer-anchor interaction and consumer-consumer interaction, which positively affects the purchase intention. The anchor or seller can provide information about the products straightaway and give feedback towards questions and comments by customers. Communication between customers could also enhance the product experience. According to Qi & Xiaoli (2024), the anchor's characteristics could impact customers' sustainability following the live e-commerce broadcast room. The characteristics highlighted in the study were credibility, professionalism, interactivity, and attractiveness. The professionalism and credibility of the anchors could gain customers' trust; therefore, when the anchors deliver information about the products, the customers would feel that the products are of good quality and would be attracted to them. The live broadcast of the e-commerce platform enables two-way communication between the anchors and the customers. Thus, all the doubt regarding the products could be reduced and eliminated. The attractiveness of the anchors also plays a vital role in attracting customers to purchase the product.

Another study that is related to the live-streaming was conducted by Shiu et al. (2023), mentioned that dynamic characteristics where customers can conveniently perform shopping attitudes without any limitations and restrictions, as well as atmosphere clues focused on the platform environment, like the interface design of the website and the content displayed, can lead to consumers' purchase intention. Meanwhile, atmosphere clues and perceived interactivity could support immersive experience and social interaction, thus predicting customers' desire to conduct e-commerce transactions. One of the features contributing to the popularity of e-commerce nowadays is a feature known as "Buy Now Pay Later" which enables customers to make payments later, and the payments can be made several times. This feature uses a FinTech solution, and typically, financial providers need to work together with the e-commerce platforms to allow this feature to be effective (Juita *et al.*, 2024).

Social commerce is similar to e-commerce except that the medium focuses more on social media platforms. The usage of social media is increasing because by having social media accounts, users not only manage to connect and interact with other users, share stories about daily life, distribute information, and for entertainment purposes but are also able to purchase products and get feedback or views regarding products not only from the seller but also from the other customers (Guo and Li, 2022). As we know, social media enables users to

establish a community, thus by having social commerce, sellers could develop and strengthen their community, enhance loyalty, interactivity, and collaboration among users of social commerce which are sellers or firms, customers, and normal users who are just simply looking for information (Molinillo *et al.*, 2021).

Stimulus-organism-response (SOR) is a framework that was modelled by Mehrabian and Russel in 1974, as cited in (Ma, Liu and Li, 2023). The framework has three factors. The stimulus is all the external environment factors that could influence the behavior of the individual. Organism denotes the emotional and cognitive mediated states when interacting with the stimulus. Finally, the response means the individual's reaction or behavior based on the stimulus and organism. The framework is widely used by researchers to explore the behavior of the individual when certain conditions are met. The study of behavior is really important in understanding the behavior of the customers, especially in what conditions the customers would purchase products.

Previous studies have discussed the interrelationship between SOR with e-commerce and social commerce.
A study conducted by Ling et al. (2024), to identify the customers' behavior, the researchers used the SOR framework where interpersonal interaction acted as a stimulus, psychological distance as an organism, and purchase intention as a response. Moreover, the study also included situational factors like brand identification and time pressure in the framework. Shiu et al. (2023) Also performed research to study customers' behavior using the SOR framework, but they used two theories, human information processing theory and flow theory, in the SOR framework. The theories emphasize how customers' information processing capability and the flow state of live-streaming platforms affect their sense of control or trust, which determines their purchasing behavior. Furthermore, the researchers identified streaming attributes that consist of two main attributes, which are situational influence (dynamic characteristics and atmosphere clues) and individual influence (perceived interactivity) as the stimuli, cognitive or affective states (immersive experience and social interaction) as the organism, and behavior (purchase intention) as the response. The SOR framework is not only used to study the customers' behavior but also to study the anchors' characteristics. An anchor that has good characteristics was believed could enhance the customers' experience while viewing the live broadcast (Qi and Xiaoli, 2024).

Because the popularity of online shopping through social media has increased, Guo & Li, (2022) Had done research on social commerce focusing on the features (interactivity, recommendations, and feedback) and these features acted as the stimuli in the SOR theory, the customer's perceived value (utilitarian value and hedonic value) as the organism, and the repurchase intention of the customer as the response. They wanted to know whether the platform's features could influence the customers to repurchase the products. Another study into the design of the platform was by Molinillo et al. (2021) Where the researchers focused on the design of the social commerce websites. They have identified environmental stimuli, namely information quality, service quality, rewards, and recognition; customer perceived value as the organism, and the three responses, namely repurchase intention, positive electronic word-of-mouth (eWOM) intention, and customer engagement behavior intention.

Based on the explanation of the Stimulus-Organism-Response (SOR) framework above, where the purpose is to study the behavior of customers in the area of e-commerce and social commerce, this research presents a bibliometric analysis. The aims of this research are

- to identify the number of publications and citations
- to investigate the trend of the SOR topics in conjunction with e-commerce and social commerce
- to analyze the research gap in the SOR framework.

2. Methodology

Bibliometric analysis is an analytical technique to summarize a large volume of data to identify trends within a certain research area. (Monoarfa *et al.*, 2024). It also can be used to uncover the leading trends of research topics and to analyze journals, institutions, and countries. (Merigo *et al.*, 2017). The research used a bibliometric analysis procedure that comprised four steps to conduct the analysis. (Donthu *et al.*, 2021). The following are the explanations for all the steps involved when performing the analysis.

Step 1: Define the aims and scope of the bibliometric study
The researcher identified the aim and scope of the research. As mentioned above, this research aims to identify the number of publications and citations, investigate the trend of the SOR topics in conjunction with e-commerce and social commerce, and analyze the research gap in the SOR framework. The scope of the study was to focus on the area of e-commerce and Social Commerce in the SOR framework. The area was large enough to conduct the bibliometric analysis.

Step 2: Choose the techniques for bibliometric analysis
The research emphasized discovering the themes in general and during specific periods of time. Meanwhile, for the performance analysis, the focus was on the authors, articles, total publications, total citations, and research topic.

Step 3: Collect the data for bibliometric analysis
Based on the first step, several keywords were identified according to the aim and scope of the study. The combination of the keywords is based on the previous literature and discussion among the researchers. The keywords are “stimulus-organism-response" OR "stimulus organism response" OR "SOR" OR "S-O-R”, and “electronic commerce” OR “e-commerce” OR “e-commerce” OR “social commerce”. The research used Scopus as the database. To find the relevant documents (articles), the researchers used Scopus searching format to search the articles. The researchers used a search format based on the title, abstract keywords (TITLE-ABS-KEY), and Boolean Operators. A total of 10,061 documents were generated from the keywords related to stimulus-organism-response. The advanced search was performed to focus on the research topics of e-commerce and social commerce. From the initial number of documents generated, the result became 375. The research was only limited to “English” and “journals” as the language and type of publication, and the final result was 267 documents generated. The documents generated resulted from the year 2008 until 2024.

Step 4: Run the bibliometric analysis and report the findings
The analysis was done by using an analysis tool in the Scopus Database and VOSviewer. VOSviewer is a software tool that can be used to create, visualize, and explore maps. There are three types of visualizations namely network visualization, overlay visualization, and density visualization. (van Eck and Waltman, 2013). After the analysis was completed, the findings were reported.

3. Results and Discussion

Figure 1 presents the total publications and total citations of the articles from 2008 to 2024 in the field of stimulus organism response that focused on e-commerce and social commerce topics. The number of total publications showed a steady growth except for 2009, when there was no article published on the topics, and in 2015 and 2017, the number of publications decreased. Even though in 2024 the result showed a decline, it can be explained that the data was collected in the middle of the year, with a few months remaining. Table 1 denotes the total number of publications from 2008 to 2024.

Figure 1: Total Publications (TP) and Total Citations (TC)

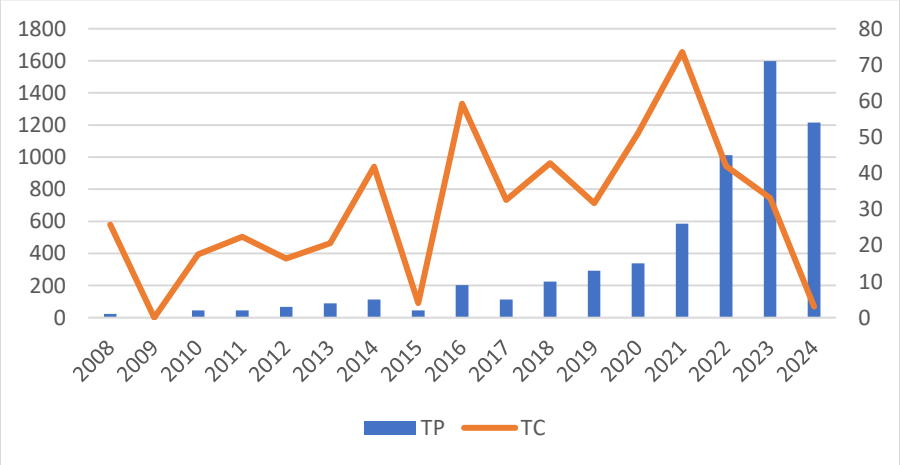


Table 1: Total Publications in 2008 – 2024

YEAR	TOTAL PUBLICATION	YEAR	TOTAL PUBLICATION
2008	1	2017	5
2009	0	2018	10
2010	2	2019	13
2011	2	2020	15
2012	3	2021	26
2013	4	2022	45
2014	5	2023	71
2015	2	2024	54
2016	9		

Table 2 depicts the total number of citations from 2008 to 2024. The highest number of citations were 1655 (2021) followed by 1333 (2016) and 1149 (2020). Table 3 presents twenty articles that have the highest number of citations. Popular articles discussed the area of social commerce, purchase intention, customer behavior, live streaming, and impulse buying. The article "What motivates customers to participate in social commerce? The impact of technological environments and virtual customer experiences" had the most citations. This is because nowadays, customers tend to use social media to socialize and at the same time, it is very convenient to do online shopping using social media. Therefore, the areas related to the customers' behavior while using social media and the features of the media itself become a trending research area to be explored.

Table 2: Total Citations in 2008 – 2024

YEAR	TOTAL CITATION	YEAR	TOTAL CITATION
2008	580	2017	732
2009	0	2018	963
2010	395	2019	713
2011	504	2020	1149
2012	368	2021	1655
2013	463	2022	945
2014	940	2023	745
2015	92	2024	70
2016	1333		

Table 3: Mostly Cited Publications (TC = Total Citations)

AUTHORS	YEAR	TITLE	SOURCE	TC
Zhang, H., Lu, Y., Gupta, S., Zhao, L.	2014	What motivates customers to participate in social commerce? the impact of technological environments and virtual customer experiences	Information and Management, 51(8), pp.1017-1030	601
Chang, H.H., Chen, S.W.	2016	The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator	Online Information Review, 32(6), pp. 818-841	580
Zhang, K.Z.K., Benyoucef, M.	2016	Consumer behavior in social commerce: A literature review	Decision Support Systems, 86, pp. 95-108	431
Chan, T.K.H., Cheung, C.M.K., Lee, Z.W.Y	2017	The state of online impulse-buying research: A literature analysis	Information and Management, 54(2), pp. 204-217	397
Kang, K., Lu, J., Guo, L., Li, W.	2021	The dynamic effect of interactivity on customer engagement behavior through tie strength: Evidence from live streaming commerce platforms	International Journal of Information Management, 56, 102251	357
Koo, D.-M., Ju, S.-H.	2010	The interactional effects of atmospherics and perceptual curiosity on emotions and online shopping intention	Computers in Human Behavior, 26(3), pp. 377-388	303
Floh, A., Madlberger, M.	2013	The role of atmospheric cues in online impulse-buying behavior	Electronic Commerce Research and Applications, 12(6), pp. 425-439	298
Li. H., Sarathy, R., Xu, H.	2011	The role of affect and cognition on online consumers' decision to disclose personal information to unfamiliar online vendors	Decision Support Systems, 51(3), pp. 434-445	298
Hu, M., Chaudhry, S.S.	2020	Enhancing consumer engagement in e-commerce live streaming via relational bonds	Internet Research, 30(3), pp. 1019-1041	284
Zhang, M., Ren, C., Wang, G.A., He, Z.	2018	The impact of channel integration on consumer responses in omni-channel retailing: The mediating effect of consumer empowerment	Electronic Commerce Research and Applications, 28, pp. 181-193	258
Liu, H., Chu, H., Huang, Q., Chen, X.	2016	Enhancing the flow experience of consumers in China through interpersonal interaction in social commerce	Computers in Human Behavior, 58, pp. 306-314	252
Xue, J., Liang, X., Xie, T., Wang, H.	2020	See now, act now: How to interact with customers to enhance social commerce engagement?	Information and Management, 57(6), 103324	221

Figure 2: Authors and Number of Publications

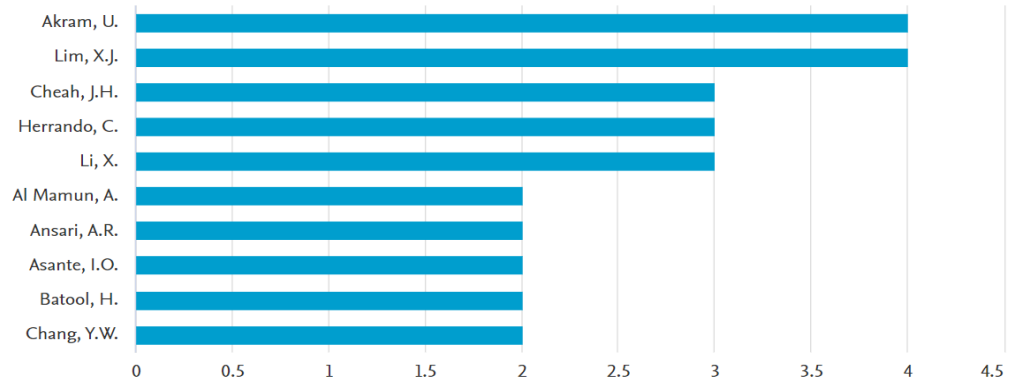


Figure 2 presents authors that frequently published articles that are related to the Stimulus Organism Response with e-commerce and social commerce. Two authors published 4 articles, three published 3 articles, and five published 2 articles. The authors were not necessarily the main contributors to the articles. Meanwhile, Table 4 highlights two authors that have 4 articles published. These two authors were derived from Figure 2 above.

Table 4: Name of Articles based on Authors

AUTHOR	NO OF PAPERS	TITLE	AUTHORS	JOURNAL	YEAR
Akram, U.	4	Feeling hungry? Let's order through mobile! Examining the fast food mobile commerce in China	Akram, U., Ansari, A.R., Fu, G., Junaid, M.	Journal of Retailing and Consumer Services, 56, 102142	2020
		An empirical study on the impact of e-commerce live features on consumers' purchase intention: From the perspective of flow experience and social presence	Wang, H., Ding, J., Akram, U., Yue, X., Chen, Y.	Information (Switzerland) 2021, 12(8), 324	2021
		Cosmetics makers have always sold 'hope in a jar'! Understanding the cosmetics purchase intention in the Chinese mobile commerce environment	Akram, U., Ansari, A.R., ulhaq, I;, Yan, C.	Journal of Retailing and Consumer Services, 73, 103337	2023
		Does social media usage contribute to cross-border social commerce? An empirical evidence from SEM and fsQCA analysis	Hu, S., Akram, U., Ji, F., Zhao, Y., Song, J.	Acta Psychologica, 241, 104083	2023
Lim, X.J.	4	Are men from Mars, women from Venus? Examining gender differences towards continuous use intention of branded apps	Lim, X.-J., Cheah, J.-H., Ng, S.I., Kamal Basha, N., Liu, Y.	Journal of Retailing and Consumer Services, 60, 102422	2021
		Thanks COVID-19, I'll reconsider my purchase: Can fear appeal reduce online shopping cart abandonment?	Wang, S., Cheah, J.-H., Lim, X.-J., Leong, Y.C., Choo, W.C.	Journal of Retailing and Consumer Services, 64, 102843	2022
		Why Do Some Consumers Still Prefer In-Store Shopping? An Exploration of Online Shopping Cart Abandonment Behavior	Wang, S., Ye, Y., Ning, B., Cheah, J.-H., Lim, X.-J.	Frontiers in Psychology, 12, 829696	2022
		How do I deal with complex social commerce landscape? Understanding continuance intention using approach and avoidance motivations model	Chong, S.-E., Ng, S.-I., Kamal Basha, N.B., Lim, X.-J.	Aslib Journal of Information Management	2024

A bibliometric analysis using VOSviewer created term co-occurrence visual representations based on text data. The results discovered 61 items in the 6 clusters with 1558 links, and the total link strength was 26706. The following are the items in the clusters.

Cluster 1 (17 items): Attention, behavior, enjoyment, impulse, impulse buying, information, online impulse buying, online survey, organism, social interaction, stimuli, stimulus, stimulus organism response framework, urge, usefulness, website, willingness.

Cluster 2 (15 items): Consumer purchase intention, customer satisfaction, e-commerce, feature, flow, flow experience, interactivity, mediating effect, mediating role, moderating effect, purchase intention, satisfaction, social presence, or model, trust

Cluster 3 (14 items): Author, commerce, covid, customer engagement, customer loyalty, design methodology approach, dimension, framework, online shopping, originality value, PLS-SEM, social commerce, use, value

Cluster 4 (9 items): Business, consumer behavior, emotion, perception, pleasure, response, review, risk, type

Cluster 5 (4 items): Product, respondent, sor, streamer

Cluster 6 (2 items): Social medium, turn

Figure 3: Network Visualization of Clusters on Keyword Co-Occurrence Analysis

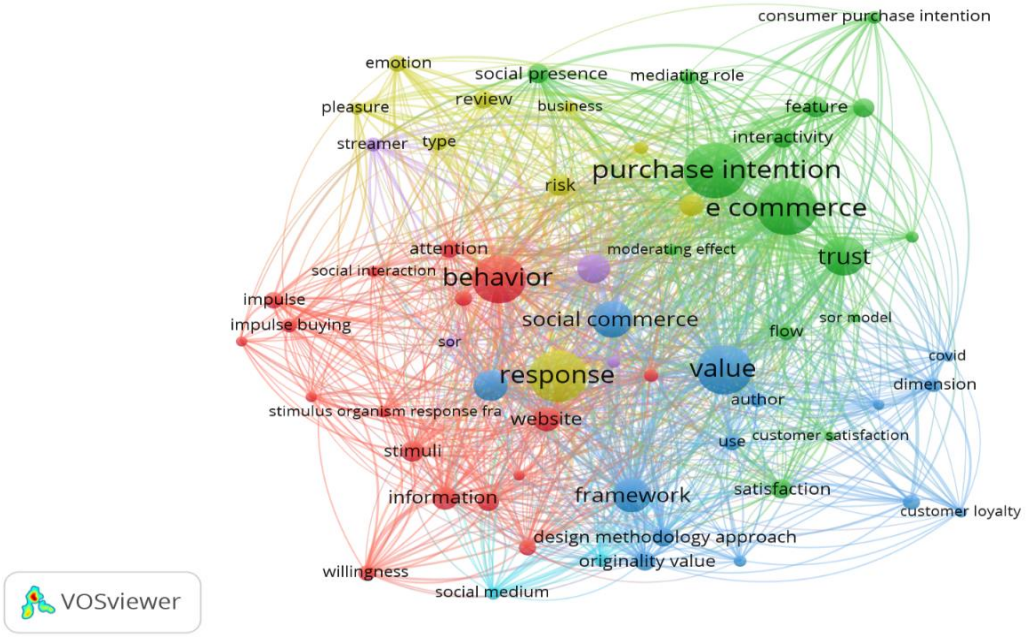
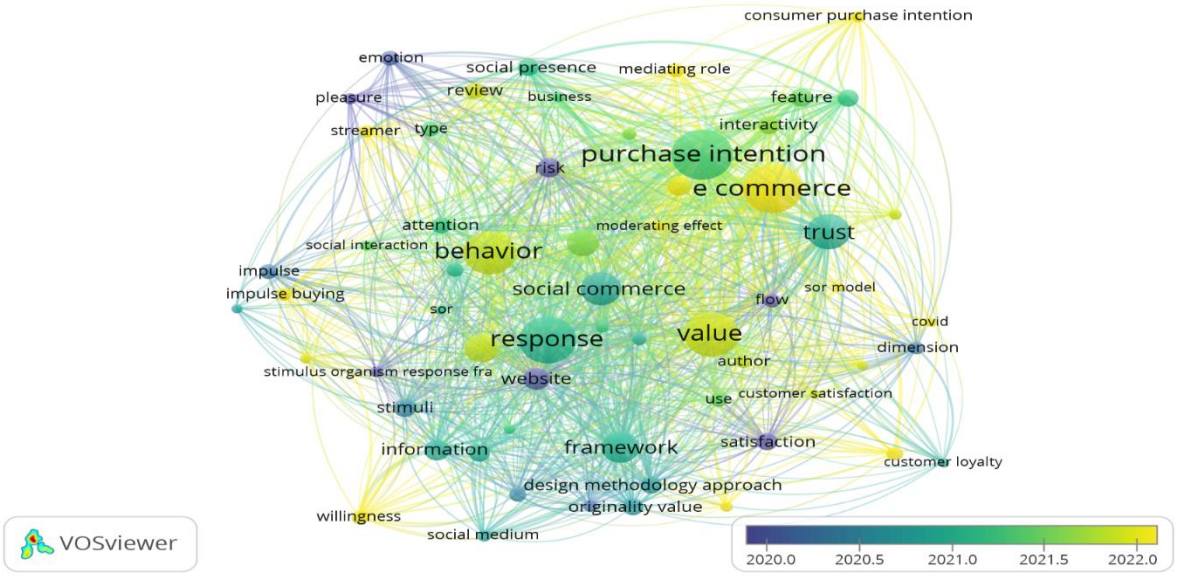


Figure 3 above shows network visualization that highlights terms or keywords that were most used by the researchers in the publications. The threshold was based on the minimum number of occurrences of a term. The researcher chose 20 terms as the minimum number and the results revealed that out of 5536 terms, 102 terms meet the threshold. The relevance score was calculated for each of the 102 terms identified and the most relevant terms would be selected based on the score. The default choice was to select 60% of the most relevant terms, and the result was 61 terms identified.

The size of the labels and nodes (circles) represented the items. The larger the size of the labels and nodes the higher the weight of the item. The colors shown represented the cluster of each of the items. Some of the terms that were widely used in the journals based on the clusters are behavior, website, and information (Cluster 1), purchase intention, e-commerce and trust (Cluster 2), value, social commerce, and framework (Cluster 3),

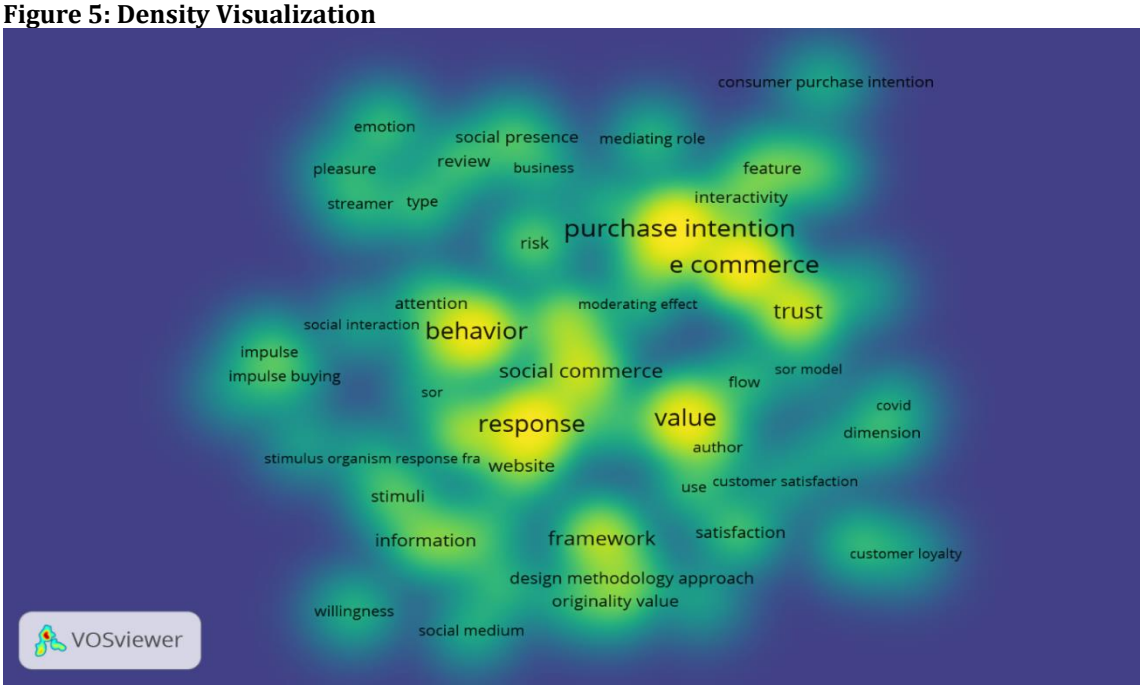
response, risk, and perception (Cluster 4), product and streamer (Cluster 5) and finally social medium (Cluster 6).

Figure 4: Overlay Visualization



As stated by (Monoarfa *et al.*, 2024), overlay visualization enables the researchers to examine the progression of trends within the field of study and also to investigate the interconnections among the topics being studied. Figure 4 shows the evolution of topics, and the trend can be seen from the topics of website, satisfaction, risk, emotion, and pleasure, then moving forward to topics like e-commerce, behavior, value, consumer purchase intention, willingness, impulse buying, and streamer.

Figure 5: Density Visualization



Density visualization is best used to identify a research gap in the field of study that has little attention or has not been thoroughly examined (Monoarfa *et al.*, 2024). Figure 5 denotes the item density visualization that

shows the level of density of items (topics) from 2008 until 2024. In VOSviewer, the colors varied from blue to green to yellow, where yellow color indicates the items that carry the higher weightage and have the larger number in the neighborhood of a point. At the same time, the blue color indicates the items that have a lower weight and have a smaller number of items (van Eck and Waltman, 2013). The results showed that purchase intention has the largest density among the items that have a yellow color. Apart from that, items that have darker colors represent items or topics that can be further explored to generate new findings.

4. Conclusion

The research aims to analyze trends in Electronic Commerce and Social Commerce that use stimulus-organism response (SOR) as the framework in their research. The SOR framework is vital in finding the behavior of the customers whether the customers would have the purchase intention and could establish motivation and engagement while using social media. Moreover, environmental factors are also important to know as these factors could trigger the individual's inner self, which could lead to the positive behavior of the customers. It can be concluded that the trend is moving forward positively and increasing from year to year. The research topics also vary, and based on the findings, a total of six clusters were identified with a total of 61 items. Overlay visualization demonstrated several research topics that could be discussed. Meanwhile, density visualization projected the research gap, which has the potential to be further explored.

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Understanding the Knowledge Concealment Predictors: A Proposed Framework for Knowledge Practitioners in Malaysia

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Abstract: This paper explores the knowledge concealment (KC) predictors among knowledge practitioners in Malaysia. It highlights that knowledge concealment (KC) is widely recognized as having a detrimental impact on individuals and organizations. Moreover, KC poses a significant challenge for organizations that are striving to enhance their knowledge management initiatives due to the difficulty in recognizing the existence of the information and the uncertain nature of its impacts. In addition, the prevalence of employees concealing their knowledge and expertise despite the organization's efforts to cultivate a culture of knowledge sharing. Thus, the act of concealing knowledge in an organization has an impact on the Sustainable Development Plan 9 (SDGs), which focuses on industry, innovation, and infrastructure, the Sustainable Development Plan 8 (SDGs), which targets decent work and economic growth to accelerate human capital development for an advanced nation, and the Twelfth Malaysia Plan (2021–2025), which emphasizes human capital through training and education. Therefore, it is crucial to study these predictors as they facilitate the prompt execution of proactive strategies to mitigate KC among knowledge practitioners. This study additionally proposes a novel conceptual framework that explores the relationship among variables, namely the lack of rewards in knowledge sharing, moral disengagement, internal competition, and psychological entitlement with a specific focus on knowledge concealment (KC). This framework presents significant potential for facilitating future research endeavors undertaken by other scholars.

Keywords: *Knowledge concealment (KC), knowledge sharing, moral disengagement, internal competition, psychological entitlement.*

1. Introduction and Background

In today's knowledge-based economy, organizations are mushrooming, increasing their investments in knowledge management (KM) projects to gather, evaluate, and share knowledge (Abbate, Coppolino & Schiavone, 2013; Zhao et al., 2019; Ode, 2020; Ali & Tang, 2022). Organizational KM is crucial as it acts as a valuable resource, encouraging innovation catalyst, effective decision-making mechanism, ongoing learning platform, and offering flexibility while enhancing competitiveness by boosting productivity, strategic positioning and customer happiness (Bollinger & Smith, 2001; Adams & Lamont, 2003; Otundo, 2023). Previous studies have shown that KM is vital for an organization's accomplishment as it involves organizing and making essential knowledge available to employees anytime and anywhere (Nonaka & Takeuchi, 1995; Howell & Annansingh, 2013; Fauzi, 2019). It aligns with Sukumaran and Lanke's (2021) studies, which stated that KM influences long-term growth and market success, as it is a systematic procedure that encompasses capturing, organizing, managing, and sharing knowledge throughout a business. Moreover, the success and development of organizations rely significantly on knowledge resources, particularly tacit knowledge, which is difficult to replicate.

Knowledge sharing (KS) is vital in KM as employee knowledge is a precious and enduring asset for organizations (Ugwu et al., 2020; Joo et al., 2024). KS exists when there is communication between two or multiple individuals, Osman et al., (2015). The employee's utilization of KM through sharing practices has been proven to enhance the efficiency of the organization and bolster the competitive edge (Hendriks, 1999; Hernaus et al., 2018; Singh, 2019; Fonseca et al., 2021). Prior research in the field of KM has mostly concentrated on the aspect of KS. However, there is an increasing interest in exploring subjects linked to knowledge concealment (KC), as proven by academic research (Islam et al., 2018; Arain et al., 2020; Koay et al., 2022). The act of concealing knowledge and not sharing it with others has become a major barrier in organizations (Akbarzadeh et al., 2022; Issac et al., 2022). This change demonstrated an acknowledgment of the difficulties associated with

overseeing the flow of knowledge within organizational settings. The distinction between KS and KC resides in the fact that the latter includes actively seeking knowledge from the knowledge requester. KS in this context, means the voluntary willingness of employees to share knowledge with colleagues, while KC is concealing that requested knowledge from sharing with others (Koay & Lim, 2021; Koay et al., 2022). Additionally, an increasing amount of literature acknowledges the significance of KC as being the converse of KS (Cabrera & Cabrera, 2002; Riege, 2005; Webster et al., 2008; Butt, 2020; Liu et al., 2020; Chatterjee et al., 2021; Pereira & Mohiya, 2021).

KC is a significant obstacle for organizations aiming to enhance their KM efforts, as it is hard to identify the presence of information, and its impacts are mainly uncertain. Although organizations generally strive to foster a culture of KS, many employees try to conceal and hide their knowledge and expertise. Most awful, even though the top management has established an entrenched policy to promote KS, typically, employees still tend to avoid this behavior at work (Ruparel & Choubisa, 2020; Xiong et al., 2021; Arias-Perez & Velez-Jaramillo, 2021; Jasimuddin & Saci, 2022). Besides, KC is influenced by the environment as it is critical in specific professional and technology-oriented organizations to enhance and control the sustainability and overall performance of an organization (Hoseinpour et al., 2022). Hoseinpour et al. (2022) also examined the impact of social norms on concealing organizational knowledge. Moreover, Andreeva and Zappa (2023) found that purposefully concealing information and knowledge from colleagues who requested it is detrimental to individuals and organizations. Therefore, KC is widely viewed as damaging to organizational development (Nguyen et al., 2022; Bhatti et al., 2023; Goncalves et al., 2023).

Problem Statement and Urgency to Conduct the Study

Knowledge sharing (KS) is a vital activity in knowledge management (KM) since employee knowledge is a precious and enduring asset for organizations (Ugwu et al., 2020; Joo et al., 2024). KS enables employees to acquire knowledge, learn, and generate new knowledge, ultimately achieving technological and knowledge innovation goals and developing strong survival capabilities (Scuotto et al., 2017). The employee's utilization of KM through sharing practices has been proven to enhance the organization's efficiency and bolster the competitive edge (Hendriks, 1999; Hernaus et al., 2018; Singh, 2019; Fonseca et al., 2021). Awkwardly, employees' unwillingness to share knowledge with their colleagues presents a significant challenge that can exacerbate the existing deficiencies in knowledge sharing within the organization (Connelly et al., 2012). KC inside an organization may significantly hinder the organization's performance and growth, impeding the dissemination of knowledge within the organization (Afshar-Jalili et al., 2021; Siachou et al., 2021). Besides, KC is fascinating since it has evident adverse effects on enterprises. This factor hampers the expression of originality and innovation, hinders the ability to work together and cooperate, and ultimately weakens achieving the organization's objectives (Yingfei et al., 2021).

Numerous employees intentionally conceal their knowledge, information, abilities, and expertise simultaneously, which can significantly impede the sharing of knowledge and harm individual performance (Gagne et al., 2019; Xiao & Cooke, 2019; Pereira & Mohiya, 2021; Xiong et al., 2021; Chatterjee et al., 2021; Hadjielias et al., 2021). The prevalence of KC also impedes individual progress (Zulkeflee et al., 2022), for instance, on individuals' creativity (Jahanzeb et al., 2019; Malik et al., 2019; Wang, 2019), innovation (Kang, 2016; Jiang, 2021; Mohamed et al., 2023), and generation of new ideas and long-term success in businesses (Zutshi et al., 2021; Lei, 2024). This is supported by Koay and Lim (2022), who stated that when someone conceals knowledge from others, the knowledge requester must spend additional time searching for it elsewhere, resulting in decreased job efficiency. Subsequently, people's deliberate concealment of knowledge can result in decreased income, less team effectiveness, lower employee performance and impede the management of organizational knowledge (Arain et al., 2019; Xiong et al., 2019).

Global et al. (2022) reported that Malaysia produced fewer innovations in the outputs than its investments due to a lower score in creative output, knowledge, and technology output pillars. Similarly, Malaysia also has the weakest infrastructure performance. This will impact the achievement of SDG 9, which focuses on industry, innovation, and infrastructure. Besides, a lack of innovation can also affect SDG 8, which targets decent work and economic growth to accelerate human capital development for an advanced nation (Ministry of Economy, 2024). Furthermore, the Twelfth Malaysia Plan (2021–2025) on human capital through training and education will also be affected.

Since many studies have focused on the consequences of KC, there has been a lack of interest in investigating the predictors of KC, as evidenced by many researchers (Connelly et al., 2012; Zhao et al., 2016; Zhao et al., 2019; Bai, 2020; Hoseinpour, 2022). Moreover, research on the predictors of KC receives limited attention from scholars, with just a few scholars having conducted studies on this topic by focusing on single predictors, such as studies by Erkutlu and Chafra (2023) and Cen et. al, (2024). Bai (2020) suggests that future studies should focus on more KC predictors rather than one predictor. Therefore, this paper aims to examine the knowledge concealment (KC) predictors, which are the lack of rewards in knowledge sharing, moral disengagement, internal competition, and psychological entitlement among knowledge practitioners in Malaysia.

2. Literature Review

Knowledge concealment (KC)

Connelly et al. (2012) affirmed that KC occurs when someone hides or conceals knowledge that someone else has asked. Thus, they described KC as the deliberate act of hiding or concealing information when demanded by a colleague inside the organization. Meanwhile, Wen and Ma (2021) defined KC as the intentional act of an individual hiding or concealing knowledge that a coworker has asked for. It was supported by Xiao and Cooke (2019) when they described KC as another unproductive knowledge activity. Employees who conceal knowledge gained from others can make it harder for an organization to handle knowledge well (Connelly et al., 2012; Bogilovic et al., 2017; Ghani et al., 2020; Zutshi et al., 2021).

Pereira and Mohiya (2021) discovered that a favorable corporate atmosphere and this purpose could facilitate the sharing of knowledge. In contrast, an unfavorable corporate atmosphere and individual intents can result in the concealment of knowledge. Regrettably, certain employees deliberately conceal their professional knowledge despite their willingness to share it can harm employee performance (Connelly et al., 2012; Gagne et al., 2019; Xiao & Cooke, 2019; Saaed et al., 2020; Pereira & Mohiya, 2021; Xiong et al., 2021; Chatterjee et al., 2021; Hadjielias et al., 2021). Nevertheless, if people fail to share knowledge, organizations may waste money, teams might not work well, and business knowledge management could be slowed down (Arain et al., 2019). Employees might be less productive (Xiong et al., 2019). In addition, organizational crises can result in a lack of resources, which may result in employees concealing knowledge to secure a competitive advantage (Rauf et al., 2024).

The phenomenon of KC has been explored in several industries, situations, environments and domains, including organization studies, organizational behavior, leadership, human resource management (Connelly et al., 2012; Peng, 2013; Arain et al., 2018; Khalid et al., 2018; Pan et al., 2018; Butt, 2019; Khalid et al., 2019; Connelly et al., 2019; Anand et al., 2020; Rezwan & Takahashi, 2021; Di Vaio et al., 2021). Certain employees conceal their knowledge to protect their interests (Oliveira et al., 2021). Furthermore, they may hesitate to share information despite being offered incentives (Cabrera & Cabrera, 2002; Webster et al., 2008). Consequently, because of its significance in organizational and management literature, research on KC has been broadened across multiple disciplines, including information systems, higher education, and psychology (Abdullah et al., 2017; Ghani et al., 2020). Most studies on KC in businesses define it as an unethical, harmful, and unproductive activity that impedes employee innovation and impacts organizational accomplishment (Serenko & Bontis, 2016; Hernaus et al., 2019).

Despite considerable efforts and financial investment, the organization still needs to achieve the targeted objective of improving KS (Banerjee et al., 2017; Labafi, 2017). Anand and Hassan (2019) found that the seriousness of the problem is that management has been mostly unsuccessful in preventing the concealment of knowledge. If KC is effective within an organization, it will result in a quiet benefit derived from learning and development programs. Interacting with other individuals will enhance their comprehension more than workplace experience will lessen it. Hence, only individuals with knowledge and expertise will succeed, while others will experience failure and lag. Subsequently, it will mitigate the occurrence of employees' deficiency in essential knowledge and abilities (Ahmad & Tan, 2018). Akbarzadeh et al. (2022) asserted that KC poses a significant barrier to sharing knowledge, and effectively dealing with this issue necessitates a comprehensive assessment, intervention, and preventative measures.

Although KS among employees is advantageous for an organization, a notable percentage of employees are reluctant or unwilling to share what they know with others (Connelly & Zweig, 2015). Černe et al. (2014) have demonstrated that the drawbacks of concealing knowledge affect those seeking knowledge and diminish the creativity of personnel possessing such knowledge. KC involves taking specific actions that might unexpectedly affect both conditions and communication channels. At the organizational level, employees deliberately conceal knowledge for the organization's advantage (Arain et al., 2018; Butt, 2019). The concealment of knowledge by employees across different organizations can detrimentally impact a company's capacity to compete and expand, ultimately leading to the deterioration of customer relationships (Avotra et al., 2021). If this scenario occurs, it will impede the employees' capacity to acclimate and accommodate changes in their everyday lives. Thus, Anand and Hassan (2019) suggested that it is essential to establish a robust framework that promotes unity and collaboration among a varied workforce to address hidden agendas or issues linked to ethics or cultural differences.

Lack of rewards in knowledge sharing

Studies found that there are several obstacles to KS in organizational contexts. An essential barrier is the lack of rewards in knowledge sharing as a mechanism that inspires employees to disseminate their expertise to others. Lack of KS rewards refers to the absence of public recognition and financial compensation for sharing market knowledge (Anaza & Nowlin, 2017). Thus, employees who lack recognition for their achievements are less inclined to disseminate their expertise, Riege (2005). In the meantime, Kurniawan and Anindita (2021) found that recognition as part of rewards encourages individuals to share knowledge. It can be extrinsic and intrinsic rewards that aim to inspire employees inside the organization. Hence, acknowledging exceptional individuals inspires and drives the organization. Asaari et al. (2019) acknowledged employees who have improved their performance, encouraged them to share, and enabled organizations to provide excellent services. Similarly, Hussain et al. (2019) found that recognizing employees benefited their performance. Additionally, Ali and Anwar (2021) underscored the importance of employee valuation, as it directly influences employees' job performance.

These studies indicate that acknowledgment has a meaningful effect on employee productivity. Recognition and awards can contribute to organizational success by enhancing performance effectiveness (Masri & Abubakr, 2019). Research by Hee and Rhung (2019) has demonstrated that organizations using a motivational approach incorporating employee recognition experience higher worker morale and performance levels of worker morale and performance. Understanding employee motivation is crucial since it directly impacts service performance. The concept of a "public performance engine" emphasizes the individual and their dedication to serving society as the focal point of public administration governance. This is because employees see their contributions as highly valued and their job quality recognized. Likewise, recognition enhances the worth of individuals, maintains their concentration on their tasks, and stimulates their progress and advancement. Recognition is employed to identify and acknowledge desired employee behaviors. McAdams (1995) noted that acknowledgment might take the form of either financial or non-financial rewards. Nevertheless, the outcome is contingent upon the prevailing culture and practices inside the organization.

Moral disengagement

Moral disengagement is a personal characteristic that influences how individuals process ethical decisions and act unethically without experiencing any feelings of distress (Moore et al., 2012). It is a process that involves the interaction between cognition, organizational cues, and reciprocal causality (Moore, 2015). Moral disengagement has been recognized as a contributing factor to unethical conduct (Barsky, 2011), unethical behavior that benefits the organization (Lian et al., 2022), social loafing (Alnuaimi et al., 2010) and workplace harassment (Kowalski et al., 2021). Valle et al. (2019) found that moral disengagement functions as a cognitive process that investigates the influence of leader humility on subordinates' justifications and minimizations of deviant behaviors. As stated in Bandura's social cognitive theory (1990; 1991), moral disengagement involves a set of cognitive processes that people use to justify and rationalize unethical behavior to avoid feelings of guilt. Hence, this cognitive aspect helps explain why individuals may disregard common standards and violate ethical boundaries in various situations.

From the Malaysian perspective, few cases of moral disengagement are reported among knowledge practitioners. The Integrity Unit of Malaysia reported seventeen cases of disciplinary crimes committed by

public officials in ministries, departments, agencies, and companies from January to June 2022. Public servants perpetrated this offense for six months in 2022, and this figure will escalate if the authorities neglect to take appropriate measures. This immoral activity must be promptly restrained since these knowledge practitioners are valuable assets to the nation as human capital KKMM Integrity Unit (2022).

Internal competition

Internal competition occurs when employees become competitors, vying for limited resources such as compensation, recognition, promotion, and status (Anaza & Nowlin, 2017). Meanwhile, Birkinshaw and Lingbald (2005) defined internal competition as the degree to which there is redundancy inside an organization regarding the goods manufactured, markets targeted, and business competencies. Internal competition, also known as internal rivalry Khoja (2008), pertains to the competitive dynamics within an organization, with individuals and business units vying for markets, technology, and organizational resources. Hence, managers foster rivalry among employees to enhance performance and efficiency, which is advantageous for all organizations Cen et al., (2024). The impacts encompass heightened employee exertion, drive to undertake demanding projects, efficacy in job completion, and the cultivation of robust interpersonal connections with colleagues (Tjosvold et al., 2006).

This internal competition exists between two parties who are trying to establish supremacy in the workplace. It motivates individuals to engage in competition for resources, rewards, status, and power, thereby accomplishing corporate goals. Furthermore, the existence of internal competition has spurred personnel into positions of power, with knowledge assets acting as the motivating factor, thus accelerating the organization's operations. Scholars have conducted prior research revealing that a robust motivating element can significantly impact an individual's perception of competitiveness in the workplace. A strong motivating factor can also alter this perception (Sarfraz et al., 2019; Shah et al., 2019; Kalra et al., 2021). Oliveira et al. (2019) stated that individuals within an organization who are concerned about the negative impact on their power or capacity to outperform others frequently conceal or hide their knowledge and are likely to be hostile to other employees. Individuals deliberately erase data for personal gain (Perotti et al., 2022) and participate in other detrimental actions, resulting in significant harm to the organization's performance. Competitive individuals prioritize their benefits and interests over the recognition, prestige, and rewards of others to protect their authority and status against rivals inside the company (Hernaus et al., 2019). Consequently, there is an increased likelihood that they will conceal their knowledge (Shirahada & Zhang, 2022).

According to the Malaysian Anti-Corruption Commission (MACC) reported in Terengganu, there are few cases reported among knowledge practitioners for abusing their positions within a state agency to secure procurement contracts valued at over RM200,000 (Bernama, 2024). Previously, there was a case in Sabah whereby a civil servant misused his position by accepting a successful vehicle purchase quotation worth RM15,000 from his wife three years ago (FMT Reporters, 2024). Consequently, this gave a bad reputation to the individual and the organization itself as it reflects their image.

Psychological entitlement

Psychological entitlement has attracted heightened scrutiny as a topic of theoretical and empirical investigation across multiple research disciplines, including marketing (Kemper et al., 2022); organizational behavior (Schwarz et al., 2023); ethics (Chen et al., 2023); education (Sun et al., 2022); and social psychology (Klein & Conley, 2022), among others. Psychological entitlement (PE) is a consistent and widespread belief that one is deserving of more and entitled to more rewards than others, irrespective of their performance, as proven by Grubbs and Exline (2016). Snow et al. (2001), Naumann et al. (2002), and Harvey and Martinko (2009) have conducted previous research on this concept. This attitude toward entitlement is evident in both desired and actual behaviors (Campbell et al., 2004).

Psychological entitlement also refers to the characteristics of people who constantly believe they deserve exceptional rewards and treatment, regardless of their natural attributes or performance levels. Entitled people believe they deserve preferential treatment or should be considered unique in social circumstances. They continually uphold a positive self-image and expect positive results in significant situations. Furthermore, they are entitled to exclusive benefits and exemptions from standard social norms without reciprocating contributions. Even if they manipulate or take advantage of others to achieve their objectives, this sense of

entitlement remains unchanged. This idea is defined by a widespread sense of entitlement, encompassing the belief that one is more deserving than others (Grubbs & Exline, 2016). Individuals exhibiting elevated psychological entitlement expect to receive more than their counterparts in numerous domains, including superior employment positions, enhanced authority, autonomy, power, rewards, and recognition (Grubbs & Exline, 2016).

According to Jordan et al. (2017), PE in organizational psychology refers to relatively young people, and this subject is attracting growing interest among scholars and organizational managers, which is aligned with Priesemuth and Taylor (2016). PE refers to the widely accepted belief that an individual merits and has a right to a higher quantity or quality of things than others. Moreover, it has been associated with other detrimental personality characteristics such as greed, aggression, and a lack of ability to pardon (Campbell et al., 2004), narcissism and a deficiency in self-control (Raskin & Terry, 1988) and Machiavellianism (McHoskey, 1995). Loi et al. (2020) indicate that employee psychological entitlement negatively affects organizations. Specifically, some psychologically entitled employees demonstrate abusive behavior towards their colleagues and are more likely to engage in political behaviors, as observed by Eissa and Lester (2021). They often show less concern for how their actions affect others, making them more likely to engage in deviant behavior at work. (Zitek & Jordan, 2019). Thus, individuals with a high degree of psychological entitlement (PE) are more prone to displaying deviant and unproductive workplace actions based on their knowledge (Ellen et al., 2021). They may utilize efficient techniques and ethically dubious strategies (Lee et al., 2019). Discontent at work, mistreatment of others, relationship difficulties, and perceptions of supervisors as abusive are all associated with psychological entitlement (Harvey & Harris, 2010; Haveny & Martinko, 2009; Haveny et al., 2014). Researchers have linked high levels of PE to unethical negotiation strategies (Neville & Fisk, 2019), below-average performance (Joplin et al., 2021), self-centered sharing of organizational information (Alnaimi & Rjoub, 2021), abusive supervision (Eissa & Lester, 2021), and involvement in corruption (Levine, 2005; Rosenthal & Pittinsky, 2006; Lin et al., 2023).

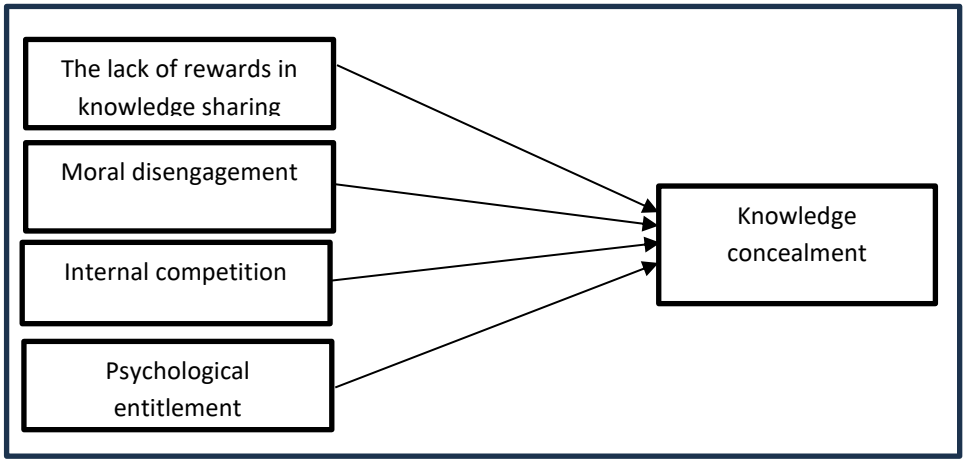
The Malaysian Anti-Corruption Commission (2024) reported that the corruption cases in Malaysia within five months of 2024 (January until May) namely top management, professional and management, support staff, public sector, private sector, public, and others. There are two categories which consist of professionals and management and top management shows the lowest level of participation throughout the period under review compared to both the public and private sectors. Meanwhile, the report from Transparency International confirmed that Malaysia received a score of 47 on the Corruption Perception Index for the year 2022. Today, Malaysia stands in 61st position out of 180 countries. This demonstrates the importance of developing more measures to prevent such misbehavior and corruption effectively in the Malaysian public sector. Therefore, strong and effective integrity measures must be adopted to prevent the loss of public trust resulting from unethical conduct (Moreira, 2019).

3. Research Methodology

Following a comprehensive and systematic review of current academic literature, the authors focused on published studies on "knowledge concealment" and "knowledge hiding." The review employed a synthesis of Google Scholar and manual searches, alongside automated keyword searches across significant databases, including Scopus, Science Direct, WOS, Springer Link, and Emerald, from 2004 to 2024.

4. Findings and Conclusion

Figure 1: The proposed framework



In the proposed framework, the researcher chose to include variables with the strongest supporting evidence as predictors of knowledge concealment (KC). This framework has potential contributions to Malaysian knowledge practitioners. In the first place, this research significantly increases the understanding of knowledge concealment among knowledge practitioners. Likewise, this framework promotes a more transparent and collaborative knowledge-sharing environment for knowledge practitioners in an organization. Similarly, this framework also meets the organization's immediate need for openness and collaboration while aligning with larger national and international development goals. Additionally, this paper explicitly supports Sustainable Development Goal (SDG) 9, which emphasizes industry, innovation and infrastructure by fostering knowledge practices that enhance innovation and drive institutional progress. These efforts are aligned with SDG 8, which promotes good jobs and economic growth, by aiming to improve the workplace environment to maximize human capital development as an important factor in Malaysia's progress towards a sophisticated knowledge-driven economy. Nevertheless, this research also reinforces the Twelfth Malaysia Plan (2021-2025) by highlighting the importance of human capital development through targeted training and educational initiatives. In addition, this framework offers direction to policymakers and organizational leaders who seek to cultivate a workforce that capable of addressing the challenges of a competitive global environment. This aims to mitigate knowledge concealment among knowledge practitioners in an organization.

Moreover, this framework could serve as a guide for future studies exploring KC topics in various sectors, particularly in Malaysia's public sector, higher education and agriculture, as these areas have been overlooked in most existing KC research. This model can be tested to assess its suitability for this context of study. This study examines knowledge concealment in an organization. Numerous researchers have proven that employees who conceal knowledge gained from others can make it harder for an organization to handle knowledge well (Connelly et al., 2012; Bogilovic et al., 2017; Ghani et al., 2020; Zutshi et al., 2021). Given the limited research on KC in Malaysia and the factors influencing it within organizations, the researcher is motivated to explore the predictors of KC in this context. Moreover, KC plays a vital role in individuals' reluctance to share their knowledge to improve KM implementation in Malaysia. These KC predictors should be understood, and the underlying difficulties should also be addressed since the implementation of KM practices in Malaysia is still in its infancy (Ahmad et al., 2023). Consequently, it is vital to identify the factors that contribute to challenges in knowledge management practices in Malaysia (Ganapathy et al., 2020). Therefore, this paper seeks to explore the knowledge concealment (KC) predictors in Malaysia. Additionally, it seeks to propose a comprehensive framework for understanding knowledge concealment among knowledge practitioners in Malaysia.

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Digital Culture in Information Science Studies: A Systematic Literature Review

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Abstract: This paper aims to provide a systematic literature review covering the field of digital culture in the information science study. Digital culture studies have been used in various fields, including but not limited to humanities, education, information technologies, human resources, and counseling. However, the amount of research that discusses the digital culture in information science study remains limited. This paper will provide a comprehensive insight into the studies that have been conducted related to digital culture based on various publications that have been deposited in the selected databases. Based on findings, previous scholars define the concept of digital culture as associated with people as well as technology. The behavior of people interacting, behaving, thinking, and communicating as human beings will create the digital culture environment within current communication settings. Besides that, the development of digital culture research began within the 21st century when the digital and industrial revolutions were introduced. The findings also present the limited number of digital culture research trends within information science. Thus, it is significantly important to explore digital culture research, particularly within information science studies. The information provided in this current study will be greatly beneficial to the research community to discover which database is the most relevant to digital culture studies. This will further assist the researchers to select and target the high-indexed journals in the respective databases.

Keywords: *Library and information science, digital culture, digital technology, digitalization.*

1. Introduction and Background

The digital revolution also known, also known as the third industrial revolution, emerged in the year 1969 until 2009. With the introduction and widespread use of digital computers and digital record-keeping in the late 1950s, the Digital Revolution got underway and is still going strong today (Itigatti, 2020). During the late 1980s, digital technology started to rise with less than 1% of the technology information stored in the digital format (Hilbert, 2020). According to Technopedia (2017), the digital revolution began to spread to developing countries in the 2000s, causing the number of mobile phones and internet users to rapidly increase. During this period, analog television was replaced by digital signal, reaching 94% of usage in the year 2007. In 2014, 99% of technology information was stored in digital format. The development of hardware and software began, creating fierce competition among well-known developer companies. Microsoft and Apple are among the top performer companies which continuously upgrading their technologies and keep soaring until today at a top-notch level.

Each of the Industrial Revolution phases has changed the way we live, work, and interact with each other (Shahroom & Hussin, 2018). Nowadays, digital technology has become a part of human ways to think, behave, and interact within the community as well as within an organization. Allen (2019) stated that technology brought new methods of electronic communication. Digital technology has created an online environment called digital culture. The revolution in the advancement of technology shows that digital culture has been present since then. Technology, hardware, software, and systems are the tools that not only create and build a digital culture among people but also significantly connect one person with another. Mahmood and Hussin (2018) reported that internet development and mobile technology have also changed the way people gain contact and information, their technology style and preference, and influence their decision-making in selecting and purchasing related services. Smartphones are a technology that provides various range of services including the internet and advanced computing skills that help users stay involved and connected in their everyday lives (Kirvan, 2023). Internet and mobile technology eventually become vital platforms that build and shape the digital culture environment among people worldwide.

In Malaysia's context, digital technology has shaped the community or society to accept and emerge with the technology in their daily lives, known as digital culture. According to Kemp (2024), the internet user in January 2024 is 33.59 million out of 34.49 million of the Malaysian population. The data revealed that the penetration of the Internet within the community and society in Malaysia has covered almost the entire population of Malaysia. According to MCMC (2022) show that the number of internet users in 2022 is a 92.7% increase of 4% than in 2020 with 88.7%, while the percentage of non-internet users is 7.3%. The data revealed by MCMC (2022) state that the online activities of Malaysians are communicating by text (98.3%), visiting social networks (94.1%) and watching and downloading video or online television (89.6%). The data show that Malaysians have begun to absorb the digital lifestyle in their daily life. Internet, social media and smartphones have become significant tools to connect with the technologies in their life. This scenario shows that digital culture exists, and the urban and rural communities have begun to adapt to this digital culture environment and lifestyle in their daily lives. Therefore, that is significantly important to explore and investigate the digital culture status of society to embrace Society 5.0.

The concept of digital culture can describe the idea that technology and the internet significantly shape the way we interact, behave, think, and communicate as human beings in a societal setting (d'Arnault, 2015). This concept has been described by Clayton d'Arnault (2015) in the Digital Culturist website. Meanwhile, GDS Insight (n.d) also defines digital culture as a concept that describes how technology and the internet shape the way we interact as human beings. Miller (2011) describes the digital culture as a culture shaped by the emergence and usage of digital technology. Digital culture is regarded as a key component of the current digital transformation of society. However, at the same time, it also can be seen as an epistemological obstacle to the sociological analysis of the same phenomenon (Guy, 2019). The emergence of technology has created the "digital culture" in which knowledge and information have emerged, centering on the organization, recording, and distribution within society (Sobandi, 2021). This current study will expand the literature review by covering both the Google search tool and the published articles in the EBSCO Host, ScienceDirect, and Emerald Insight databases. A systematic literature review will be performed to dig out more on the definition of digital culture from the multiple perspectives of various disciplines, including in the area of information science study. This study has come out with the following research question to construct the systematic literature review:

- *What is the definition of digital culture based on the previous literature review?*
- *Which areas have been developed on the digital culture within the previous literature review?*
- *How have digital culture research trends evolved over the years?*
- *How many publications have been published in information science studies?*

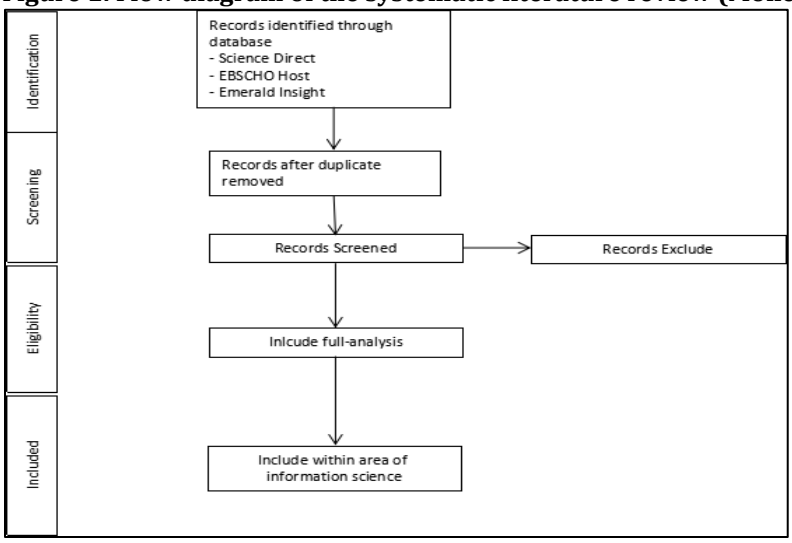
This report will also describe the methodology that has been adopted for the systematic literature review. Then, the findings generated from the search against the targeted databases will be further discussed comprehensively. The discussion will be based on previous studies to identify which area related to digital culture was the most explored by previous scholars.

2. Methodology

In constructing a systematic literature review, this study has articulated a series of steps that allow the construction of the literature review based on all the selection parameters in the databases (EBSCHO Host, ScienceDirect, and Emerald Insight. These databases have been selected because database like EBSCHO Host provides a large number of databases that cover a diverse range of subjects in the social sciences (National College of Ireland Library 2021). Emerald Insight focuses on academic journals or books in the fields of management including accounting & finance, economics, human resource & organizational behavior, management science & operations, marketing, and strategy (National College of Ireland Library, 2021) while Science Direct provides free access on to their most cited research which covering on physical science and engineering, life science, health science as well as social science and humanities (Elsevier, 2021). The digital culture studies within the social science fields, thus this database has been selected by the author of the paper. Besides that, a flow diagram for the reporting of systematic literature review based on Moher et al. (2009) called PRISMA was used as a guide to provide the complete picture to understand the digital culture definition from the view of information science study and other disciplines. This PRISMA-P will facilitate in preparation and reporting of a robust protocol in systematic review (Moher et al, 2015). Figure 1 displays a systematic

literature review development, addressing the entire selection process of the targeted publications.

Figure 1: Flow diagram of the systematic literature review (Moher et. al, 2009)



H1: Different customer age groups experience mobile network operators differently.

Selection of topic: Digital Culture

The systematic literature review was conducted on the digital culture topic, focusing on the information science study field. In the library and information science studies, EBSCHO Host, ScienceDirect, and Emerald Insight databases are identified as the most highly referred databases among academicians, including students and researchers within the field of information science. This study presents the publications that were captured and retrieved using the search keyword "Digital Culture" from these popular databases. Multiple databases were considered and analyzed to perform this empirical study and to ensure the originality of the results.

Records identified through the database: EBSCHO Host, Science Direct & Emerald Insight.

Table 1 shows the search results related to the "Digital Culture" keywords that were extracted from EBSCHO Host, ScienceDirect, and Emerald Insight databases. This result displays the overall search result on the databases regardless of the inclusion and exclusion criteria. However, the limitation of the publications year and the language filter were applied to the searching process. The search strategy during searching the title with "digital culture" is field searching. According to Iowa State University (2021), field searching is a technique that lets you search for information that you know will be in a specific field of an item record, such as the title or author. The data summarized in Table 1 indicates the publications from the year 2011 until 2020, involving numerous journals that cover the research area of interest.

Table 1: Search results generated from the keyword "digital culture"

No.	Database	Search Query	Search Result	Date of Search
1.	ScienceDirect	Find an article with this term: "digital culture"	546 results	31 December 2022
2.	EBSCO Host	Searching: <"digital culture"><Select a Field (optional)><TX All Text><language:english>	2,714 results	31 December 2022
3.	Emerald Insight	"Digital Culture"	336 results	31 December 2022

Then, the results obtained were classified based on the source type as shown in Table 2.

Table 2: Search results are sorted based on the source type in the databases (31 December 2020)

Database	Source Type	Total
ScienceDirect	Review article (23), research article (375), encyclopedia (15), book chapters (69), book review (14), news (18), editorial (9), others (23)	546 results
EBSCHO Host	Academic journals (1,561), book reviews (501), magazines (481), trade publications (120), and newspapers (51)	2,714 results
Emerald Insight	Article (279), book part (33), and early cite article (24)	336 results

Removal of Duplicated Publication & Records Screening

The number of the search results was further reduced by removing the duplicated articles. The articles were also filtered by a screening of the abstract title. This process is essential in finding the right articles and ensuring the selected article fits the requirements of the literature review, where the research topic must be highly related to the digital culture. Several criteria have been excluded and some others were included via the advanced search option available in the databases. The selected criteria were tabulated in Table 3 below.

Table 3: Results and the selection criteria extracted from the keyword "digital culture".

No.	Database	Selection Criteria	Search Result
1.	EBSCO Host	Include Year: 2011 - 2020 Source Type: Academic Journal Language: English only Limit to: Full text only Exclude Subject Company Publisher	19 results
2.	ScienceDirect	Include Year: 2011 - 2020 Source type: Research Article Include: Open Access only Limit to: Full text only Exclude Open archive	4 results
3.	Emerald Insight	Include Year: 2011 - 2020 Type: Article Only open access Exclude The article, Book part, Early cite article	3 results

Based on Table 3, the keyword "digital culture" was most frequently used in the EBSCHO Host database. The data revealed that 19 articles have been published related to digital culture topics in this database. Meanwhile, ScienceDirect and Emerald Insight showed a relatively low number of published articles related to the same research topic. Referring to this number, academicians, including the students and researchers could use the EBSCHO Host database as the main reference to look for the articles related to digital culture and subsequently to find the relevant information. Table 4 below shows the list of journals that were primarily discussed in the digital culture studies found in the EBSCHO Host, Science Direct, and Emerald Insight databases.

Table 4: Most relevant journals for the keyword "digital culture"

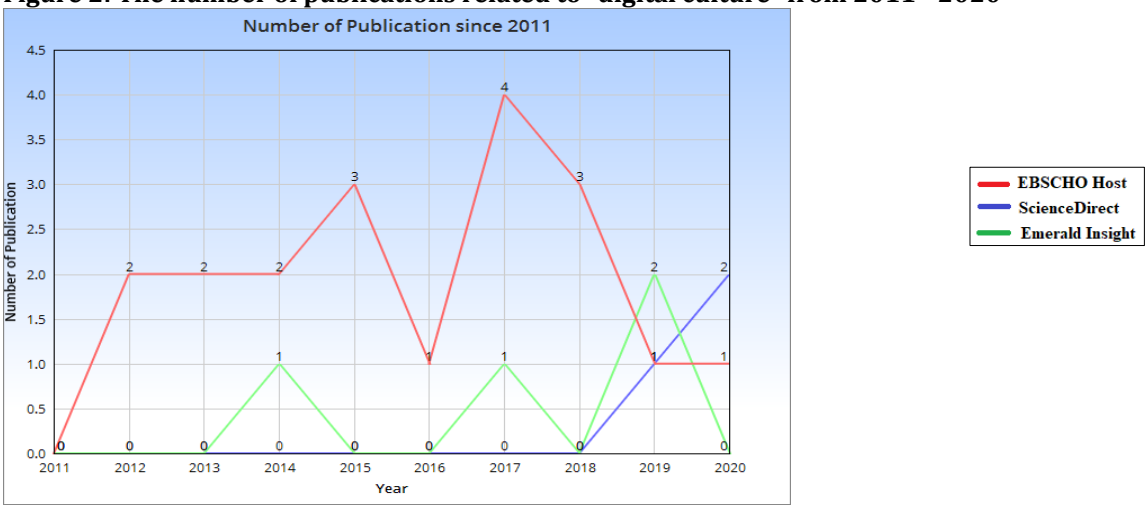
Database	Journal	No of Article
EBSCHO Host	Grey Room	1
	Mission Studies	1
	Leonardo	1
	International Journal of Humanities & Art Computing	1
	Radical History Review	1
	Distance Education	1
	Atlantic Journal of Communication	1
	HTS Theologies Studies/ Theological Studies	1
	Critical Art	**2**
	British Journal of Guidance & Counselling	1
	Sign System Studies	1
	The Journal of Arts Management, Law and Society	**3**
	International Journal of Children's Spirituality	1
	Education & Reality	1
	Journal of Gender Studies	1
	Gender, Work & Organization	1
	The Art in Psychotherapy	1
ScienceDirect	Discourse, Context, and Media	1
	Technological Forecasting, Social Change	1
	Computers and Education	1
Emerald Insight	Library Hi Tech	1
	Strategic HR Review	**2**

Based on Table 4, digital culture has been discussed and published in various fields of study. EBSCHO Host database displays the highest number of journals and articles (16 journals, 19 articles) that have discussed digital culture studies compared to ScienceDirect (four journals, four articles) and Emerald Insight (two journals, three articles). The Journal of Arts Management, Law and Society published the highest number of related articles, while is three articles, followed by Critical Art (two articles) and Strategic Human Resource Review (two articles). The low number of publications indicates that the digital culture field has not been explored much until now, answering why there is no firm theoretical research done on this field of study.

3. Revolution of Digital Culture Research Trend

Based on the literature survey conducted, the publications trend related to the digital culture fluctuated from 2011 through 2020. The EBSCHO Host database showed that the digital culture research increased to four publications in 2017. Meanwhile, the number of publications increased from one to two in the ScienceDirect and Emerald Insight databases in the year 2019 and 2020, respectively. The data shows that the research publications in the digital culture field are highly lacking and limited. This suggests that more research should be conducted, especially in this current digital environment to explore and theorize the digital culture research academically.

Figure 2: The number of publications related to "digital culture" from 2011 - 2020



Digital Culture on Information Science Studies

Information science study is composed of theoretical and applied efforts to define the word information, explain how the information is processed by the computer and related technologies (for example, information system), and how this information and system may interact with specific human practices such as business, culture, library science, and philosophy (Ess, 2003, 2004; Tavani, 2004). Zins (2007) has identified the components and the conception of information science. The journals associated with this component were identified in this systematic literature review. Figure 2 shows the conception map of information science.

Figure 2: The conception map of information science (Zins, 2007)

Characteristics: Scope	Domain	Explored Phenomena: Data	Information	Knowledge	Message
Mediating	Model (1) **Hi-Tech**	(Focusing on the mediating aspects of D-I-K-M as they are implemented in computer-based technologies)			
Mediating	Model (2) **Technology**	(Focusing on the mediating aspects of D-I-K-M as they are implemented in all types of technologies)			
Mediating	Model (3) **Culture/Society**	(Focusing on the mediating aspects of D-I-K-M as they are implemented in human societies)			
Inclusive (all aspects)	Model (4) **Human World**	(Focusing on all aspects of D-I-K-M as they are implemented in the human realm)			
Inclusive (all aspects)	Model (5) **Living World**	(Focusing on all aspects of D-I-K-M as they are implemented in the living world)			
Inclusive (all aspects)	Model (6) **Living & Physical Worlds**	(Focusing on all aspects of D-I-K-M as they are implemented in all types of biological organisms, human and non-human, and all types of physical objects)			

A series of steps to explore digital culture studies was designed in this systematic literature review. The research topic was specified to be within the keyword of "digital culture" in the information science field. Table 5 shows the identified journals and articles that fall within this search category. The research result was filtered based on the conception map of information science developed by Zins (2007).

Table 5: List of journals and published articles related to the keyword "digital culture" in information science study

Database	Journal	Title of Article	Author
EBSCHO Host	International Journal of Humanities & Art Computing	A data infrastructure for digital cultural heritage: Characteristics, requirements, and priority services	Fresa (2013)
	Distance Education	Digital culture clash: "massive" education in the E-learning and Digital Cultures MOOC	Knox (2014)
	Atlantic Journal of Communication	Toward a Media Literate Model for Civic Engagement in Digital Culture: Exploring the Civic Habits and Dispositions of College Students on Facebook	Mihailidis, Fincham, & Cohen (2014)
	British Journal of Guidance & Counselling	Training therapists to work effectively online and offline within digital culture	Anthony (2015)
	Sign System Studies	Internet memes as Internet signs: A semiotic view of digital culture	Cannizzaro (2016)
	The Journal of Arts Management, Law and Society	[1] Who Needs a Plan Anyway? Digital Cultural Policymaking is the Art of Navigating through Uncertainties	[1] Roberge, Nantel & Rousseau (2017)
		[2] The Promised Land of Comparative Digital Cultural Policy Studies	[2] Roberge & Chantepie (2017)
		[3] The Shaping of France's Digital Cultural Policy	[3] Chantepie (2017)
	Education & Reality	Brazil, Argentina and Uruguay: Public Relations education in digital culture	Rhoden & Oliveira (2018)
Science Direct	Technological Forecasting, Social Change	Digital technology, digital culture, and the metric/nonmetric distinction	Guy (2019)
	Computers and Education	The digital culture of students of pedagogy specializing in the humanities in Santiago de Chile	Ayala-Perez & Joo-Nagata (2019)
	Library Hi Tech	How to provide public digital cultural services in China?	Wanyan & Hu (2019)
Emerald Insight	Strategic HR Review	[1] Cultivating digital cultures	[1] Kavanaugh (2019)
		[2] How to nurture a transformative digital culture in the workplace	[2] William (2019)

Based on Table 5, digital culture has been discussed in various fields of study. However, some of the articles are not associated with the information science study. From the articles selected based on the conception of information science by Zins (2007), our findings show that digital culture has been discussed in humanities, education, information technologies, human resources, and counseling. The interdisciplinary study of the digital culture has been discussed widely in academic journals nowadays. The academicians, such as researchers and students can access the EBSCHO Host database if they want to explore the articles related to the digital culture study. Other than that, digital culture researchers can target the journals listed in Table 5 to publish their articles related to the digital culture study. This will contribute to the development of a body of knowledge, especially in the areas of digital culture, cultural studies, as well as social and human behavior. Meanwhile, the articles extracted from the ScienceDirect database were primarily discussed in the study field of media, technology, and education. Emerald Insight only published three articles in two journals, namely

Library Hi Tech and Strategic Human Resource Review. These findings also reveal that the academicians within the field of Library and Information Science have the opportunity to publish their work in the Library Hi Tech journal in the Emerald Insight database. Thus, this study suggests that this journal could be the most suitable for the scholars to publish their research work related to the information science study.

4. Discussion

The first insight that can be drawn from the previous literature review is, the digital culture topic has been applied in various disciplines, This topic also has influenced the other disciplines of study and is recognized as an interdisciplinary knowledge, On top of that, development of the systematic literature review based on the publications in the EBSCHO Host, ScienceDirect and Emerald Insight databases brings out the richness of ideas of digital culture in diverse disciplines, including computer science, applied science, communication, art, and humanities.

Defining Digital Culture

Based on the search results for the publications against the EBSCHO Host, ScienceDirect, and Emerald Insight databases, various definitions of digital culture have been obtained. The "digital culture" keyword has been applied in multiple disciplines, giving out a diverse definition of this term. To gain a more in-depth understanding of the digital culture, this systematic literature review has addressed the following research question:

"What is the definition of digital culture based on a previous literature review?"

The definition of digital culture is still being debated over time. Each definition that has been reported by previous studies is mostly specific to individual fields of study and expertise. Deuze (2006) stated that digital culture is seen as an emerging set of values, practices, and expectations regarding the ways people (should) act and interact within the contemporary network society. Digital culture is also recognized as a participatory culture where people not only gain information from it but also contribute in a variety of ways (Uzelac, 2008). Meanwhile, Miller (2011) stated that the digital culture represents the culture shaped by the emergence and the use of digital technology. d'Arnault (2015) further elaborated that the digital culture describes the idea that technology and the internet significantly shape the way we interact, behave, think, and communicate as human beings in a societal setting. Digital culture represents an integration and adaption of the comprehensiveness of utilizing computer technologies for practical, creative, and connective platforms and practices (Carlton, 2014). Similarly, Ayala-Perez & Joo-Nagata (2019) referred the digital culture as a concept that focuses the technology, that is, the collection of knowledge and uses of digital technology (devices, software, media, etc.), which encodes its data in binary code. Digital culture can be a component of the current digital transformation in society. However, it also can be an epistemological obstacle to the sociological analysis of the same phenomenon (Guy, 2019). The digital technology encompassing our daily lives makes our membership in digital culture grow (Lòpez, 2012). On the other hand, this study concludes that the digital culture represents the culture shaped by the emergence and use the technology among the society itself. This definition has been adopted from Vincent Miller in a book entitled "Understanding the Digital Culture", published in 2011. The combination of cultural components which includes individual and behavioural factors should be assessed in creating and building a digital culture in the society.

Development of Digital Culture Studies

Interestingly, based on the systematic literature review conducted, it was revealed that digital culture has been assessed in various disciplines, including but not limited to humanities, information technologies, human resources, counseling, library and information science, computing, and education. This indicates that the digital culture is not only applied to information technology (IT), but other disciplines have already started to explore this area of study according to their context and perspective. The second question that is addressed in this systematic literature review is:

"Which areas have been developed on the digital culture within the previous literature review?"

Digital culture studies started to be generally well-known in the 21st century, particularly during the Industrial

Revolution 4.0. Based on the various definitions discussed previously, it can be concluded that digital culture has been discussed from various perspectives. The previous study describes communication and interaction as the mediums in the application of technology in the world of digital culture, either in the organization or the local community as a whole. The Pew Study (Purcell, Rainie, Mitchell, Rosenstiel, & Olmstead, 2010) revealed that more individual within the community and political group participates in online technologies nowadays. Different areas of study have different understandings covering a broad spectrum and high dimension of digital culture. However, it all directed to similar primary contents which are the components of technology such as digital technology, media, internet, information technology, social network, as well as information, communication, and technology (ICT).

In educational studies, digital culture is developed and practiced in ICT among students and educators. Besides that, digital culture also has engaged with media literacy. Media literacy abilities possessed by youth in identifying the type of media allow them to access, evaluate, and manipulate the media. Adults should monitor the youth's daily activities on the social media platform to ensure that they display good digital behavior. It is also important to make sure that social media culture does not affect their life negatively. Previous studies also explored the reason why social media platforms redefined civic voice, engagement, and the participation of youth, especially in this 21st century. Scholars also took a glance at cyberculture, usage of software, technological, devices, and digital skills of students in embracing the digital culture. Digital culture has created an environment for students and educators that enables them to fully utilize the technologies by focusing on their daily practices. The experience gained from using ICT has enhanced the digital skills of students and youth within the community. As a result, ICT has been regarded as one of the significant platforms that are essential in embracing the digital culture in today's world.

In art management, scholars have been discussing the advancement of technology in the concept of performing art, visual, and media arts. The technology that going to be adapted into media and art studies must be relevant, considering that technology keeps on changing and evolving at a faster rate over time. The advancement of technology created new challenges for policy-makers in producing cultural policies through the adaption of technologies into the field of practice. The future of the digital culture also has been explored to make sure that their practice is relevant and up with the advancement of digitalization.

Among the various fields related to digital culture that have been discovered in this systematic literature review, the primary areas of study were identified to be (1) education and (2) art management. The compatibility of the digital culture with the field of study becomes a global challenge in this current era of globalization. No matter how big the challenges are, they must be overcome because technology will influence human behavior and daily life practices. Without technology, workers could not operate systematically which would limit efficiency. Taking the example of the current global situation due to the COVID-19 pandemic, students and teachers cannot communicate with each other without digital devices. Thus, education and learning cannot be carried out as usual. Moreover, without technology, the exhibition of arts (including artifacts and work in galleries, museums, or any cultural organization) could not be presented to the public. These examples show the importance of technologies, the enabler of human functions in today's world.

Revolution of Digital Culture Research in Technologies Study

The topic of digital culture has been discussed since 1997 in the academic arena. However, the definition of digital culture has only been properly defined nine years later, which was in 2006 by Deuze. Based on the literature survey, the number of publications related to digital culture research is low, particularly from 1997 until 2010. Then, from 2011 until the present, the number of publications in digital culture research has increased but remains at a considerably low number. The highest number of publications was reported in 2015 from the ScienceDirect database. Digital culture research is still not well-known among scholars within the information science study. According to Creeber and Martin (2008), new media and the digital revolution are parts of cultural transformation and most likely affect the world due to the development of the printing press or electrification. In the '90s, scholars have been discussing the barriers that surfaced in dealing with the digital culture. They were also concerned about how to deal with the diversity of digital content. In the '20s, a higher number of scholars coming from various disciplines have explored the digital culture within their respective fields of study. Scholars in the education field, particularly students and teachers tried to deal with the skill and media literature. Meanwhile, in the art management field, scholars have been discussing and exploring the

entanglement between digital technologies, culture, media, and public policy-making. Next, in the "21s, digital culture arose from various disciplinary, especially following the emergence of digital transformation and industrial revolution 4.0. The increased number of publications related to digital culture shows that this topic is closely associated with the digital world and technology plays an important role in the successful implementation of digital culture within an organization, as well as in the community.

With the emergence of the Industrial Revolution 4.0, researchers realized the importance of digital culture and started to take more interest in this topic. Moreover, they also realize that the digital world has monopolized the current global environment especially the Covid-19 pandemic that requires people to keep their social distance from other people. When people need to isolate themselves from other people, technology comes in handy to communicate and connect with their family and friends. Most organizations started to embrace digital technology. This situation highlights the importance of digitalization and its culture. Digital technology must be fully utilized by an organization to create a good digital culture. Digital culture can be developed from the utilization of technologies through associated platforms such as social media that allow people to communicate, interact, and share information regardless of distance. This area of digital culture should be explored more intensively by researchers in the future.

Digital Culture within Information Science Study

This systematic literature review also narrowed down the search on digital culture within information science study. According to Zins (2007), information science consists of humanities, information technologies, human resources, library and information science, computing, and education. The publications related to information science that was generated from the databases were matched with the keyword "digital culture". However, this classification of the areas of study is based on the author's point of view rather than other expert perspectives. The following research question is addressed:

"How many publications have been published within information science studies?"

Based on the data revealed, only a small number of publications was found to be related to the digital culture research within the information science study. A total of 26 articles were discovered from the targeted databases (EBSCHO Host, ScienceDirect, and Emerald Insight), published throughout the year of 2011 until 2020. In summary, the research area of digital culture within information science study is yet to be explored extensively. Researchers should conduct more studies and publish more data and findings regarding this area to contribute to the development of the body of knowledge. The relationship between technology and human factors should be studied more to gain more understanding of digital culture in the context of information science study, Human and technology forms an interaction in digital culture, either within a small organization or the whole community.

5. Conclusion

This study presents a systematic literature review in the area of digital culture within the information science study. The methodology performed to overcome the complexity of searching for relevant information can be a guide to assist researchers in capturing the right information within their field. "Digital culture" has been used as a keyword to examine the existing literature review in the targeted databases. The use of suitable keywords is essential to prepare a systematic literature review in facilitating researchers to identify the most suitable journal and article based on their preferred topic. This study has discovered that most of the publications related to digital culture have been published in the EBSCHO Host compared to the ScienceDirect and Emerald Insight databases. In the future, researchers who want to explore digital culture study can use EBSCHO Host as the primary database and use the keyword "digital culture" to search for related publications. This systematic literature review also has shown how the digital culture topic has evolved over the years (2011 - 2020). Apart from that, a systematic literature review will give an overview of how far a particular field of study has been explored. This knowledge is important for the development of research theory or model in that respective field. Hence, it can be a powerful tool in exploring a certain field and will be a strong basis of knowledge for researchers before starting to go deeper into a particular field of study.

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Exploring Entrepreneur Intention in the Mushroom Industry with Government Support in Malaysia

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Abstract: The mushroom industry in Malaysia is experiencing significant growth due to its high return value and low production costs. The Malaysian government has implemented initiatives to encourage entrepreneurial activities. However, the effectiveness of these initiatives in influencing entrepreneurial intention remains to be determined. This study investigates the relationship between entrepreneurial intention in the Malaysian mushroom industry and the moderating effect of government support, drawing insights from the interplay between entrepreneurial self-efficacy, intention, and external support mechanisms. Numerous factors influence entrepreneurship intentions in the mushroom industry. Entrepreneurial self-efficacy plays a crucial role in shaping entrepreneurial intentions and behaviors, and individuals with high self-efficacy are more likely to perceive themselves as capable of successfully starting and running a new business. Government support can provide funding, tax advantages, subsidies, skills development, and advice services and create enabling environments for entrepreneurial efforts. The literature on government support and its impact on entrepreneurship intention reveals gaps that need further exploration. The theory of Planned Behavior (TPB) offers a comprehensive framework for understanding how entrepreneurship education influences self-efficacy, attitudes, and intentions. This study examines the capacity of government assistance to impact entrepreneurial intention in the Malaysian mushroom business, providing vital knowledge on how to promote a more robust environment for sustainable mushroom production. Additionally, this research aims to bridge the gap by investigating how government support moderates the relationship between entrepreneurial self-efficacy and intention in the Malaysian mushroom industry, offering valuable conceptual insights to policymakers for fostering a sustainable mushroom production sector.

Keywords: *Entrepreneur Education, Entrepreneur Attitude, Entrepreneur Self-Efficacy, Government Support, Entrepreneur Intention, Mushroom Industry.*

1. Introduction

Mushrooms have been classified as a high-value commodity under Malaysia's National Argo-Food Policy (2011-2020). The mushroom industry development focuses on expanding the cultivation area, increasing productivity, developing new kinds, and improving product quality. In the current setting, the mushroom industry in Malaysia has been experiencing significant growth, becoming one of the fastest-growing agricultural sectors in the country. This growth is attributed to high return value and low production costs (Munir et al., 2021). The demand for mushrooms in Malaysia has been steadily increasing, with projections indicating a rise from 23,000 tons per year in 2008 to 72,000 tons per year by 2020 Rashidi & Yang (2016). This growth is further supported by mushroom cultivation, which does not require extensive land and can be established with modest to low capital investment, making it an attractive option for rural farmers and peri-urban dwellers (Rosmiza et al., 2016). Grey oyster mushrooms are a focal point in commercial mushroom farming in Laysia, with white oyster mushrooms being less popular due to their slower growth rate (Abdullah et al., 2023). Additionally, various mushroom species, such as Agaricus, Auricularia, and Pleurotus, are widely cultivated in the country (Majib et al., 2023).

Mushroom cultivation, particularly oyster mushrooms, is seen as a lucrative agricultural activity in Malaysia due to its high value and low-cost technology that can yield substantial returns within a short period (Latif et al., 2023). Additionally, cultivating rare polypore mushrooms like Ganoderma neo-japonica in Malaysia presents opportunities for commercialization and utilization in various products due to their unique properties (Tan et al., 2015). Small and medium-sized enterprises (SMEs) play a vital role in the Malaysian economy, with

manufacturing SMEs contributing significantly to the country's industrial development (Khan & Khalique, 2014). Developing SMEs, including those in the mushroom industry, is crucial for achieving high-income nation status by leveraging their economic contributions (Wahab et al., 2019). Furthermore, SMEs in Malaysia are expected to increase their production output, with manufacturing SMEs projected to contribute up to 50% of the total production output in the sector by 2020 (Mamun et al., 2018).

The mushroom industry's potential in Malaysia is further underscored by the increasing demand for mushrooms, with the total market expected to rise significantly in the coming years (Rashidi & Yang, 2016). To enhance production efficiency and quality, innovations such as automated controlled environment mushroom houses have been developed to optimize growing conditions and increase yields (Ten et al., 2021). Moreover, the industry's focus on expanding areas, increasing productivity, creating new varieties, and improving product quality highlights a commitment to growth and innovation (Wong & Cheng, 2018). The landscape of the mushroom industry SMEs in Malaysia is characterized by rapid growth, technological advancements, and a significant contribution to the country's economy. With favorable conditions for cultivation, increasing demand, and ongoing research and development efforts, the mushroom industry in Malaysia presents promising opportunities for SMEs to thrive and contribute further to the nation's economic development.

Entrepreneurial intention in the mushroom industry is critical to innovation and economic growth. However, the factors influencing entrepreneurial intention within this sector, particularly in the context of government support, still need to be explored. The Malaysian government recognizes the mushroom industry's potential and has implemented initiatives to encourage entrepreneurial activity. However, the effectiveness of these initiatives in influencing entrepreneurial intention remains unclear. Examples of government support programs include subsidies and grants and training and skills development. Understanding how government initiatives impact entrepreneurial aspirations in the mushroom industry is essential for fostering a conducive entrepreneurial ecosystem. Therefore, this study aims to investigate the relationship between entrepreneurial intention in the Malaysian mushroom industry and the moderating effect of government support, drawing insights from the interplay between entrepreneurial self-efficacy, intention, and external support mechanisms.

2. Research Methodology

This study involves a literature review investigating the relationship between entrepreneurship education, entrepreneurship self-efficacy, entrepreneurship attitudes, government support, and entrepreneurship intention. A thorough review of secondary data sources on relevant literature and past research is carried out to achieve this purpose, gathering information from scholarly journals, books, conference proceedings, reports, websites, government reports, etc. The relevancy of previous studies and the authors' credentials have become this study's selection criteria. As such, all the journals were taken from ProQuest, Scopus, Emerald Insight, and Science Direct. Criteria for concept paper were emphasized based on recommendations from Gilson and Goldberg (2005) such as providing an integrated framework, proposing new relationships among constructs, developing arguments for associations, and broadening the scope of thinking. The following sections offer an overview of relevant studies organized by individual perspectives and the correlation between the components. The research findings are summarized and discussed in the final remarks.

3. Literature Review and Hypothesis Development

Entrepreneurship education and entrepreneurship intention: The relationship between entrepreneurship education and entrepreneurial intention has been extensively studied, with various research findings highlighting the significance of this connection. Entrepreneurship education plays a crucial role in shaping individuals' attitudes, skills, and motivations toward entrepreneurship, ultimately influencing their intention to engage in entrepreneurial activities. Numerous studies have demonstrated the positive impact of entrepreneurship education on fostering an entrepreneurial mindset, which subsequently affects students' intention to engage in entrepreneurial activities (Rodriguez & Lieber, 2020; Sun et al., 2023; Handiman et al., 2022; Zhang et al., 2022; Supriyanto et al., 2020; Wardana et al., 2020; Li et al., 2021; Hidayatulloh & Ashoumi, 2022; Aga, 2023). These programs commonly employ project-based learning and experiential learning methods to develop a comprehensive skill set associated with an entrepreneurial mindset. Entrepreneurship education has been consistently linked to fostering entrepreneurial intentions among students. Various studies

have highlighted the positive impact of entrepreneurship education on entrepreneurial intentions through different mechanisms. For instance, research by Bae et al. (2014) emphasizes that entrepreneurship education enhances awareness of entrepreneurship as a viable career path, distinct from traditional employment. This sentiment is echoed by (Duong, 2021), who suggests that factors like attitude toward entrepreneurship and perceived behavioral control can mediate the influence of entrepreneurship education on entrepreneurial intentions. Moreover, studies such as those by Hoang et al. (2020) and Lv et al. (2021) delve into the mediating roles of self-efficacy, learning orientation, and entrepreneurial competence in the relationship between entrepreneurship education and entrepreneurial intentions. These findings underscore the importance of providing entrepreneurship education and nurturing students' confidence, skills, and competencies to effectively translate education into entrepreneurial intentions.

Entrepreneurship attitudes and entrepreneurship intention: Entrepreneurship attitudes and intentions within the mushroom industry can be influenced by various factors. Agung & Mashuri (2022) found that attitudes toward entrepreneurship positively affect entrepreneurial intentions, which can be crucial in shaping individuals' mindset towards starting a business in the mushroom industry. Additionally, Shirur et al. (2019) highlighted the importance of entrepreneurial behavior among mushroom growers, indicating that how individuals conduct their entrepreneurial activities can impact their success in the mushroom industry. Moreover, Salam & Siswanto (2021) emphasized the significance of entrepreneurship education in stimulating entrepreneurial intentions among students. This is particularly relevant for individuals aspiring to venture into the mushroom industry, as education can equip them with the necessary knowledge and skills to succeed in this sector. Furthermore, Adeyemo et al. (2021) demonstrated that entrepreneurship education influences entrepreneurial intentions and enhances entrepreneurial competence, essential for individuals looking to thrive in the competitive mushroom industry.

Entrepreneurship self-efficacy and entrepreneurship intention: Entrepreneurial self-efficacy is a crucial concept in entrepreneurship, defined as an individual's belief in their ability to successfully undertake the tasks and responsibilities associated with being an entrepreneur (Wardana et al., 2020; Wijangga & Sanjaya, 2019; Porfírio et al., 2018). This belief in oneself plays a significant role in shaping entrepreneurial intentions and behaviors (Nursyirwan et al., 2022; Wilson et al., 2007). Research has shown that individuals with high entrepreneurial self-efficacy are more likely to perceive themselves as capable of successfully starting and running a new business (Wijangga & Sanjaya, 2019; Porfírio et al., 2018). Moreover, entrepreneurial self-efficacy has been linked to positive attitudes toward entrepreneurship and a greater inclination toward engaging in entrepreneurial activities (Nursyirwan et al., 2022; Wilson et al., 2007). Research has also highlighted the mediating role of entrepreneurial self-efficacy in the relationship between entrepreneurship education and entrepreneurial intentions (Rizqi et al., 2022). Entrepreneurial self-efficacy acts as a mediator that enhances the effect of entrepreneurship education on students' intentions to engage in entrepreneurial endeavors by boosting their confidence and belief in their entrepreneurial capabilities. Furthermore, entrepreneurial self-efficacy has been found to moderate the relationships between attitudes toward entrepreneurship, subjective norms, and perceived behavioral control, influencing entrepreneurial intentions (Duong, 2021). This suggests that individuals with higher levels of self-efficacy are more likely to translate positive attitudes and beliefs into concrete intentions to pursue entrepreneurial activities.

The moderating role of government support: Government support in entrepreneurship encompasses a range of initiatives to foster and sustain entrepreneurial activities. This support can be direct or indirect, involving funding major investments, providing tax advantages, offering subsidies, skills development, advice services, and creating enabling environments for entrepreneurial efforts (Martin et al., 2013; Moro et al., 2020; Saberi & Hamdan, 2019; Gigauri & Damenia, 2020). Such support can also come from policies that eliminate barriers, provide preferential loans, and facilitate partnerships between government organizations, businesses, and the non-profit sector (Akbulaev et al., 2019). Moreover, research emphasizes the importance of government policies in enhancing the sustainability and viability of mushroom cultivation. Studies suggest that funding and support from local governments and NGOs are essential for developing mushroom agriculture to create employment opportunities and alleviate poverty (Ahmed & Rahman, 2008).

Additionally, government initiatives focusing on developing the mushroom industry in regions like Russia have led to dynamic growth supported by high consumer demand and year-round production possibilities

(Alexandrova & Lazareva, 2021). Furthermore, the role of government support extends to areas such as research, education, and policy formulation. Governments can facilitate the dissemination of knowledge and best practices in mushroom cultivation through international cooperation and educational programs (Okuda, 2022). By investing in research and education, governments can ensure the sustainable development of the mushroom industry and address challenges related to production, marketing, and technological advancements (Anggrawan et al, 2023).

Entrepreneurship intention: Entrepreneurial intention in the mushroom industry is influenced by various factors such as entrepreneurial self-efficacy, business competitiveness strategies, utilization of technology for waste management, and the impact of entrepreneurial education. Studies have shown that entrepreneurial self-efficacy is crucial to the entrepreneurial process (McGee et al., 2009). Additionally, mushroom small-medium enterprises' strategic resources and environmental uncertainty directly affect their competitiveness (Haryati et al., 2020). Utilizing technologies like aerobic compression composting for managing raw mushroom waste addresses ecological concerns and impacts the profitability of mushroom industries (Chia et al., 2022). Furthermore, entrepreneurial education and self-efficacy significantly influence college students' intentions (Liu et al., 2019). Access to resources and learning opportunities through entrepreneurship education programs can positively affect individuals' intentions for new venture creation (Ahmed et al., 2020). Moreover, in the mushroom industry, the cultivation of mushrooms on different substrates can impact fruiting body production and aroma profiles, affecting the products' overall quality and market competitiveness (Kleofas et al., 2014).

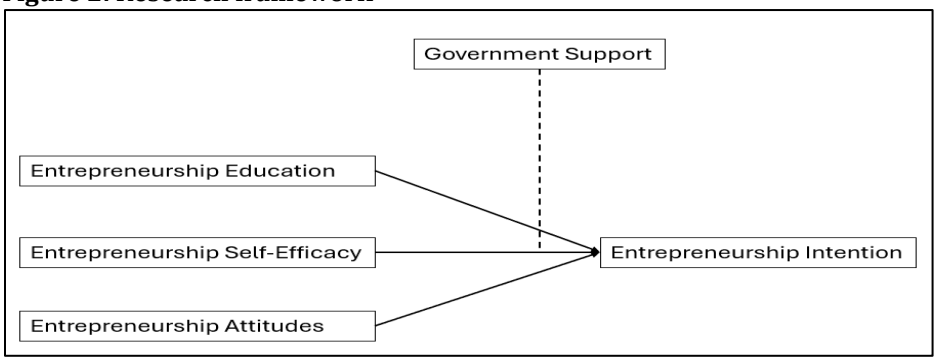
The literature gap and underpinning theory: The existing literature on government support and its impact on entrepreneurship intention reveals several gaps that need further exploration. While some studies have highlighted the positive relationship between government support policies and entrepreneurship skills development (Sule et al., 2022), others have pointed out the need for more empirical evidence on the indirect effects of entrepreneurial training effectiveness and perceived government entrepreneurial support on students' venturing intention into entrepreneurship (Salisu, 2020). Additionally, the influence of government subsidies on innovation and entrepreneurial intention has been noted, indicating a regulating effect on entrepreneurial activities (Li et al., 2021). Furthermore, the role of government interventions and policies in encouraging entrepreneurship, particularly in terms of how entrepreneurial support influences entrepreneurial intention, has been emphasized (Meyer & Synodinos, 2019).

It has been suggested that government and educational institutions should provide support such as venture funds and resources to facilitate entrepreneurial activities among students (Lv et al., 2021). Moreover, the positive impact of university entrepreneurship support on entrepreneurial attitude, self-efficacy, and intention has been highlighted (Lu et al., 2021). In addressing the gaps in the literature, policymakers need to understand that government initiatives can significantly influence entrepreneurial intentions by affecting attitudes, abilities, and subjective norms (Ebewo et al., 2017). Additionally, the importance of proper funding for entrepreneurship education and the establishment of financial institutions to support graduates in establishing entrepreneurial ventures have been underscored (Daniel & Olusola, 2023). The literature suggests that government support is crucial in shaping entrepreneurial intentions and fostering an entrepreneurial ecosystem conducive to developing new ventures.

The theory of Planned Behavior (TPB) offers a comprehensive framework for understanding how entrepreneurship education influences self-efficacy, attitudes, and, ultimately, entrepreneurial intentions. By considering the interplay of attitudes, subjective norms, and perceived behavioral control, this theory demonstrates how entrepreneurship education cultivates an entrepreneurial mindset and fosters intentions to engage in entrepreneurial activities. To illustrate, The TPB posits that attitudes, subjective norms, and perceived behavioral control influence one's intentions and subsequent behaviors (Souitaris et al., 2007). Entrepreneurship education has been demonstrated to positively impact entrepreneurial attitudes and intentions by influencing students' perceptions of entrepreneurship through theories of social learning and self-efficacy (Peterman & Kennedy, 2003). Moreover, entrepreneurship education plays a crucial role in shaping entrepreneurial self-efficacy and attitudes toward entrepreneurship, subsequently influencing entrepreneurial intentions (Kusumojanto et al., 2020). Meanwhile, research has shown that entrepreneurial

self-efficacy positively impacts attitudes toward entrepreneurship, subsequently affecting entrepreneurial intentions (Nursyirwan et al., 2022).

Figure 2: Research framework



This study establishes a research framework as a foundation for the study's objectives. The study's conceptual framework encompasses three independent variables: entrepreneurship education (EE), entrepreneurship self-efficacy (ES), and entrepreneurship attitudes (EA), with government support as the moderating variable for EE and ES. Entrepreneurship intention (EI) is the dependent variable. The arrows in Figure 1 exhibit the direct correlations within the model. Additionally, the arrows signify that the present study seeks to evaluate the degree to which the preceding elements impact entrepreneurship intention. The study adopts the Theory of Planned Behaviour as its conceptual framework.

4. Discussion

The findings of this study, derived from a comprehensive evaluation of the relevant literature, indicate that numerous elements have the potential to influence the entrepreneurship elements on entrepreneurship intention, either directly or indirectly. By investigating the influence of entrepreneurial ecosystems in the context of entrepreneurship education, entrepreneurship self-efficacy, and entrepreneurship attitude on entrepreneurial intention, we can bridge the existing knowledge gap. Additionally, government support is supposed to strengthen the association between entrepreneurship well-being and entrepreneurship intention. This research direction can contribute to developing more effective strategies for promoting sustainable business ventures that contribute to sustainable entrepreneurship.

The mushroom industry has the potential to significantly contribute to integrated rural development programs (Girmay et al., 2016). Governments can play a crucial role in supporting this industry through subsidies and policies. While there are concerns about government subsidies potentially distorting competition, targeted subsidies can effectively promote the growth of sectors like mushroom cultivation (Aghion et al., 2015). For instance, the Malaysian government has forecasted a substantial increase in mushroom exports, indicating the importance of government support in meeting the rising demand for high-quality mushrooms (Munir et al., 2021). In countries like China, government subsidies have been instrumental in driving innovation and development in industries such as renewable energy, showcasing the positive impact of strategic government intervention (Yu et al., 2016). Similarly, in Bangladesh, where funding for mushroom agriculture is limited, local governments and NGOs can collaborate to promote mushroom cultivation as an industrial endeavor, creating employment opportunities in rural and semi-urban areas (Ahmed & Rahman, 2008).

Efforts to scale up mushroom cultivation from small household businesses to large commercial operations are essential for the industry's growth (Gamage & Ohga, 2018). Educational initiatives are also crucial for sustainable development in mushroom production, emphasizing the need for knowledge dissemination and skills training (Anggrawan, Satria, & Zulfikri 2023; Mavi & Thakur, 2021). Moreover, exploring innovative cultivation practices, such as mixed cultivation to reduce CO2 emissions, demonstrates the potential for environmentally sustainable approaches in mushroom farming (Jung & Son, 2021). In conclusion, government support through subsidies, policies, and educational programs is vital for the growth and sustainability of the mushroom industry. By strategically investing in this sector, governments can foster economic development

and promote employment, innovation, and environmental sustainability within the mushroom cultivation domain.

By examining the connection between entrepreneurial ecosystems, education, self-efficacy, and government support, this research could develop more targeted and effective strategies for promoting sustainable business ventures in the mushroom industry. Success in this area could translate to significant contributions to integrated rural development programs. For example, targeted government subsidies instead of broad-based ones could foster the mushroom industry growth without distorting competition. Educational initiatives focused on knowledge dissemination and skills training could further empower entrepreneurs and contribute to the industry's transition from small-scale to large-scale operations. Additionally, exploring environmentally sustainable practices like mixed cultivation could promote ecologically responsible growth. Ultimately, by strategically investing in these areas, governments could leverage the mushroom industry to drive economic development, job creation, innovation, and environmental sustainability.

5. Conclusion

This conceptual study has examined the capacity of government assistance to impact entrepreneurial intention in the Malaysian mushroom business. By examining the interaction of entrepreneurial ecosystems, education, self-efficacy, and government programs, we may acquire vital knowledge on promoting a more robust environment for sustainable mushroom production. The potential advantages of a flourishing Malaysian mushroom business go beyond just economic expansion. Implementing sustainable agriculture practices can effectively help to achieve environmental objectives while also meeting the growing need for nutritious food sources through more excellent production. This conceptual research, however, emphasizes the necessity for more research to fill the information gap concerning the precise methods by which government support programs might effectively foster entrepreneurial intention in the Malaysian mushroom business. Arguably, further research is needed to pinpoint the most effective methods for government support programs to cultivate entrepreneurial intention. Policymakers can design more targeted and efficient strategies by understanding how these programs interact with other influencing factors. Therefore, policymakers can build more focused and efficient strategies by comprehending how these programs interact with different elements influencing intention. For instance, understanding how subsidies can interact with educational initiatives focused on mushroom cultivation can inform the creation of grant programs specifically for aspiring mushroom entrepreneurs who complete relevant training.

Similarly, studying the connection between self-efficacy and government loan programs can guide the development of mentorship programs alongside loan options, bolstering the confidence of new entrepreneurs. Through this deeper understanding, policymakers can design government support beyond simple financial incentives. By strategically combining targeted subsidies, educational programs, and mentorship initiatives, they can create a more holistic environment that fosters entrepreneurial intention and empowers individuals to succeed in the mushroom industry. In conclusion, this can result in a thriving local mushroom industry that enhances Malaysia's economic, social, and environmental welfare.

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Empowering Agribusiness: Crowdfunding as a Catalyst for Young Agri-Entrepreneurs in Malaysia

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Abstract: This study investigates the determinants of crowdfunding adoption among young agribusiness entrepreneurs in Malaysia, particularly those aged 18 to 40. As an alternative to conventional financing options, crowdfunding offers an accessible funding mechanism for entrepreneurs who face challenges securing traditional loans due to limited collateral, high risk, and stringent banking requirements. The study identifies and examines five key factors influencing crowdfunding participation: trust issues, limited financial resources, entrepreneurial attitudes, banking constraints, and awareness of crowdfunding. Data were collected through a survey of 117 young agribusiness entrepreneurs and analyzed using descriptive statistics, Exploratory Factor Analysis (EFA), and Pearson correlation analysis. Results indicate that while crowdfunding awareness positively correlates with the desire to participate, significant barriers persist in terms of trust and financial limitations. These findings contribute to the growing body of knowledge on alternative financing in Malaysia's agricultural sector, providing actionable insights for policymakers and practitioners. The study concludes that targeted interventions are necessary to build trust, improve financial literacy, and promote crowdfunding as a viable tool for economic development within the agribusiness sector.

Keywords: *Crowdfunding, Agribusiness, Young Entrepreneurs, Factor Analysis, Alternative Financing.*

1. Introduction

Crowdfunding has emerged as a significant alternative finance channel (Yu & Yu, 2022), providing crucial access to capital (Babich et al., 2021), especially in today's digitally connected society. This study focuses on the potential of crowdfunding as a financial solution for young agribusiness entrepreneurs in Malaysia. Traditional financing options, particularly bank loans, present significant challenges for young entrepreneurs, who often face barriers such as limited financial resources, lack of collateral, and stringent banking requirements (Salikin et al., 2014). Crowdfunding offers a promising alternative (Nordin & Sum, 2020) by enabling individuals or organizations to pool small contributions from a large number of supporters, usually through online platforms (Brown et al., 2019).

Crowdfunding models, such as equity-based, reward-based, donation-based, and peer-to-peer (P2P) lending, have gained traction globally and are increasingly used in Malaysia (Azganin et al., 2021). Regulatory frameworks established by the Securities Commission Malaysia in 2015 and 2016 provided a structured environment for equity crowdfunding and P2P financing (Securities Commission Malaysia, 2023). These frameworks have created a legally regulated space to encourage both investor protection and alternative financing growth.

However, while crowdfunding has been successfully implemented in many countries, challenges remain, especially for young entrepreneurs in the agricultural sector. Limited awareness, trust issues and financial literacy hinder the widespread adoption of crowdfunding among young agri-entrepreneurs. Studies have shown that positive attitudes toward crowdfunding are essential for successful participation and fundraising (Shabbab et al., 2020). Yet, trust concerns, especially regarding platform security and the potential for fraud, persist as significant barriers (Shi Qing et al., 2019).

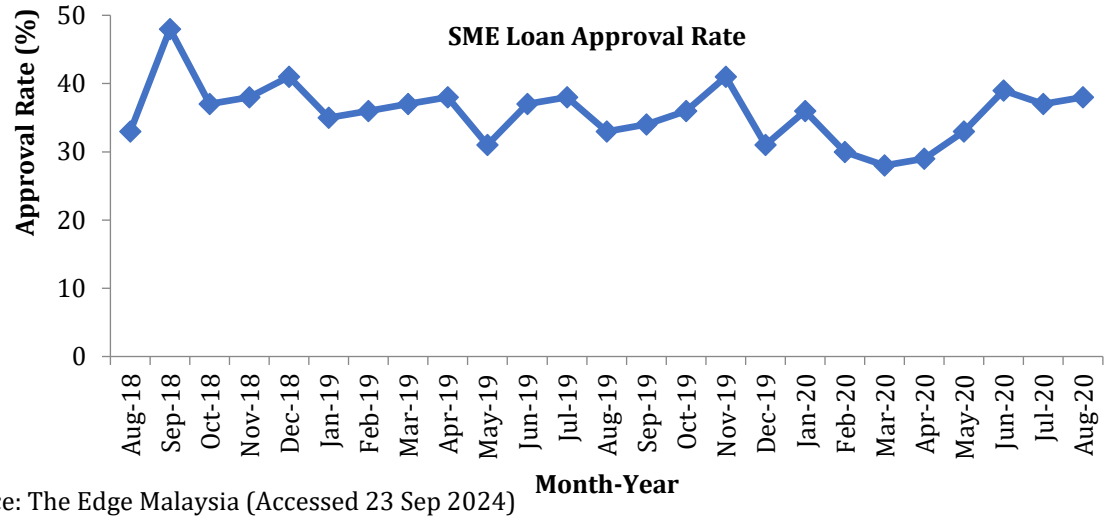
Financing Challenges for SMEs and the Agribusiness Sector

Small and medium-sized enterprises (SMEs) in Malaysia, particularly in the agribusiness sector, face numerous financial challenges (Radzi & Yaacob, 2022). Banks impose stringent requirements for obtaining loans, often demanding collateral, financial track records, and high interest rates, which are out of reach for many young entrepreneurs (Salikin et al., 2014). Research shows that 40% of SMEs encounter financial difficulties due to insufficient capital (Lam & Liu, 2020) and inadequate accounting records, limiting their ability to secure bank

loans (Adonia et al., 2018). Figure 1 illustrates the loan approval rate in Malaysia over three years, with the approval rate remaining below 50%.

Moreover, many young entrepreneurs are reluctant to pursue external financing options (Eniola, 2021), such as long-term loans, due to the perceived risk of bankruptcy and high interest repayments (Aderemi et al., 2021). As a result, crowdfunding, which provides a lower-risk, more accessible alternative to traditional financing methods (Torres et al, 2024), presents an opportunity for these entrepreneurs to overcome financial barriers and grow their businesses.

Figure 1: SME Loan Approval Rate by RHB Bank Bhd. in Malaysia from 2018 until 2020.



Source: The Edge Malaysia (Accessed 23 Sep 2024)

Awareness and Trust Issues in Crowdfunding

Despite the potential of crowdfunding, a lack of awareness and trust continues to limit its adoption among young agri-entrepreneurs. In Malaysia, studies reveal that public knowledge about crowdfunding remains low, with only 1% of the population exhibiting a high level of understanding (Tambi, 2022). Furthermore, fraud and trust issues compound this lack of awareness. Research shows that over 70% of participants in crowdfunding campaigns have experienced fraud or deception, resulting in a general mistrust of the platform (Arumugam et al., 2020).

Regulatory frameworks, although established, are still developing, and many entrepreneurs remain uncertain about the security of their investments on crowdfunding platforms (Azganin et al., 2021). This lack of confidence often deters participation, particularly among young agri-entrepreneurs, who may already be risk-averse due to the uncertain nature of the agricultural sector (Salim & Kassim, 2019).

Opportunities in Crowdfunding for Agri-Entrepreneurs

Despite these challenges, crowdfunding presents unique opportunities for young agri-entrepreneurs. Platforms such as Ata Plus and Ethis Kapital follow Islamic principles that avoid riba' (interest), offering ethical financial products aligned with the values of many Malaysian entrepreneurs (Razak et al., 2021). This model of crowdfunding, combined with waqf (endowment), has been shown to provide substantial benefits to underprivileged farmers, helping them access essential capital to meet their basic needs and contribute to economic development (Azganin et al., 2021).

Additionally, crowdfunding models such as donation-based and reward-based crowdfunding allow young agri-entrepreneurs to raise capital without the financial burden of repaying loans or offering equity stakes in their businesses. These models have been particularly successful among Malaysian start-ups, where bank financing is often inaccessible (Mokhtarrudin et al., 2017).

Given the growing importance of alternative financing mechanisms for young entrepreneurs, this study aims to explore the factors influencing the participation of young agri-entrepreneurs in crowdfunding platforms.

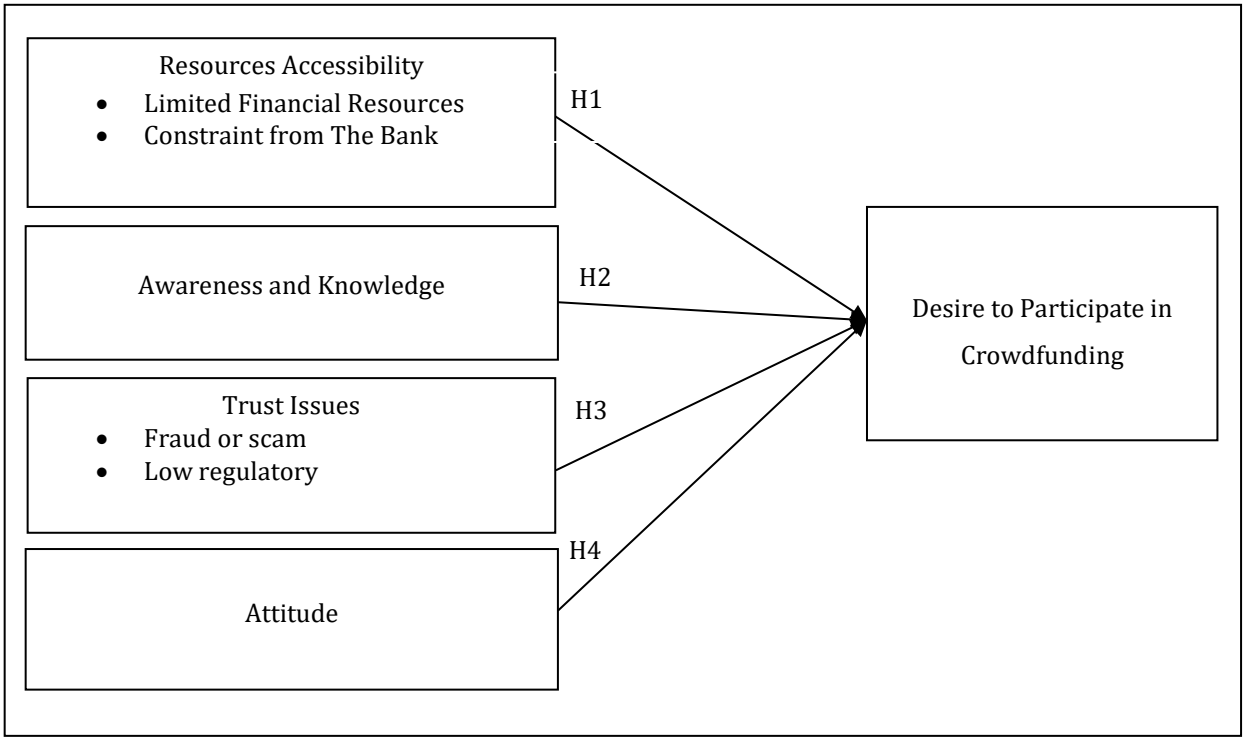
Specifically, it seeks to identify the challenges and opportunities associated with crowdfunding in the agribusiness sector, measure the level of awareness and attitudes toward crowdfunding, and assess the relationship between these attitudes and the desire to participate. By providing insights into these factors, this research aims to contribute to a better understanding of how crowdfunding can support young agricultural businesses in Malaysia.

2. Methodology

This study adopts a quantitative research design to explore the factors influencing young agri-entrepreneurs' participation in crowdfunding across Malaysia. Data were gathered from a structured online questionnaire, distributed between October 2023 and June 2024, to a sample of 117 young agri-entrepreneurs aged 18 to 40, selected through convenience sampling.

The survey comprised three sections: demographic information, attitudes towards crowdfunding, and factors such as financial resources and trust issues. Section A collected demographic data, including age, gender, location, education, business experience, and income level. Section B assessed respondents' attitudes, awareness, and perceptions of crowdfunding using a 5-point Likert scale. Finally, Section C focused on factors like financial resources, trust issues, and the desire to engage in crowdfunding, utilizing a 7-point Likert scale to capture the intensity of their responses.

Figure 2: Research Framework
Determinants of Crowdfunding Participation Among the Young Agri-Entrepreneurs



Source: Authors, 2024

The research framework (Figure 1) for this study examines four key factors influencing the participation of young agri-entrepreneurs in crowdfunding: awareness and knowledge, resource accessibility, trust issues, and attitudes toward crowdfunding. Awareness refers to the entrepreneurs' understanding of crowdfunding platforms, where greater familiarity encourages higher participation (Tambi, 2022). Resource accessibility involves the financial constraints young entrepreneurs face, pushing them toward alternative financing methods like crowdfunding (Salikin et al., 2014). Trust issues focus on concerns related to platform security

and fraud (Arumugam et al., 2020), while attitudes capture the entrepreneurs' general perceptions of crowdfunding and their willingness to engage (Shabbab et al., 2020).

Based on these factors, the study proposes the following hypotheses:
H1: Resource accessibility significantly influences the desire to participate in crowdfunding.
H2: Awareness and knowledge about crowdfunding significantly influence participation desire.
H3: Trust issues significantly influence participation desire.
H4: Attitudes toward crowdfunding significantly influence participation desire.

The framework and hypotheses align with previous studies on alternative financing in entrepreneurial settings (Shi Qing et al., 2019).

The research instrument was developed based on previous studies on crowdfunding, entrepreneurship, and agribusiness (Shabbab et al., 2020; Salikin et al., 2014). The questionnaire was designed to assess multiple dimensions, including:

- **Awareness and Knowledge of Crowdfunding:** To measure respondents' familiarity with crowdfunding platforms and concepts.
- **Trust Issues:** To assess the perceived risks related to crowdfunding, particularly fraud and the lack of regulatory oversight.
- **Financial Resources:** To understand the financial constraints faced by agri-entrepreneurs and their preferences for alternative financing models.
- **Attitudes toward Crowdfunding:** To gauge the willingness and interest of young agri-entrepreneurs in participating in crowdfunding campaigns.

The validity and reliability of the survey were ensured through a pilot study involving 20 participants, which led to minor adjustments in the phrasing of questions for enhanced clarity. Cronbach's alpha was calculated to measure internal consistency, yielding a value of 0.930, indicating a high level of reliability (Taber, 2018). The data collected from the questionnaire were then analyzed using the Statistical Package for the Social Sciences (SPSS) version 26 to ensure precise and comprehensive statistical evaluation.

The analysis began with descriptive statistics to summarise the respondents' demographic characteristics and provide an overview of their attitudes toward crowdfunding. Following this, exploratory factor analysis (EFA) was employed to identify the key underlying factors influencing crowdfunding participation, allowing for the grouping of related variables and the reduction of data complexity. Lastly, Pearson correlation analysis was conducted not only to examine the relationships between the independent variables (such as resource accessibility, awareness, trust issues, and attitudes) and the dependent variable (desire to participate in crowdfunding) but also to test the proposed hypotheses. This analysis helped determine the strength and direction of these relationships, revealing how each factor contributes to the likelihood of crowdfunding participation.

3. Findings and Discussion

The descriptive analysis offers a clear profile of the respondents, providing insight into the context of young agri-entrepreneurs and their potential inclination toward crowdfunding.

Table 1: Respondent's Demographic Profile.

Items	Details	Frequency (n)	Percent (%)
Age (years)	18-23	42	35.9
	24-29	33	28.2
	30-35	19	16.2
	36-40	23	19.7
Gender	Male	60	51.3
	Female	57	48.7
Location	Johor	48	41

	Melaka	38	32.5
	Selangor	16	13.7
	Perak	2	1.7
	Perlis	1	0.9
	Pahang	2	1.7
	Negeri Sembilan	2	1.7
	Kelantan	5	4.3
	Sabah	1	0.9
	Terengganu	1	0.9
	Kedah	1	0.9
Education	Did not obtain formal education	1	0.9
	Secondary	38	32.5
	Skills Certificate	2	1.8
	Diploma	36	30.8
	Degree	38	32.5
	Master	2	1.7
Race	Malay	114	97.4
	Chinese	1	0.9
	Bumiputera Sabah	1	0.9
	Orang Asli (Indigenous)	1	0.9
Business Operation (Months)	0-1	2	1.7
	2-24	63	53.8
	25-49	24	20.5
	50-74	14	12
	75-99	2	1.7
	100-124	5	4.3
	150-174	5	4.3
	175-199	2	1.7
Monthly Income (RM)	≤ 3000	101	86.3
	< 6000	11	9.4
	≥ 6000	5	4.3
	Total	117	100

Note: Data collected by the authors until June 2024

Most respondents (35.9%) were aged 18 to 23, followed by 28.2% aged 24 to 29, suggesting that the younger demographic is in the early stages of entrepreneurship. They likely face significant barriers in accessing traditional financing, making crowdfunding an attractive alternative. The relatively balanced gender distribution (51.3% male, 48.7% female) highlights the growing participation of women in agribusiness, an industry historically dominated by men. This is important as crowdfunding, with its direct public appeal, may offer women entrepreneurs better access to capital, bypassing potential biases in traditional banking systems. Geographically, Johor (41%) and Melaka (32.5%) were the most represented regions, which may reflect higher agricultural activity in these areas. However, the low representation from other states like Sabah and Sarawak points to a potential gap in awareness or access to crowdfunding platforms, suggesting that these regions may benefit from targeted outreach programs.

In terms of education, a significant portion of respondents had higher education (32.5% with degrees, 32.5% with secondary education), indicating they are likely familiar with digital platforms, crucial for navigating crowdfunding. However, those with lower educational backgrounds may require more support in understanding how to engage with these platforms.

Business experience also plays a role, with 53.8% of respondents have been in operation for 2 to 24 months, signalling that most are early-stage entrepreneurs in need of capital to grow their ventures. The low-income

levels reported by 86.3% of respondents (earning below RM3000 monthly) further highlight their need for alternative financing, as traditional banks may be inaccessible to them.

These demographic insights underline the strong potential for crowdfunding among young agri-entrepreneurs, particularly those facing financial and geographic barriers. With the right awareness campaigns and support systems, crowdfunding could serve as an essential tool for driving innovation and growth in the agribusiness sector.

Factor Analysis

The Kaiser-Meyer-Olkin (KMO) measure (0.850) and Bartlett's test confirmed the dataset's suitability for factor analysis (Shrestha, 2021), as mentioned in Table 2. Principal Component Analysis (PCA) with varimax rotation was applied to identify key factors influencing crowdfunding participation. The relationship between the independent variables (resource accessibility, awareness, trust, and attitudes) and the dependent variable (desire to participate in crowdfunding) was examined, testing the following hypotheses:

Table 2: KMO and Barlett's Test Result

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**0.850**
Bartlett's Test of Sphericity	Approx. Chi-Square	2910.722
	df	406
	Sig.	0.000

Note. Data collected by the authors until June 2024

The commonality value represents the squared multiple correlations for each variable, using the factor as a predictor. It indicates the percentage of a variable's variance explained by the common components in the analysis. Item commonality serves as a numerical measure of how effectively the factor model captures the variation of an item. Acceptable cut-off values generally range from 0.25 to 0.4, but a threshold of 0.5 was applied in this study (Eaton et al., 2019).

The overall reliability of the selected items was 0.930. Table 3 shows the PCA with varimax rotation performed on the survey data. These techniques are frequently applied in exploratory data analysis to evaluate each component in light of the significance of the variables that significantly contributed to that component (Kakade et al., 2018).

Table 3: Output of Exploratory Factor Analysis

Items	Factor Loading				
	F1	F2	F3	F4	F5
Factor 1: Trust Issues					
Low regulatory oversight in crowdfunding increases the likelihood of fraud or scams	0.884				
The lack of a credible monitoring body to oversee crowdfunding platforms in Malaysia worries me	0.878				
I worry that there is no guarantee of getting my money back if a crowdfunding project fails.	0.868				
I am concerned about the possibility of my personal financial information being shared for other crowdfunding investment opportunities.	0.857				
The presence of fraudulent activities on crowdfunding platforms is a major concern for me	0.848				
The lack of clear guidelines on the responsibilities of crowdfunding platforms in handling disputes or fraudulent activities is a significant concern for me.	0.833				

I am concerned about the lack of regulations and oversight of crowdfunding platforms in Malaysia.	0.789				
The laws and regulations governing crowdfunding platforms in Malaysia are unclear.	0.716				
My biggest concern about crowdfunding is the risk of being involved in a fraudulent project	0.656				
I will actively seek information or reviews about crowdfunding platforms before deciding to participate in any campaigns.	0.526				
Factor 2: Limited Financial Resources					
I often find myself unable to pursue promising business opportunities due to financial constraints.		0.846			
Limited financial resources delay my ability to invest in and grow my business.		0.838			
Limited financial resources have a significant impact on my decision-making process regarding business investments.		0.790			
Businesses with limited financial resources struggle to survive during economic downturns.		0.702			
Limited financial resources hinder the research and development (R&D) of new products or services.		0.627			
Factor 3: Attitude					
Participating in crowdfunding would help me connect with potential customers and investors.			0.862		
Crowdfunding could help me overcome financial barriers and access capital for my business projects.			0.843		
I am willing to invest time and effort into planning and executing a crowdfunding campaign for my business projects.			0.776		
Crowdfunding offers more opportunities and flexibility compared to traditional banking loans for business projects.			0.727		
I am confident in my ability to successfully raise funds through a crowdfunding campaign.			0.681		
Factor 4: Limitation of the Bank					
Banks do not offer enough financial products that are suitable for the needs of small businesses.				0.845	
The interest rates charged by banks are too high.				0.819	
The eligibility requirements for obtaining a bank loan are too strict.				0.790	
The lack of sufficient collateral makes it difficult to obtain a bank loan.				0.667	
Banks are more interested in lending to businesses with a strong repayment history, rather than assessing the business's needs and growth potential.				0.569	
Factor 5: Awareness and Knowledge					
I understand the basic concept of crowdfunding.					0.863
I know how to find information about crowdfunding projects in Malaysia.					0.824
I have heard of crowdfunding.					0.812
I am confident about the safety and regulations of crowdfunding platforms in Malaysia.					0.603

Cronbach's Alpha	0.945	0.896	0.872	0.914	0.850
Eigenvalue	10.933	4.205	2.843	1.633	1.348
Percentage of variance (%)	37.699	14.502	9.805	5.631	4.647
Cumulative percentage of the variance (%)	37.699	52.201	62.005	67.636	72.283

Rotated Component Matrix Table
Extraction Method: Principal Component Analysis (PCA) Rotation Method: Varimax with Kaiser Normalization
Note: Data collected by the authors until June 2024

The factor analysis conducted in this study identified five key factors that influence young agri-entrepreneurs' participation in crowdfunding. The Kaiser-Meyer-Olkin (KMO) value was 0.850, indicating that the sample was adequate for factor analysis, and Bartlett's test of sphericity was significant ($p < 0.05$), confirming the appropriateness of the dataset.

The first factor, *Trust Issues*, emerged as the most influential, with an Eigenvalue of 10.933 and a Cronbach's alpha of 0.945, indicating high internal consistency. This factor encompassed concerns around fraud, regulatory oversight, and platform security, all of which affect confidence in crowdfunding. These trust issues were seen as a major barrier to participation.

The second factor, *Limited Financial Resources*, had an Eigenvalue of 4.205 and a Cronbach's alpha of 0.896. This factor highlighted the financial constraints faced by young agri-entrepreneurs, such as insufficient capital and difficulty in securing traditional loans, which push them to explore alternative financing methods like crowdfunding.

Attitudes toward crowdfunding formed the third factor, with an Eigenvalue of 2.843 and a Cronbach's alpha of 0.872. This factor captured the respondents' perceptions of crowdfunding as a flexible and viable option for business financing. While many had positive attitudes, this alone did not always translate into participation due to other limiting factors.

The fourth factor, *Bank Limitations*, had an Eigenvalue of 1.633 and a Cronbach's alpha of 0.914. This factor covered the strict criteria imposed by banks, such as high interest rates and collateral requirements, which restrict young entrepreneurs' access to traditional financing, driving them toward alternative solutions like crowdfunding.

Finally, *Awareness and Knowledge* about crowdfunding were identified as the fifth factor, with an Eigenvalue of 1.348 and a Cronbach's alpha of 0.850. This factor underscored the importance of awareness, as greater knowledge of crowdfunding platforms was associated with a higher likelihood of participation.

Overall, the factor analysis revealed that trust issues, financial constraints, attitudes, banking limitations, and awareness levels are all critical in determining whether young agri-entrepreneurs engage with crowdfunding platforms. These factors provide a foundation for understanding how to better promote crowdfunding as a solution to financing challenges in the agribusiness sector.

Attitude Level

The inclusion of attitude levels in this study serves to examine how young agri-entrepreneurs perceive crowdfunding as a viable financing option and the extent to which these perceptions influence their desire to participate. Understanding the role of attitudes provides valuable insights into the factors driving or hindering participation, which can inform targeted strategies to increase engagement. The analysis of the respondents' attitudes toward crowdfunding revealed three distinct levels: high, medium, and low as presented in Table 4.

Table 4: Attitudes Toward Crowdfunding

Attitude Level	Frequency (n)	Percent (%)
High	30	25.6
Medium	56	47.9
Low	31	26.5
Total	**117**	**100.0**

Note: Data collected by the authors until June 2024

Out of 117 respondents, 25.6% (30 respondents) demonstrated a high attitude level toward crowdfunding, indicating a strongly favorable view of it as a financing option. These respondents showed confidence in crowdfunding as a tool that could help them overcome financial barriers and grow their businesses. The high attitude level suggests that these entrepreneurs are likely early adopters, open to exploring alternative methods of financing, including crowdfunding.

A medium attitude level was recorded in 47.9% (56 respondents), making it the largest group. These respondents exhibited a more neutral stance, neither strongly supporting nor opposing crowdfunding. This group likely sees potential in crowdfunding but may have reservations about its effectiveness or security. They may also be uncertain about how well crowdfunding aligns with their business needs or the agricultural sector's specific challenges. This group represents a significant opportunity for education and outreach, as targeted efforts could help move them from a neutral to a more favorable attitude toward using crowdfunding.

The remaining 26.5% (31 respondents) displayed a low attitude level, suggesting skepticism or hesitancy toward crowdfunding. These entrepreneurs may prefer traditional financing methods, such as bank loans, or may be unfamiliar with crowdfunding platforms. Their reluctance could also stem from concerns about fraud, the complexity of using crowdfunding platforms, or a lack of confidence in the outcomes of crowdfunding campaigns. Overcoming these barriers will be crucial in driving wider adoption of crowdfunding in the agri-entrepreneurial community.

Overall, the attitude level distribution highlights the need for focused interventions to educate entrepreneurs about the benefits of crowdfunding. While a quarter of the respondents are enthusiastic about using crowdfunding, the majority remain neutral or hesitant. This suggests that more awareness, case studies, and success stories could help increase positive attitudes toward crowdfunding, especially among those currently in the medium and low attitude groups.

Pearson Correlation Analysis

The Pearson correlation analysis provided valuable insights into the relationships between the independent variables (resource accessibility, awareness and knowledge about crowdfunding, trust issues, and attitude of young agri-entrepreneurs) and the dependent variable (desire to participate in crowdfunding). The analysis revealed a weak but positive relationship between resource accessibility and the desire to participate ($r = 0.175$, $p = 0.059$), suggesting that while financial constraints push young agri-entrepreneurs to explore crowdfunding, the relationship is not statistically significant (Table 5).

Table 5: Pearson Correlation Analysis's Output

		Resources Accessibility	Awareness and Knowledge about Crowdfunding	Trust Issues	The Attitude of The Young Agri Entrepreneur Towards Crowdfunding
Desire to participate in crowdfunding	Pearson Correlation (r)	0.175*	0.198**	0.023	0.029
	Sig. (2-tailed)	0.059	0.033	0.807	0.755

Note: ** Significant at 5%, * Significant at 10%
Data collected by the authors until June 2024

Pearson correlation analysis

A more significant finding was the positive relationship between awareness and knowledge of crowdfunding and the desire to participate ($r = 0.198$, $p = 0.033$), indicating that increased familiarity with crowdfunding platforms positively influences participation. This highlights the importance of educating young entrepreneurs about the benefits and mechanisms of crowdfunding as a viable financing option.

Interestingly, trust issues did not show a significant relationship with the desire to participate in crowdfunding ($r = 0.023$, $p = 0.807$). Despite concerns about fraud and platform security, these factors did not appear to heavily influence the decision to engage in crowdfunding. This may be due to the overall lack of experience or exposure to crowdfunding platforms, which could mitigate the impact of trust concerns.

Finally, the correlation between attitudes toward crowdfunding and the desire to participate was also not significant ($r = 0.029$, $p = 0.755$). This suggests that while attitudes toward crowdfunding are generally positive, they may not be strong enough on their own to drive participation, likely due to lingering uncertainties or preferences for more traditional financing methods.

These results underscore the importance of raising awareness and providing clear information to young agri-entrepreneurs, as familiarity with crowdfunding appears to be the most significant factor driving participation. The hypothesis testing aimed to examine the relationships between the identified factors—resource accessibility, awareness and knowledge about crowdfunding, trust issues, and attitudes of young agri-entrepreneurs—and their desire to participate in crowdfunding. The results provide critical insights into the motivations and barriers that influence crowdfunding participation among young agri-entrepreneurs in Malaysia.

Table 6: Hypothesis Testing

	Variable	r Value	p-Value	Strength and Relationship	Result
H1	Resource accessibility	0.175	0.059*	Weak positive	Supported
H2	Awareness and Knowledge about Crowdfunding	0.198	0.033**	Weak positive	Supported
H3	Trust Issues	0.023	0.807	Weak positive	Not supported
H4	The Attitude of The Young Agri Entrepreneur	0.029	0.755	Weak positive	Not supported

Note. ** Significant at 5%, * Significant at 10%; Data collected by the authors until June 2024

The results of the hypothesis testing highlight awareness and knowledge as the most significant factor influencing young agri-entrepreneurs' desire to participate in crowdfunding. Entrepreneurs who are more familiar with crowdfunding's potential benefits and processes are more likely to consider it a viable financing option (Bernadino & Santos, 2020). However, resource accessibility, while important, did not significantly influence participation, perhaps due to a lack of experience or confidence in the platform's ability to meet financing needs.

Interestingly, trust issues, despite being a common concern, did not have a strong influence on participation, suggesting that entrepreneurs may be more focused on financing opportunities than risks at this stage. Finally, attitudes toward crowdfunding, while generally positive, were not significant enough to drive participation, indicating that more needs to be done to demonstrate the effectiveness and reliability of crowdfunding in the local context.

These findings suggest that raising awareness and providing education on crowdfunding, while also addressing concerns about platform security and trust, are critical steps for increasing participation among young agri-entrepreneurs. As crowdfunding continues to grow as an alternative financing model, improving knowledge and confidence in its use will be essential for broadening its adoption in the Malaysian agribusiness sector.

4. Conclusion and Recommendations

This study underscores the crucial role of awareness and knowledge in encouraging young agri-entrepreneurs to participate in crowdfunding. While financial constraints drive entrepreneurs toward alternative financing options, limited knowledge and regional disparities pose significant barriers to wider adoption. Although trust and attitudes towards crowdfunding were found to be less influential, they remain important factors that can be enhanced through regulatory improvements. Crowdfunding has substantial potential to support Malaysia's agricultural sector, particularly among young, tech-savvy entrepreneurs. To fully realize this potential, comprehensive educational initiatives, trust-building efforts, and tailored support systems are necessary to overcome the barriers posed by traditional financing models.

To promote crowdfunding effectively among young agri-entrepreneurs in Malaysia, a multifaceted strategy is required. This should involve targeted educational programs, especially in regions with lower levels of engagement, and the strengthening of regulatory frameworks to build trust in the system. Highlighting local success stories, providing financial incentives such as tax breaks, and offering simplified tools and mentorship to support early-stage entrepreneurs are also essential steps. Tailored outreach initiatives will ensure equitable access to crowdfunding opportunities across the country. Furthermore, future research should explore long-term trends in crowdfunding adoption, the role of technology and success stories in fostering participation, and the influence of cultural and regional differences. By implementing these strategies and advancing research, crowdfunding can serve as a powerful instrument for driving innovation and financial growth in Malaysia's agricultural sector.

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Evolutionary Overview of *Tawarruq* Based on Bibliometric Analysis from 2012 to 2024

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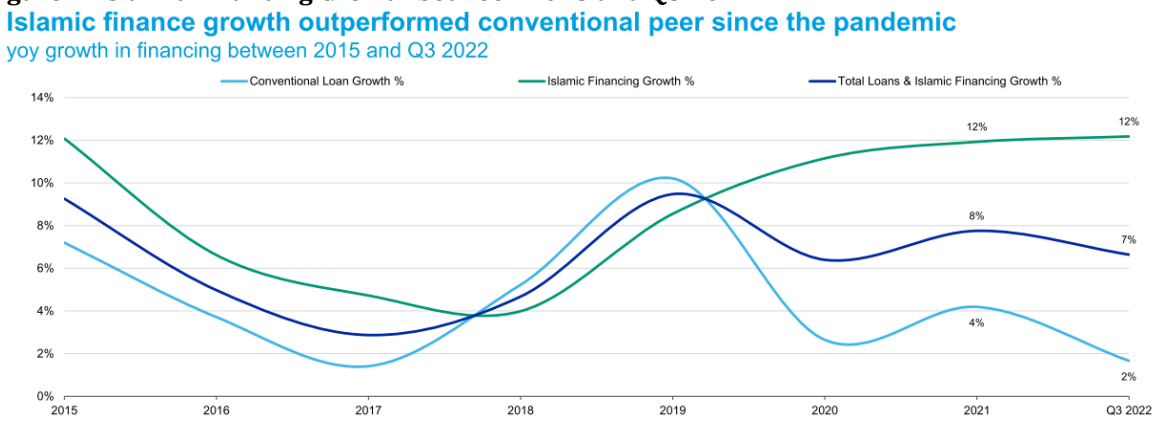
Abstract: Islamic financing in Malaysia is helping the Islamic banking sector expand quicker than conventional lending. This expansion is driven primarily by *tawarruq*-based financing. Surprisingly, since *tawarruq* is the most common contract especially when it comes to financing products, the proposal in Bank Negara Malaysia's (BNM) Financial Sector Blueprint 2022 – 2026 to review its use must be taken seriously to target broader adoption of sustainable financing. This study uses bibliometric analysis based on the Scopus and Science Direct databases to capture the research landscape relevant to tawarruq since no large-scale studies have been performed from 2012 until 2024. The application of *tawarruq* on financing products is also considered to assess the importance and relevance of studies in the area of tawarruq. The results manage to unpack the evolutionary nuances of *tawarruq* while shedding light on the emerging regions of *tawarruq*. As a whole, this paper should be a useful resource for gaining insight and identifying the patterns, trends and impact of *tawarruq* within the Islamic finance industry.

Keywords: *Tawarruq, bibliometrics, Islamic banking, Islamic financing, Islamic finance*

1. Introduction

In Malaysia, Islamic financing growth continues to outpace conventional counterparts. Figure 1 reveals that there has been a slight increase in Islamic financing growth compared to conventional loan growth until Q3 2022. Globally, Malaysia continues to maintain the development of the Islamic finance industry which is reported to be the largest Islamic financial market in the world alongside Iran and Saudi Arabia by 2023. Of the total US$4.9 trillion, the Islamic banking sector has contributed US$3.6 trillion in assets. Considering the global average score, Malaysia topped the overall global ranking for Islamic finance development (ICD-LSEG, 2024). Therefore, Bank Negara Malaysia (BNM) maintains financial stability by monitoring and regulating the lending activities of all financial institutions in Malaysia. This effort can be translated into five strategic thrusts in the Financial Sector Blueprint 2022 - 2026, one of which is advanced value-based finance through Islamic finance leadership.

Figure 1: Islamic Financing Growth between 2015 and Q3 2022



Source: Moody's Investors Service, Central Banks Data, Banks' Annual Reports (2023)

To maintain these achievements, the blueprint issued by BNM has listed several strategies to leverage Malaysia's well-developed Islamic finance ecosystem. The effort to offer value-based finance solutions to a

growing number of households and businesses is based on the fundamental values of Shariah to prevent harm and promote benefits to consumers. The positive impact of the implementation of VBI-aligned financing shows over RM94.2 billion disbursed by Islamic banks since 2017 which benefits Micro SMEs, public infrastructure, affordable housing and renewable energy and green projects. Thus, BNM is committed to strengthening the Shariah regulatory framework by harmonizing the application of Shariah contracts and facilitating the application of diverse Shariah contracts. Among the focuses emphasized in the blueprint is a reconsideration of the use of *tawarruq* which is the most common shariah contract in Malaysia's Islamic finance landscape (Bank Negara Malaysia, 2022).

On December 31, 2022, BNM issued *tawarruq* and other shariah contracts for the three primary Islamic banking segments: financing, deposits and interbank money market funds. These contracts show how effective the *tawarruq* model is in Malaysia. The role of *tawarruq* received increased attention in recent years. In this regard, *tawarruq* is seen as having the ability to facilitate the provision of money market funds between banks, deposits and cash management as well as financing for various purposes. This trend is consistently growing based on statistics by BNM in 2018 which shows that more than 57% of the total financing offered by Islamic financial institutions in Malaysia is applying the *tawarruq* model. (Ahmad et al., 2020). Similarly, according to the Islamic Financial Services Board (IFSB), in 2021, the proportion of *tawarruq* in the total financing amount based on the 12 IFSB member countries had grown to 25.7%.

Notwithstanding, the dominant use of *tawarruq* in all corners of the Islamic banking segment is not in line with the criticism of its use in addition to the recommendations issued by BNM in the Financial Sector Plan 2022 - 2026 which recommends reevaluating its use of *tawarruq*. Meanwhile, because Islamic banks have historically relied on corporate deposits to support financing growth, they are reportedly having structural difficulties managing liquidity risk. In this case, shariah-compliant money market products are more scarce than conventional options, which further limits the difficulty in using liquidity instruments (Bank Negara Malaysia, 2023). The issue of *tawarruq* has received considerable critical attention. This proves the importance of research related to *tawarruq* given that this recommendation is suggested by BNM as the regulator that has full authority over all financial institutions in Malaysia. Scholars also have the same impression not only from a Malaysian perspective but also from a global perspective. Nevertheless, how much are the trends and developments in the field of *tawarruq* studies based on sources found in comprehensive academic information resources? Are these developments as important as current needs? Therefore, the primary purpose of this paper is to capture the landscape of previous research relevant to *tawarruq* since 2012 by using bibliometric analysis and to look at the development of *tawarruq* on financing products to compare the importance of using *tawarruq* and studies in this field. Through conceptualization, this approach may manage vast amounts of data, revealing the patterns and structural composition of a scientific field.

2. Literature Review

Overview of *Tawarruq*

According to Bank Negara Malaysia (2018), *tawarruq* involves two contracts for sale and purchase. The initial step in this process is when a seller sells a buyer an asset on a deferred basis. The original buyer will then sell the same asset to a third party on a spot and cash basis. The sale and purchase contract may be based on *murabahah* or *musawamah* contracts which differ in terms of the disclosure of the asset cost price and profit margin to the purchaser. The general permissibility of sales including *tawarruq* is based on Ayat 275 from Surah al-Baqarah, meaning *".....whereas Allah SWT has permitted trading and forbidden usury....."*. In addition, the contract components that need to be present in *tawarruq* are offer and acceptance; contracting parties; asset; price; arrangement with other contracts; and dissolution and completion (Bank Negara Malaysia, 2018).

It is said that, when the governor of Khaibar brought to the Prophet (peace be upon him) Janib (dates of high quality), he asked, "Are all the dates of Khaibar like this?" He replied, "No, by Allah, but we take one Sa' from this (high-quality date) for two or three Sa' from the other date (low-quality date)". The Messenger of God (peace be upon him) replied, "Do not do that, but first sell dates of lower quality to get money and then buy Janib with that money" (Sahih al-Bukhari 2302, 2303). Here, as in the case of *tawarruq*, the Prophet (peace be

upon him) authorized two distinct sales. This advice aims to ensure fairness and avoid injustice in trade. In addition, the statement from Ali bin Abu Taleb who said: 'I will not leave Hajj even if I have to do it through *tawarruq*" (Ibn al-Athir, n.d.: 301-302) implies that Ali bin Abu Taleb will not use *tawarruq* unless it is the last resort.

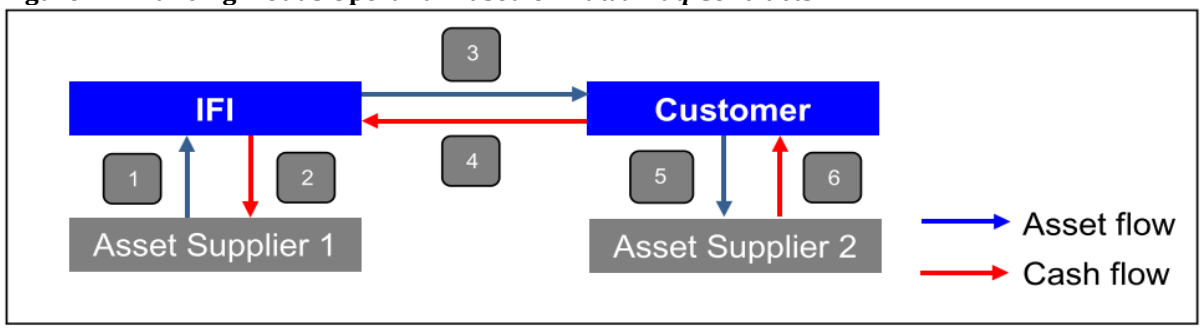
Several aspects like *wakalah* and *wa'd* need to be considered in executing *tawarruq*. *Wakalah* refers to a contract whereby one party, acting as principal, designates another party to operate as his agent to carry out a certain duty in circumstances where payment may or may not be required. *Wa'd*, on the other hand, is a unilateral undertaking, also known as a promise, which is a declaration of commitment made to another party by one to carry out specific actions(s) in the future. In this case, *wakalah* arrangements must be made in a contract that is distinct from the *tawarruq* sale and purchase agreement *and* is used to reduce an Islamic financial institution's (IFI's) risk associated with purchasing commodities (Bank Negara Malaysia, 2018).

From the perspective of legal provisions, to promote financial stability and to support shariah compliance, Malaysia has enacted the Islamic Financial Services Act 2013 (IFSA 2013). In addition, there are also some relevant laws applicable in governing Islamic finance contractual relationships and transactions such as the Central Bank of Malaysia Act 2009, Stamp Act 1949, Real Property Gains Tax 1976 and Contracts Act 1950. In this regard, IFSA 2013 has given BNM the authority to ascertain the Shariah standards for contracts that serve as the foundation for Islamic financial products in Malaysia after consulting with SAC. In total, there are 14 PDs on Shariah contracts which provide Shariah and operational requirements for the implementation of Shariah contracts. PD *tawarruq* which was issued on 28th December 2018 and is in use now, is one of the totals that focuses on i) outlining the shariah rules that are related to *tawarruq*; ii) outlining the essential operational requirements for putting *tawarruq* into practice; and iii) encouraging complete adherence to shariah requirements which include protecting the interest of consumers and adhering to sound Islamic banking practices. It is an obligation for all Islamic financial institutions licensed under BNM to comply with IFSA 2013 and Shariah standards (PD) issued by BNM to avoid non-shariah compliant activities. These, researchers such as Jalil & Osman, (2024) Found that Malaysian law has been proposed as a law of reference internationally because civil courts are legally required to refer Islamic financial issues to BNM's SAC.

Financing Process Based on *Tawarruq* Contract

The figure below is a guide as stated in the policy document (Bank Negara Malaysia, 2018) to obtain a clear and accurate picture of the financing modus operandi based on *tawarruq* contracts practiced in Malaysia.

Figure 2: Financing Modus Operandi Based on *Tawarruq* Contracts



Source: *Tawarruq* Policy Document (2018)

Based on the diagram above, the *tawarruq* arrangement is as follows;

- The asset is bought by the IFI from the asset supplier 1.
- The IFI pays cash to asset supplier 1.
- The owned asset is sold by the IFI to the customer at the agreed selling price.
- The customer makes deferred payments through monthly installments.
- The IFI is appointed by the customer as its agent to sell the asset to asset supplier 2 on the spot.
- The customer obtains the cash required for the financing.

In general, the bank will purchase the asset and sell it to the customer with a deferred payment by the *tawarruq* contract. The customer then requests the bank to sell the commodity in the market on their behalf. Here, the bank acts as the customer's representative to sell commodities to third parties and provide cash from the sale to the customer. In this process, Islam, (2024) adds that there are *tawarruq* conditions that need to be maintained which are i) the seller must own the asset before offering it to the buyer; ii) the seller must explain the details of the product to the buyer; iii) the seller can deliver the asset at the agreed time if requested; and iv) the method of payment must be clearly stated.

According to the findings of earlier studies, there is also a gap in Malaysia's implementation of *tawarruq*. Asni, (2022) Found that there are differences from the point of view of *tawarruq munazzam* contract practice which is also in line with the study by Ali & Hassan, (2020) Which found that every Islamic banking institution in Malaysia employs a distinct approach. Furthermore, it can be proven by Smolo & Musa, (2020) The *hilah* principle has been widely used in the Islamic financial industry such as in *tawarruq* contracts because the transaction is not aimed at the asset base but rather to obtain cash from the sale and purchase of the asset. From the aspect of practicing *tawarruq* in other countries, a study by Aprianto & Nazilah, (2023) found that *tawarruq* contracts in Indonesia can only be practiced in commodity trading transactions on the Commodity Exchange and are not allowed to be used as products of Islamic financial institutions.

In addition, the number of *tawarruq* transactions also increased at the London Metal Exchange (LME) and Bursa Suq Al-Sila (BSAS) to launch the process of offering Islamic financing (Alotaibi, 2024). However, the element of *gharar* has been detected in the implementation of the BSAS platform that uses *tawarruq* as the results of the study proved by (Mazlan et al., 2024). Despite the issue, Mazlan et al., (2024) also found that the platform provider has taken the initiative to address the issue by recording information such as the offer number, the date the commodity was issued in BSAS, the valuation date, product code, unit, amount, point value money, price and type of transaction. From a conceptual standpoint, scholars like Islam, (2024) concluded that *tawarruq* is a contract to get money where someone buys a commodity with a deferred payment, to sell it to a third party at a lower price to get cash. In this regard, there are three parties involved, namely the Islamic bank as an intermediary, the customer as the party that wants to get money, and the supplier. The traded commodity must be sold to a third party other than the original seller to ensure the purity of the contract.

3. Methodology

Bibliometric is a quantitative analysis method that uses mathematical and statistical tools to measure the interrelationship and impact of publications in a particular research area. It enables researchers to sketch out complex knowledge maps that represent the structure of knowledge in a field of study and study their properties through statistical and mathematical methods. In addition, the bibliometric analysis used in this study helps the researcher to identify broad reviews related to *tawarruq* through large datasets which will eventually produce an agenda for further research (Passas, 2024, Donthu et al., 2021).

Data was gathered from the databases of Scopus, Science Direct, and bank websites. These databases were chosen because of their wide interdisciplinary coverage and are sources for obtaining comprehensive information resources. VOSviewer software is also used for creating maps based on network data and for visualizing and exploring these maps.

The following is the process used in this study as suggested by Passas (2024) & Donthu et al., (2021);

Table 1: Process of conducting the study

Phase	Process
Phase 1 Define research objective	- Research objectives are identified based on research gaps from an academic and practical perspective.

Phase 2 Literature search and data collection	- Collect relevant literature on "*tawarruq*" from Science Direct and Scopus databases and also collect data on financing products that apply *tawarruq* from the database of every Islamic banking institution in Malaysia. The Mendeley software is then used to gather the data in the form of pdf files.
Phase 3 Data cleaning and pre-processing	- Each data is checked for content such as journal type, author names, journal name, year of publication, volume, issue, pages, DOI and the most important information is keywords. After the journal review process is complete, data from the Web of Science and Scopus databases is exported to RIS files for analysis purposes.
Phase 4 Selection of Bibliometric Techniques	- Analysis is done using VOSviewer software to create a term co-occurrence map based on text data.
Phase 5 Data analysis	Text data from RIS files are extracted to produce visual patterns in the literature.
Phase 6 Visualization	- The results of the study are divided into two, namely performance analysis and science mapping, which are depicted in the table, network visualization, overlay visualization and density visualization.
Phase 7 Interpretation and reporting	- Results are presented comprehensively with insights and recommendations.

Source: Author's Illustration

4. Findings and Discussion

The results of the study are divided into two based on the two main approaches used, namely performance analysis and science mapping.

Performance analysis

Performance analysis uses metrics including publications, author contributions, and citation-related indicators to assess the influence of academics, organizations, and nations (Passas, (2024) & Donthu et al., (2021)). The comparison of search results using the keyword "*tawarruq*" from the Science Direct and Scopus databases is shown in Table 2.

Table 2: Comparison Between Search Results with The Keyword "*Tawarruq*" Using the Science Direct and Scopus Databases.

Publication-Related Metrics	Science Direct	Scopus
Year of publication	2014 - 2024	2012 – 2024
Total publication	37	52
Article type	35 research articles 2 book chapters	39 research articles 4 review paper 3 conference review 2 conference paper 1 book 3 book chapter

The highest publication title	Pacific-Basin Finance Journal (6 publications)	ISRA International Journal of Islamic Finance (6 publications)
The highest subject areas	Economics, Econometrics and Finance (33 publications)	Economics, Econometrics and Finance (28 publications)

Source: Author's compilation

Compared to the Science Direct database, which contains data from 2014, searches conducted using the Scopus database can locate data from 2012. There are 52 publications total for the term "*tawarruq*" from the Scopus database between 2012 and 2024, compared to 37 publications from Science Direct between 2014 and 2024. The Scopus database details article types such as 39 research articles, 4 review papers, 3 conference reviews, 2 conference papers, 1 book and 3 book chapters. Unlike the Science Direct database, the article type shown only consists of 35 research articles and 2 book chapters. With six publications overall, the ISRA International Journal of Islamic Finance has the highest publication title among all publications in the Scopus database, and Pacific-Basin has the highest number of publications among all publications in the Science-Direct database. Overall, from the number of publications shown from both databases, the highest subject area with the keyword "*tawarruq*" is from the area of Economics, Econometrics and Finance.

The following is a list of articles with the keyword "*tawarruq*" from the Scopus and Science Direct databases.

Table 3: List of Articles with The Keyword "*Tawarruq*" from the Scopus and Science Direct Databases.

Authors	Title	Year	Source Title
	Scopus		
Ahmed H.; Aleshaikh N.M.	Debate on Tawarruq: Historical Discourse and Current Rulings	2014	Arab Law Quarterly
Mohd Yusof R.; Bahlous M.; Haniffa R.	Rental Rate as An Alternative Pricing for Islamic Home Financing: An Empirical Investigation on The UK Market	2016	International Journal of Housing Markets and Analysis
Bilal M.; Mydin Meera A.K.	Al-Muqassah Model: An Alternative Shariah-Compliant Islamic Credit Card Model for Islamic Financial Institutions in Malaysia	2015	International Journal of Islamic And Middle Eastern Finance and Management
Muneeza A.; Fauzi M.F.; Bin Mat Nor M.F.; Abideen M.; Ajroudi M.M.	House Financing: Contracts Used by Islamic Banks for Finished Properties in Malaysia	2020	Journal of Islamic Accounting and Business Research
Panggi F.; Amin H.; Shaikh I.M.	Determinants of Millennials' Acceptance Towards Tawarruq Home Financing in Sandakan, Sabah, Malaysia	2024	International Journal of Housing Markets and Analysis
Abbasi H.; Aziz K.	Critical Study of Commodity Murābahah Practice of Islamic Banks from Sharī 'ah Perspective	2023	Hamdard Islamicus
Yusoff A.F.; Ahmad A.A.; Nik Abdul Ghani N.A.R.	Classical Tawarruq: A Potential Alternative to Bai Al-Īnah In the Malaysian Banking and Finance Industries	2019	Arab Law Quarterly
	International Conference on Business and Technology, ICBT 2021	2023	Lecture Notes in Networks and Systems
Kenjebaev N.	Shariah-Compliant Credit Cards: An Analysis of Underlying Structures	2012	ISRA International Journal of Islamic Finance
Orhan Z.H.; Zaheer S.; Kazancı F.	Evaluating the Current Interest-Free Monetary Policy Tools and Suggesting A New One: Case of Turkey Via Examples of Malaysia, Pakistan, and Bahrain	2024	Qualitative Research in Financial Markets
Syahmi M.I.; Mohamad M.T.; Ramli M.A.	Experts' Views On Ḥiyal In Malaysian Islamic Banks: The Case of Tawarruq-Based Deposit Products	2022	ISRA International Journal of Islamic Finance
Muqorobin A.; Kurniawan C.S.	Instalment Sale: Its Contemporary Application in Islamic Banking Finance (Case Study Brunei Darussalam)	2022	Malaysian Journal of Shariah And Law

Alotaibi H.A.	Examining the Integration of Legal and Shariah Principles in The London Metal Exchange	2024	Journal of Eco humanism
Yasini S.; Yasini M.	Current Trends and Future Impacts of Fintech In Islamic Finance	2018	Fintech In Islamic Finance: Theory and Practice
Solarin S.A.; Hammoudeh S.; Shahbaz M.	Influence of Economic Factors on Disaggregated Islamic Banking Deposits: Evidence with Structural Breaks in Malaysia	2018	Journal of International Financial Markets, Institutions and Money
Alnaies T.A.	Sale of The Needy in Islamic Fiqh: Applied Constituent Study	2018	Journal of King Abdulaziz University, Islamic Economics
Ismail A.G.; Nik Abdul Ghani N.A.R.; Mat Zain M.N.	Tawarruq Time Deposit with Wakalah Principle: An Option That Triggers New Issues	2016	International Journal of Islamic And Middle Eastern Finance and Management
Hassan R.; Hamidi H.	Examining the Practice of Tawarruq Credit Financing in Malaysian Credit Co-Operatives	2023	Lecture Notes in Networks and Systems
Smolo E.; Musa A.M.	The (Mis)Use of Al-Hilah (Legal Trick) And Al-Makhraj (Legal Exit) In Islamic Finance	2020	Journal of Islamic Accounting and Business Research
Visser H.	Islamic Finance: Principles and Practice, Second Edition	2013	Islamic Finance: Principles and Practice, Second Edition
Kurniawan A.; Shomad A.	Composite Islamic Contracts in Modern Complex Islamic Bank Finance	2017	Islamic Quarterly
Alzaidi A.; Kazakov D.	Earn More, Stay Legal: Novel Multi-Agent Support for Islamic Banking	2012	Advances in Intelligent and Soft Computing
Barre G.M.	Tawarruq As an Alternative Product for Bai Al-Inah Within the Islamic Banking System: A Case Study of Somali Islamic Banks	2023	Asian Economic and Financial Review
Mahyudin M.I.; Seman A.C.	The Application of Bay' Al-Tawarruq In Islamic Banking Institutions in Malaysia: A Study of Bank Muamalat Malaysia Berhad	2018	New Developments in Islamic Economics: Examples from Southeast Asia
Ibrahim N.; Mohd Sapian S.	Does Tawarruq Still Remain the Top Option for Islamic Home Financing (IHF) Products in Malaysia?	2023	Qualitative Research in Financial Markets
Bello N.; Hasan A.; Saiti B.	The Mitigation of Liquidity Risk in Islamic Banking Operations	2017	Banks and Bank Systems
Razak S.A.B.A.	Sharīʿah Compliance of Islamic Credit Cards Reconsidered: A Case Study of Malaysia	2015	ISRA International Journal of Islamic Finance
Ahmad A.A.; Mohd Dasar M.H.; Nik Abdul Ghani N.A.R.	Analysis of Tawarruq Contract in The Islamic Profit Rate Swap (IPRS) Implementation in Malaysia	2022	Qualitative Research in Financial Markets
Ebrahim M.S.; Sheikh M.	Debt Instruments in Islamic Finance: A Critique	2016	Arab Law Quarterly
Bahari N.F.; Shafii Z.; Hanefah M.M.	Legitimizing Ar-Rahnu Through Tawarruq: What Practitioners Have to Say	2022	Global Journal Al-Thaqafah
Ali M.M.; Hassan R.	Survey on Sharīʿah Non-Compliant Events in Islamic Banks in The Practice of Tawarruq Financing in Malaysia	2020	ISRA International Journal of Islamic Finance
Thaidi H.A.A.; Ab Rahman M.F.; Ab Rahman A.	The Analysis of Gharar Existence in The Implementation of Tawarruq Personal Financing; [Analisa Eksistensi Gharar Terhadap Perlaksanaan Pembiayaan Peribadi Tawarruq]	2014	Global Journal Al-Thaqafah
Miah M.D.; Suzuki Y.	A Critique to A Naïve Critique To 'Murabaha' 'Tawarruq' Syndrome	2018	Dilemmas and Challenges in Islamic Finance: Looking at Equity and Microfinance
	International Conference on Business and Technology, ICBT 2021	2023	Lecture Notes in Networks and Systems
Siddiky S.; Swandaru R.; Muneeza A.	Can Micro-Enterprises Use Tawarruq Fardi Financing (TFF) For Fund Raising?	2022	PSU Research Review

	International Conference on Business and Technology, ICBT 2021	2022	Lecture Notes in Networks and Systems
Ali M.M.; Hassan R.	Determinants of Shariah Non-Compliant Events in Islamic Banks in Malaysia: With Special Reference to Tawarruq-Based Financing	2016	Al-Shajarah
Asni F.	The Difference of Shariah Risk Potential and Shariah Risk in Personal Financing Products Based on Tawarruq Munazzam Contracts Practised in Malaysia	2022	Qualitative Research in Financial Markets
Alkhan A.M.; Hassan M.K.	Tawarruq: Controversial or Acceptable?	2019	Arab Law Quarterly
Haron R.; Mohamed Barre G.	Application of Tawarruq In Islamic Banking Institutions in Somalia	2023	Qualitative Research in Financial Markets
Nienhaus V.	Islamic Finance Reform: A Few Points to Ponder	2020	Journal of King Abdulaziz University, Islamic Economics
Alkhan A.M.	Analysing Product Utilization by Islamic Retail Banks: The Case of Bahrain Islamic Bank and Kuwait Finance House-Bahrain	2020	Asian Economic and Financial Review
Shahwan S.; Sapian S.M.; Ibrahim N.; Mohammed M.O.; Agha E.; Kanesan T.	Ranking the Compliance of Islamic Banking Home Financing Products with Maqasid Shariah Using AHP	2022	International Journal of The Analytic Hierarchy Process
Abdul-Rahim R.; A. Wahab A.; Yusoff N.A.	Impact of Shariah-Compliant Status on Firms' Decision to Practice Forex Hedging	2019	Journal of Islamic Accounting and Business Research
Mohamad N.; Ab Rahman A.	Tawarruq Application in Islamic Banking: A Review of The Literature	2014	International Journal of Islamic And Middle Eastern Finance and Management
Ahmad M.; Ansary R.	Fiqhī Views on Bayʿwa Salaf And Qarḍ-Based Islamic Banking Deposit Accounts in Malaysia	2017	ISRA International Journal of Islamic Finance
Sharaiyra S.W.; Haswa M.	The Effect Of 'Motive' On Characterising Organised Tawarruq	2019	Arab Law Quarterly
Ilias I.I.; Nasrun M.; Muhamed N.A.	Unveiling the Terrain of Non-Bank Islamic Personal Financing: Current Practices, Challenges, And Future Prospects	2024	Journal of Islamic Accounting and Business Research
Muttaqin A.A.; Samsudin M.A.; Salleh A.D.; Ahmad A.A.; Kurnia A.S.	Developing an Islamic Business Model: A Case for Agricultural Value Chain Finance in Agrobank, Malaysia	2023	ISRA International Journal of Islamic Finance
El-Seoudi A.W.; Mohd. Nasranmohamad Z.; Mohd. Nor A.H.; Ahmad S.; Alias M.; Dahlansalleh A.	Gift of The Compensation Condition and Used in Islamic Financing Instruments	2012	Advances in Natural and Applied Sciences
Amin H.; Hassan M.K.	Millennials' Acceptability of Tawarruq-Based Ar-Rahnu In Malaysia	2022	International Journal of Ethics and Systems
Amin H.; Hamid M.R.A.	Patronage Factors of Tawarruq Home Financing in Malaysia	2018	International Journal of Business and Society
	Science Direct		
Klemens Katterbauer, Hassan Syed, Laurent Cleenewerck, Sema Yilmaz Genc,	Robo-Sukuk Pricing for Chinese Equities	2022	Borsa Istanbul Review
Sabri Mohammad, Mehmet Asutay, Rob Dixon, Elena Platonova	Liquidity Risk Exposure and Its Determinants in The Banking Sector: A Comparative Analysis Between Islamic, Conventional and Hybrid Banks	2020	Journal of International Financial Markets, Institutions and Money
Siti Khadijah Ab Manan, Muhammad Hakimi Bin Mohd Shafiai	Risk Management of Islamic Microfinance (IMF) Product by Financial Institutions in Malaysia	2015	Procedia Economics and Finance

Madina Kalimullina	Islamic Finance in Russia: A Market Review and The Legal Environment	2020	Global Finance Journal
Md Safiullah, Mohammad Dulal Miah, Asm Sohel Azad, M. Kabir Hassan	Does the Board of Directors Influence Shariah Governance in Islamic Banks?	2024	Pacific-Basin Finance Journal
Dzuljastri Abdul Razak, Mustafa Omar Mohammed, Kazi Md. Tarique	Abandoned Housing Projects in Malaysia And the Prospect Of DP: An Overview	2015	Procedia Economics and Finance
Faisal Alqahtani, David G. Mayes, Kym Brown	Economic Turmoil and Islamic Banking: Evidence from The Gulf Cooperation Council	2016	Pacific-Basin Finance Journal
Norfaizah Othman, Mariani Abdul-Majid, Aisyah Abdul-Rahman	Partnership Financing and Bank Efficiency	2017	Pacific-Basin Finance Journal
Novi Puspitasari	Hybrid Contract and Funds Efficiency Management of Islamic General Insurance Company (Study in Indonesia)	2015	Procedia - Social and Behavioral Sciences
Zainor Nasrah Abdul Rahman, Siti Khadijah Ab Manan	Tawarruq As A Useful Instrument to Finance Retail the Halal Way	2014	Procedia - Social and Behavioral Sciences
Nabilah Rozzani, Intan Salwani Mohamed, Sharifah Norzehan Syed Yusuf	Risk Management Process: Profiling of Islamic Microfinance Providers	2017	Research in International Business and Finance
Sakiru Adebola Solarin, Shawkat Hammoudeh, Muhammad Shahbaz	Influence of Economic Factors on Disaggregated Islamic Banking Deposits: Evidence with Structural Breaks in Malaysia	2018	Journal of International Financial Markets, Institutions and Money
Faisal Alqahtani, David G. Mayes, Kym Brown	Reprint of Economic Turmoil and Islamic Banking: Evidence from The Gulf Cooperation Council	2017	Pacific-Basin Finance Journal
Matiur Rahman	Islamic Banks with Mutuality and Neutrality: A Balance-Sheet-Based Theoretical Framework	2019	The Quarterly Review of Economics and Finance
Jocelyn Grira, Chiraz Labidi	Banks, Funds, And Risks in Islamic Finance: Literature & Future Research Avenues	2021	Finance Research Letters
Murat Çokgezen, Timur Kuran	Between Consumer Demand and Islamic Law: The Evolution of Islamic Credit Cards in Turkey	2015	Journal of Comparative Economics
Umar A. Oseni, Abideen Adewale, Nor Razinah Binti Mohd Zain	Customers' Perceptions of The Dispute Resolution Clauses in Islamic Finance Contracts in Malaysia	2016	Review of Financial Economics
Shifa Mohamed Saeed, Islam Abdeljawad, M. Kabir Hassan, Mamunur Rashid	Dependency of Islamic Bank Rates on Conventional Rates in A Dual Banking System: A Trade-Off Between Religious and Economic Fundamentals	2023	International Review of Economics & Finance
Ahmet Suayb Gundogdu	Islamic Electronic Trading Platform on Organized Exchange	2016	Borsa Istanbul Review
Siti Sarah Razak, Buerhan Saiti, Yusuf Dinç	The Contracts, Structures and Pricing Mechanisms of Sukuk: A Critical Assessment	2019	Borsa Istanbul Review
Zaimy Johana Johan, Lennora Putit	Conceptualizing the Influences of Knowledge and Religiosity on Islamic Credit Card Compliance	2016	Procedia Economics and Finance
Mohammad Nurunnabi, Han Donker, Eva K. Jermakowicz	The Impact of Mandatory Adoption of IFRS In Saudi Arabia	2022	Journal of International Accounting, Auditing and Taxation
Nunung Nurul Hidayah, Alan Lowe, Margaret Woods	Accounting and Pseudo Spirituality in Islamic Financial Institutions	2019	Critical Perspectives on Accounting

Wahyu Jatmiko, M. Shahid Ebrahim, Houcem Smaoui	Sukūk Development and Income Inequality	2023	Journal of International Financial Markets, Institutions and Money
Alija Avdukic, Mehmet Asutay	Testing the Development Impact of Islamic Banking: Islamic Moral Economy Approach to Development	2024	Economic Systems
Mansor H. Ibrahim, Syed Aun R. Rizvi	Bank Lending, Deposits and Risk-Taking in Times of Crisis: A Panel Analysis of Islamic And Conventional Banks	2018	Emerging Markets Review
Aymen Ben Rejeb	On the Volatility Spillover Between Islamic And Conventional Stock Markets: A Quantile Regression Analysis	2017	Research in International Business and Finance
Abdullah Bugshan, Faisal Alnori, Walid Bakry	Shariah Compliance and Corporate Cash Holdings	2021	Research in International Business and Finance
Dewi Fatmawati, Noraini Mohd. Ariffin, Nor Hafizah Zainal Abidin, Ahmad Zamri Osman	Shariah Governance in Islamic Banks: Practices, Practitioners and Praxis	2022	Global Finance Journal
Faisal Alqahtani, David G. Mayes	Financial Stability of Islamic Banking and The Global Financial Crisis: Evidence from The Gulf Cooperation Council	2018	Economic Systems
Stefano Gatti, Mattia Pianorsi	Project Finance in Theory and Practice (Fourth Edition)	2024	Academic Press
Faisal Alnori, Faisal Alqahtani	Capital Structure and Speed of Adjustment in Non-Financial Firms: Does Sharia Compliance Matter? Evidence from Saudi Arabia	2019	Emerging Markets Review
Mohammad Dulal Miah, Md. Nurul Kabir, Md Safiullah	Switching Costs in Islamic Banking: The Impact on Market Power and Financial Stability	2020	Journal of Behavioral And Experimental Finance
Madina Kalimullina, Mikhail (Shamil) Orlov	Islamic Finance and Food Commodity Trading: Is There A Chance to Hedge Against Price Volatility and Enhance Food Security?	2020	Heliyon
Mirzet Šeho, Mansor H. Ibrahim, Abbas Mirakhor	Does Sectoral Diversification of Loans and Financing Improve Bank Returns and Risk in Dual-Banking Systems?	2021	Pacific-Basin Finance Journal
Stefano Gatti	Project Finance in Theory and Practice (Third Edition)	2018	Academic Press
Saad Azmat, Michael Skully, Kym Brown	Can Islamic Banking Ever Become Islamic?	2015	Pacific-Basin Finance Journal

Source: Author's compilation

In addition to formulating the landscape of the use of *tawarruq* contracts by Islamic banking institutions in Malaysia, the researcher has included financing products based on *tawarruq* contracts. The Product Disclosure Sheet (PDS) issued by the bank can be referred to further comprehend the characteristics of financing products that use *tawarruq*. Customers also have a right to know about the applicable Shariah concept, overview of product structure, amount and tenure of financing, and fees including an illustration of calculating profit, rebate, late payment charges, takaful protection and key terms and conditions. Therefore, to obtain a clear picture of the most recent *tawarruq* usage practices, a review of each bank's PDS and website was conducted.

The following is a list of Islamic banking institutions in Malaysia that used *tawarruq* contracts for financing involving households. The division of these types of household financing products is based on the division of financing products as per each bank's website.

Table 4: List of Household Financing Products that use *Tawarruq* Contracts

No	Bank	Vehicle	Home	Personal	Cash line	Others
1	Affin Islamic Bank Berhad	-	/	/	-	-Business Premises -Education
2	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad	-	/	/	/	-
3	Alliance Islamic Bank Berhad	-	/	/	-	-Term Financing
4	AmBank Islamic Berhad	/	/	/	-	-
5	Bank Islam Malaysia Berhad	-	/	/	/	-ASB Financing
6	Bank Muamalat Malaysia Berhad	-	/	/	/	-Ar Rahnu
7	CIMB Islamic Bank Berhad	-	-	/	-	-
8	Hong Leong Islamic Bank Berhad	-	/	/	-	-Solar Plus Financing -ASB Financing
9	HSBC Amanah Malaysia Berhad	-	-	/	-	-
10	Kuwait Finance House (Malaysia) Berhad	-	-	/	-	-
11	Maybank Islamic Berhad	-	/	/	-	-ASB Financing -Education
12	MBSB Bank Berhad	-	/	/	-	-Education
13	OCBC Al-Amin Bank Berhad	-	-	/	-	-
14	Public Islamic Bank Berhad	-	-	-	-	-
15	RHB Islamic Bank Berhad	-	/	/	-	-Term Financing
16	Standard Chartered Saadiq Berhad	-	-	-	-	-

Source: Author's compilation

Based on the table above, as of 2024, *tawarruq* is proven to still be used in financing products by all licensed Islamic banks, which constitute as many as 16 banks. Although there are two banks namely Public Islamic Bank Berhad and Standard Chartered Saadiq Berhad that do not use *tawarruq* contracts on financing products, those banks do use *tawarruq* on other product segments such as deposit products. Out of all the financing product types mentioned above, 14 banks have used *tawarruq* as the foundation for personal financing products, but only 1 bank has used *tawarruq* for vehicle financing. In addition to vehicle, home, personal and cash line products, *tawarruq* is also used as the basis for products such as education, *ar rahnu*, ASB financing, term financing and others. This supports the proof of continuous *tawarruq* contributions such as the trend and composition of *tawarruq* in the financing segment as reported by Bank Negara Malaysia (2022) which has contributed as much as RM 622.5 billion compared to other shariah contracts. This demonstrates how the tremendous demand for *tawarruq* keeps it a dominant contract in parallel with the benefits contributed to the development of Islamic banking in Malaysia. Apart from that, there is a gap between the application of contracts in the industry and the findings of academic studies related to *tawarruq*. Although *tawarruq* is seen as a dominant and popular contract among Islamic banking in Malaysia, academically, the practice of *tawarruq* in Malaysia is still debated among researchers.

The positive development shown in Table 4 is not in line with the debate on issues that arise from the practice of financing products based on *tawarruq*. Averagely, debates on *tawarruq* among researchers surround the aspect of its non-shariah compliance risk. If observed, this risk needs to be carefully assessed based on the guidelines issued by BNM. The risk should be assessed from the aspects of terms and conditions, the existence of assets, robust shariah framework, platform and controls provided to ensure shariah compliance. For instance, BNM has established strict requirements to adhere to dual-agency practice guidelines when handling dual-agency issues. BNM also conducts detailed inspections at banks to ensure compliance.

One of the debated issues is that the use of *hilah* in the context of Islamic law is controversial as it is against the principles of integrity and adherence to the true principles of shariah. There are contradictions between the implementation of *tawarruq* in Malaysia and other countries as shariah standards in Malaysia are more lenient on the *tawarruq* model compared to other international standard-setting bodies such as AAOIFI and OIC Fiqh Academy (Hasmad & Alosman, (2022) & Aprianto & Nazilah, (2023)). On the other hand, a study discovered that adopting a *tawarruq munazzam* contract can provide more prosperity to stakeholders than not adopting one (Asni et al., 2023). Researchers such as Ifwat Ishak, (2023) Also suggested that controversial practices such as *tawarruq* should be taken into consideration by Islamic banking through its implementation and should be in line with the *maqasid shariah*. However, several studies found that the use of *tawarruq* seems to be *hajiyyat*, its absence can lead to hardship in community life (Islam, 2024). In addition, Asni et al., (2023) discovered that cash liquidity for cash-based financial instruments is facilitated by the appropriateness of tawarruq.

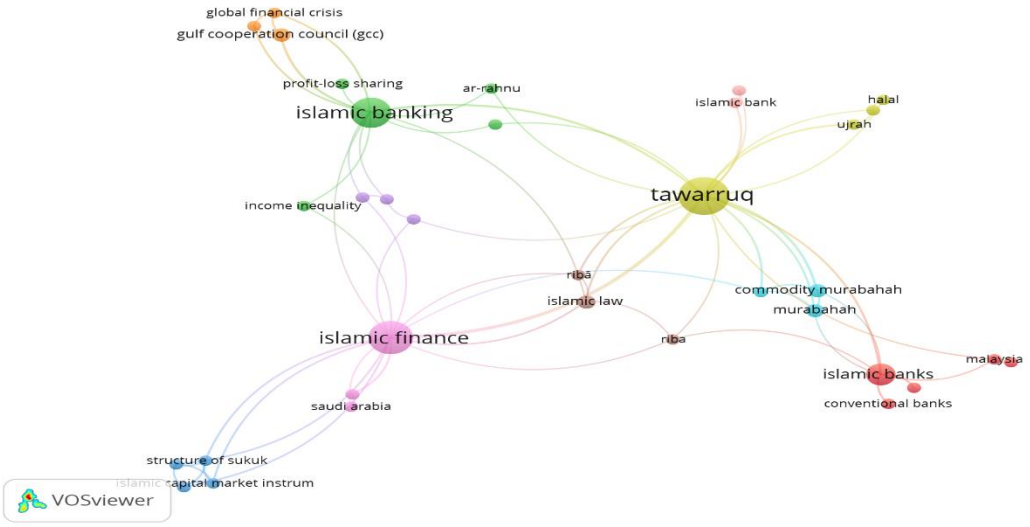
From a practical point of view, *tawarruq* is not allowed to be used in Indonesia as a basis for financing products based on fatwa decisions in that country (Aprianto & Nazilah, 2023). This proves that the decision of fatwa and implementation in Malaysia is very different from other countries. Although that is the case, Hassan et al., (2024) emphasized that the strict procedures for proper documentation of *tawarruq* provided by BNM as well as facilities such as BSAS have also facilitated greater Shariah review to resolve any objections to *tawarruq* contracts. Therefore, the Shariah review and audit process on similar bank products can be done transparently and systematically to ensure Shariah compliance is guaranteed.

Science mapping

The structure and dynamism of scientific research can be mapped with the use of science mapping. For this purpose, co-word analysis and bibliographic coupling have been used to examine how keywords or terms appear together in publications to determine how different themes relate to one another (Passas, 2024 & Donthu et al., 2021). To find trends and patterns in research topics, it also concentrates on the content of publications.

Network visualization: Items are shown in the network visualization by their label and, by default, by a circle. The weight of the item determines the size of the label and its circle. As a result, *tawarruq*, Islamic finance and Islamic banking are the most popular keywords among others. In addition, some keywords do not appear to avoid overlapping labels. The distance between the keywords *tawarruq* and Islamic banking explains the strong correlation between these two keywords. The strength of the links between items is indicated by the lines connecting them. This indirectly promotes the notable increase in *tawarruq* usage in the Islamic banking segment which contributes a large part to the growth of Islamic finance, particularly in Malaysia.

Figure 3: Network Visualization Between Keywords



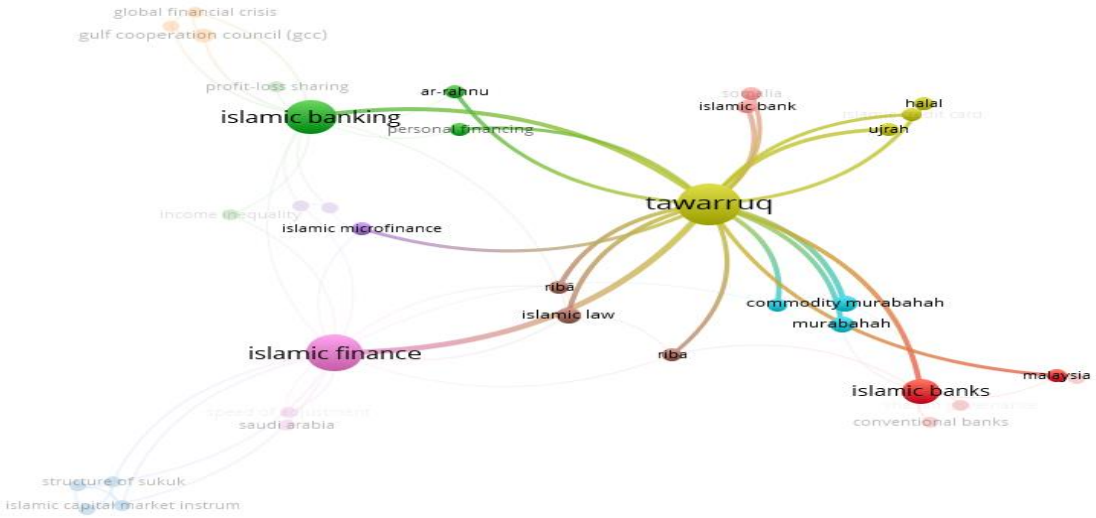
Source: Generated by VOS viewer

Researchers set a minimum threshold of 2 publications containing the same keywords. With a minimum number of occurrences of a 2 keyword, the results show that out of a total of 259 keywords, 36 meet the threshold. The overall strength of the co-occurrence links with other keywords will be determined for each of the 36 keywords until the network is created as in the diagram above. To show a more detailed network visualization, the researcher has generated a research focus and a network of researchers who are directly involved in the *tawarruq* research area.

Research Focus

From the network visualization in Figure 3, research focuses that are directly related and have clear connections are detailed in Figure 4 below.

Figure 4: Focus of Research Related to *Tawarruq*



Source: Generated by VOS viewer

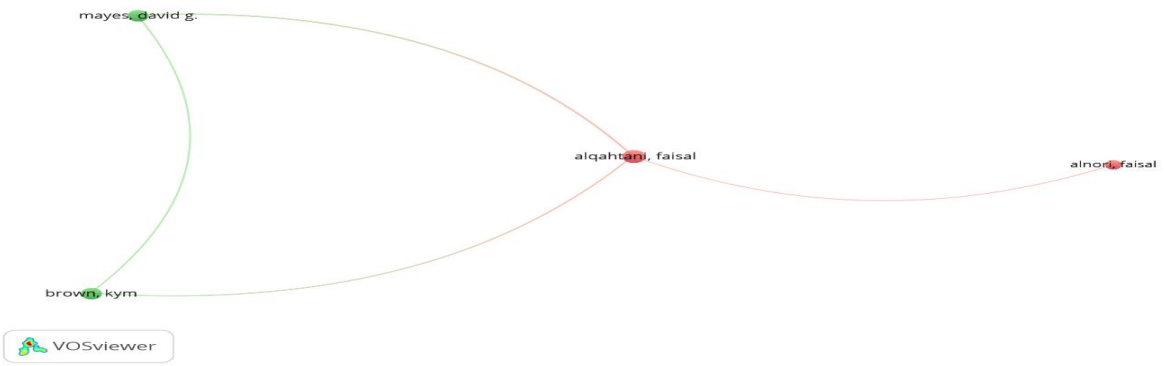
The visual network that has been scaled down as in Figure 4 shows that the focus of the study is in line with this study which examines the development of *tawarruq* and its use in financing products in Islamic banking

institutions in Malaysia. In addition, it would be interesting to assess the effects of the global financial crisis and income inequality towards tawarruq. This coincides very well with BNM's initiative in offering VBI-aligned financing. Taken together, these results are measured by the network and line which is directly depicted with the *tawarruq* area.

Strength of The Co-Authorship

In this section, the authors with the greatest total link strength will be selected. The overall strength of the co-authorship ties with the authors will be determined for each of the 19 authors. The findings indicate that, out of the 154 authors, 19 authors have at least 2 documents and only 4 of these authors are related to one another.

Figure 5: Strength of The Co-Authorship

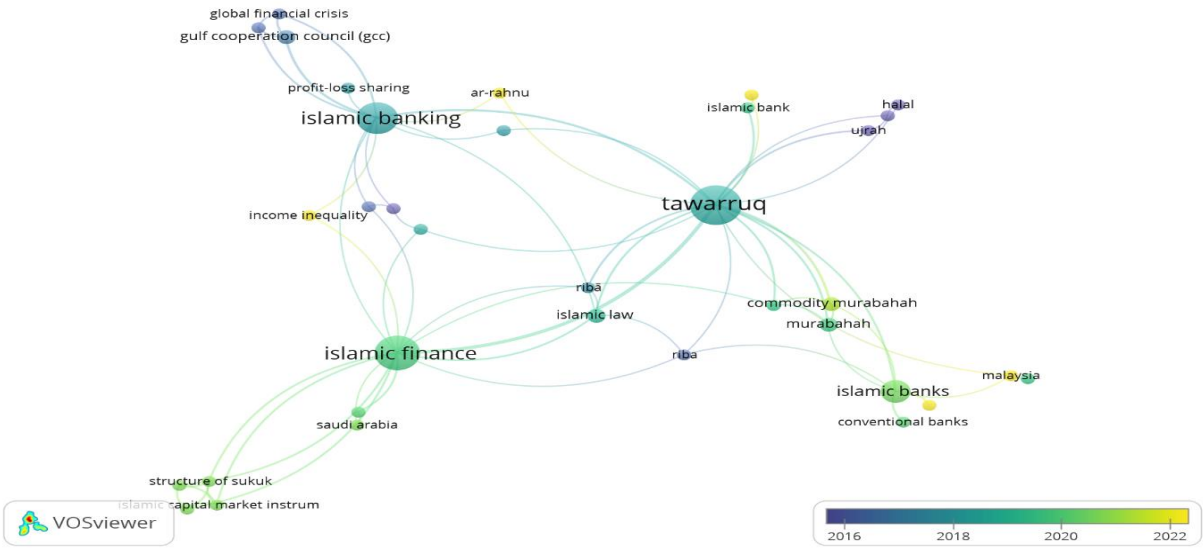


Source: Generated by VOS viewer

Overlay visualization

Except for the objects' default color scheme, which alternates between blue (lowest score), green, and yellow (highest score), the overlay display is the same as the network visualization. Based on the visualization overlay result above, the score represents the year of publication of the article and the color representing the year of publication is arranged from the darkest color to the lightest color.

Figure 6: Overlay Visualization Based on Publication Year



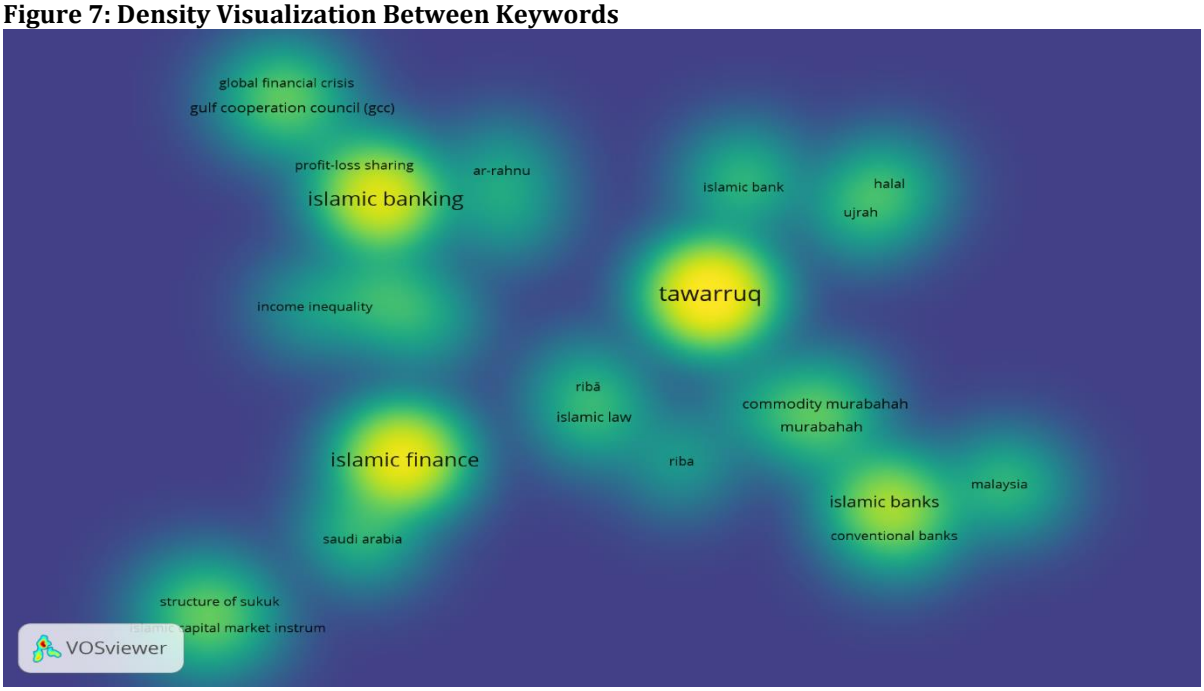
Source: Generated by VOS viewer

Even though there aren't many *tawarruq* studies available on the Science Direct and Scopus platforms, the visual above demonstrates that this study has been regarded as relevant since 2012. Based on the diagram, the latest study focuses on i) *tawarruq* used by Islamic banking institutions as an enhancement to *Ar Rahnu* products; ii) *tawarruq* practiced by Islamic banking institutions in Malaysia and; iii) *tawarruq* practiced by Islamic banking institutions with an income inequality perspective.

Density visualization

Items are represented by their label in the item density visualization, the same as they are in the network and overlay visualizations. The item density display uses hues that, by default, span from blue to green to yellow to represent the density of things at each place.

Figure 7: Density Visualization Between Keywords



Source: Generated by VOS viewer

Parallel to the findings displayed in the network visualization, the *tawarruq*, Islamic banking and Islamic finance items are the brightest, while the average item is yellow. The color that changes to a deep yellow color indicates more publications in the specified area, such as in the case of *tawarruq.*

5. Conclusion and Recommendations

The results of the performance analysis and science mapping are in line with BNM's recommendation to review the need for the use of *tawarruq* in Islamic banking products in Malaysia. As evidenced by the combined results of the Science Direct and Scopus databases, the focus of the study on *tawarruq* used in financing products among Islamic banking in Malaysia is relevant. Furthermore, research results based on secondary sources such as a review of literature related to *tawarruq*, policy documents, product disclosure sheets and bank websites found that there is still a gap between the popularity of *tawarruq* in the industry and the debate related to the issue of *tawarruq* which also involves financing products. Until 2024, the majority of Islamic banking in Malaysia used *tawarruq* for financing products even though there are conflicting opinions related to its practice. However, there are some recommendations in the future.

The first proposal is to boost the number of publications related to *tawarruq* on trusted platforms such as Science Direct or Scopus to produce quality research in line with the requirements recommended by BNM.

Other databases, like Google Scholar, can be used to broaden this bibliometric analysis approach in this field. The second suggestion is to conduct in-depth research and interviews with those who handle *tawarruq* operations including field experts. This method will be able to discuss the challenges faced by the bank in addition to getting responses related to BNM's recommendations as stated in the Financial Sector Plan 2022 - 2026. The same study can be done on other product segments to get an up-to-date picture of the practice of *tawarruq* on other product segments. Research can also be focused on other areas as shown in the science mapping results above.

Additionally, to get more precise and reliable research results, integrative review or systematic literature review methods can be applied. In brief, these proposals are intended to be a starting point for the future related to the topic of study and can be further developed and refined through ongoing research and stakeholder engagement.

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Understanding the Influence of E-Leadership on Trainee and E-Learning Effectiveness among Executives in Malaysia

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Abstract: Electronic leadership (e-leadership) is crucial for the success of e-learning initiatives, particularly in executive education. E-leaders must navigate digital technologies, foster trust and collaboration, and inspire their teams to succeed in a technology-driven workplace. In Malaysia, the National Policy on e-Learning aims to enhance the quality and accessibility of e-learning in higher education institutions. However, many failure rates of e-learning programs are due to the need for more effective e-leadership skills and execution by trainers. The study used snowball sampling to collect data from a target population that needed help to identify. This method involves starting with a few known participants and referring others to meet the study criteria. This approach helps reach hidden or hard-to-reach populations. An online questionnaire was distributed to executives in Malaysia, and data was collected from 191 participants. Structural equation modeling using SmartPLS Version 4 was used to analyze the relationships. The study examined the relationships between Computer Self-Efficacy (CSE), E-Leadership (EL), Motivation to Learn (MTL), and E-learning Effectiveness (EE). Results showed that CSE, EL, and MTL significantly influence EE. However, the model had limited predictive power for CSE, EL, and MTL. Institutions can improve e-learning effectiveness by offering pre-emptive training programs, boosting motivation to learn through engaging course materials, and strengthening e-leadership knowledge. Future research should explore additional variables, consider organizational context, and examine potential interaction effects. Developing strategies and interventions based on findings can contribute to improving E-learning experiences in various educational settings.

Key Words: *E-leadership, E-learning effectiveness, Computer Self-efficacy, Motivation to Learn, Malaysia*

1. Introduction

Electronic leadership (e-leadership) has emerged as a critical factor in the success of e-learning initiatives, particularly in executive education. Effective e-leadership can enhance the overall effectiveness of e-learning programs, leading to improved outcomes for trainees and organizations (Wart et al., 2017; Gurr, 2004). The rise of digital technologies has transformed how leaders interact with their teams, necessitating a deeper understanding of the unique challenges and opportunities presented by e-leaderships. The importance of having e-leadership capabilities to drive the success of e-learning initiatives among executives can be significant. E-leadership, also known as technology-mediated leadership, refers to influencing others through information and communication technologies to achieve organizational goals (Avolio et al., 2014). It requires unique skills and competencies beyond traditional leadership, such as effective communication, team-building, and change management in a virtual environment (Bencsik et al., 2022). E-leaders must navigate the complexities of digital technologies, foster trust and collaboration, and inspire their teams to succeed in a distributed technology-driven workplace.

As in many other parts of the world, executives in Malaysia have increasingly turned to e-learning to acquire new skills and knowledge to stay competitive in a rapidly changing business landscape. These e-learning programs' effectiveness largely depends on the quality of e-leadership provided by the program's instructors and facilitators. Moreover, Malaysia's unique socio-economic and cultural context, with its diverse population and distinct learning preferences, presents additional challenges for e-leadership in the e-learning domain (Bahar et al., 2020). Additionally, e-learning in Malaysia is gaining traction with the recent introduction of the National Policy on e-learning, which aims to enhance the quality and accessibility of e-learning in the country's higher education institutions (Musid et al., 2023, Konting, 2012). A similar setting is also applicable among executives and senior management in business settings. Nonetheless, it has been mentioned that many failure rates of e-learning programs are due to the lack of practical e-leadership skills and execution by the trainers or

instructors (Ariffin & Rami, 2023, Pulley & Sessa, 2001, Wart et al., 2017, Bencsik et al., 2022). The trainees may face challenges, such as lack of engagement, poor communication, and ineffective feedback mechanisms due to the absence of solid e-leadership (Wart et al., 2017). This indirectly leads to poor effectiveness and adoption of e-learning among executives in Malaysia (Konting, 2012, Hu & AlSaqqaf, 2021). Against this backdrop, the ability of e-leaders to effectively leverage digital technologies, foster virtual collaboration, and inspire their teams can be crucial in determining the success of e-learning initiatives among executives in Malaysia.

In Malaysia, such statistics are not readily available, but the importance of e-leadership in ensuring the success of e-learning initiatives among executives is well-recognized in past and present research (Ariffin & Rami, 2023, Konting, 2012). Therefore, it is crucial to investigate the influence of e-leadership on the effectiveness of e-learning programs among executives in Malaysia to develop a deeper understanding of the critical success factors and provide insights that can inform the design and implementation of more effective e-learning initiatives in the future.

2. Literature Review and Hypothesis Development

E-Learning Effectiveness

E-learning effectiveness can be defined as the extent to which e-learning initiatives achieve their intended learning outcomes, enhance learner engagement, and lead to the successful adoption and implementation of the e-learning program (Encarnacion et al., 2020, Alariqi et al., 2019). The effectiveness of e-learning among executives has garnered significant attention in recent years, particularly as organizations increasingly adopt digital training solutions to enhance employee skills and competencies. This literature review synthesizes current research on the subject, focusing on the factors influencing the success of e-learning initiatives in corporate settings.

One of the critical aspects of e-learning effectiveness is the integration of educational factors within corporate environments. Nam and Tutar (2023) highlight that the rise of web applications in corporate functions has led to a more seamless incorporation of e-learning into employee training programs. This integration is essential for fostering a continuous and accessible online learning environment that supports skill acquisition. Furthermore, Sharma and Rathore (2022) emphasize that e-learning can significantly impact employees' job performance, productivity, and organizational commitment, suggesting that the delivery method and content relevance are crucial for achieving desired outcomes. The role of interactive learning methods in enhancing e-learning effectiveness is also noteworthy. Chang (2016) advocates for a blended approach that combines interactive e-learning with traditional face-to-face instruction, which can stimulate learner engagement and facilitate better knowledge retention. This aligns with findings from Pena (2016), who discusses the importance of effective management methodologies in e-learning projects, particularly in industries with stringent financial and time constraints. The case study presented in Pena's work indicates that organizations must adopt structured approaches to assess and enhance the effectiveness of their e-learning initiatives.

Moreover, the demographic factors influencing e-learning adoption among executives must be considered. Balakrishnan (2021) points out that the intersection of organizational, human, and technological aspects plays a vital role in the success of e-learning programs. Understanding these factors can help tailor e-learning solutions to meet the specific needs of executives, thereby improving overall satisfaction and effectiveness. Rahayu et al. (2016) further support this notion by demonstrating that user satisfaction is a critical indicator of successful e-learning implementation in corporate environments. Evaluating the outcomes of e-learning programs is essential for continuous improvement. Beinicke and Kyndt (2019) provide evidence-based actions to maximize training effectiveness in both e-learning and traditional classroom settings. Their findings suggest that implementing specific strategies before and during training can significantly enhance learning outcomes. Dover et al. (2018) propose a framework for assessing executive education programs, emphasizing the need for clear objectives and performance metrics to evaluate the impact of e-learning on individual and organizational levels.

Computer Self-Efficacy on E-Learning Effectiveness

The concept of computer self-efficacy plays a pivotal role in determining the effectiveness of e-learning, particularly among executives who may have varying levels of technological proficiency. Computer self-efficacy refers to an individual's belief in their ability to successfully use computer technology, significantly influencing their engagement and success in e-learning environments. This literature review synthesizes recent studies to explore the relationship between computer self-efficacy and e-learning effectiveness among executives.

Research indicates that higher levels of computer self-efficacy correlate positively with perceived ease of use and perceived usefulness of e-learning systems. For instance, Li et al. found that computer self-efficacy significantly impacts users' perceptions of e-learning systems, enhancing their overall experience and effectiveness (Li et al., 2010). Similarly, Nguyen et al. highlighted that individuals with strong computer skills are likelier to adopt e-learning systems as they feel more confident and motivated to engage with the technology (Nguyen et al., 2020). This is particularly relevant for executives who often must balance their professional responsibilities with continuous learning through e-learning platforms.

Moreover, the influence of computer self-efficacy extends to self-regulation and learning outcomes in e-learning contexts. Gupta's study revealed a significant relationship between domain-specific self-efficacy and self-regulation, suggesting that executives with high computer self-efficacy are better equipped to manage their learning processes effectively (Gupta, 2023). This self-regulation is crucial for executives, allowing them to navigate complex e-learning environments and achieve their learning objectives.

The impact of computer self-efficacy is further supported by findings from Chien, who emphasized that high self-efficacy leads to improved training effectiveness in e-learning settings. This suggests that organizations should prioritize enhancing employees' computer skills and confidence to maximize the benefits of e-learning initiatives (Chien, 2012). Additionally, Ramírez-Correa et al. noted that perceived external control, which relates to an individual's belief in the support available for using technology, also significantly affects perceived ease of use and, consequently, the effectiveness of e-learning systems (Ramírez-Correa et al., 2015). Therefore, this research posits the hypothesis as below:

H1: There is a significant relationship between computer self-efficacy and e-learning effectiveness among executives in Malaysia.

Motivation to Learn on E-Learning Effectiveness

Various motivational factors significantly influence the effectiveness of e-learning among executives. Understanding these factors is crucial for enhancing the learning experience and outcomes in a corporate environment. This literature review synthesizes current research on motivation to learn in e-learning contexts, mainly focusing on executives.

Motivation plays a pivotal role in e-learning effectiveness, as evidenced by several studies. Siregar (2022) highlights that technological competence and motivation are critical antecedents of e-learning readiness. This indicates that executives, who often possess varying technological skills, may require tailored motivational strategies to engage effectively in e-learning environments. Similarly, Wang et al. (2021) found that e-learning monitoring significantly influences e-learning strategies, which in turn affects overall effectiveness. This suggests that a structured monitoring and feedback approach can enhance executives' motivation and learning outcomes.

Extrinsic factors also contribute significantly to motivation in e-learning. Lee & Faulkner (2011) emphasize the importance of social, cognitive, and teaching presences in the community of inquiry model, which can enhance the e-learning experience. These presences are moderated by extrinsic factors such as content richness and perceived ease of use. These are particularly relevant for busy executives who may prioritize efficiency and relevance in their learning experiences—furthermore, Osei et al. (2022) demonstrate that basic psychological needs, supported by motivation, influence attitudes toward e-learning, suggesting that fulfilling these needs can enhance executive engagement.

The flexibility and convenience of e-learning are often cited as motivational factors that appeal to adult learners, including executives. Berestova et al. (2022) argue that controlling the pace and timing of learning is

crucial for success in distance education. This flexibility allows executives to integrate learning into their busy schedules, increasing their motivation to use e-learning platforms. Additionally, Kim & Frick (2011) found that perceived relevance and quality of instruction are critical predictors of motivation during online learning, underscoring the need for e-learning content that resonates with executives' professional contexts.

Moreover, applying motivational design principles, such as gamification, has enhanced engagement and motivation in e-learning environments. Hamzah et al. (2015) suggest that incorporating gamification can significantly increase motivation among learners, making it a valuable strategy for organizations aiming to improve e-learning effectiveness among executives. This aligns with findings from Krishan (2023), who emphasizes the importance of interactive and engaging content in maintaining motivation and improving academic results. Therefore, this research posits the hypothesis as below:
H2: There is a significant relationship between motivation to learn and e-learning effectiveness among executives in Malaysia.

E-Leadership And Its Mediation Effect
E-leadership can be defined as (Tahir et al., 2021) the ability to influence and guide individuals and teams in effectively utilizing information and communication technologies to achieve organizational goals. The existing literature has emphasized the critical role of e-leadership in enhancing the effectiveness of e-learning among executives. Studies have shown that effective e-leadership, characterized by skills such as virtual communication, team-building, and change management, can significantly contribute to improved engagement, learning outcomes, and adoption of e-learning initiatives (Avolio et al., 2014; Hambley et al., 2007).

In the context of Malaysia, researchers have highlighted the unique socio-economic and cultural factors that present additional challenges for e-leadership in the e-learning domain (Ahmad & Karim, 2013; Razak et al., 2018). Understanding the specific learning preferences and challenges Malaysian executives face is crucial for e-leaders to adapt their approaches and ensure the success of e-learning programs. Furthermore, the literature has emphasized the need to address the high failure rates of e-learning programs, often attributed to the lack of practical e-leadership skills and execution by instructors and facilitators (Bento & Schuster, 2003; Eom et al., 2006). Developing e-leadership competencies can be a critical factor in improving the overall effectiveness of e-learning initiatives among executives in Malaysia.

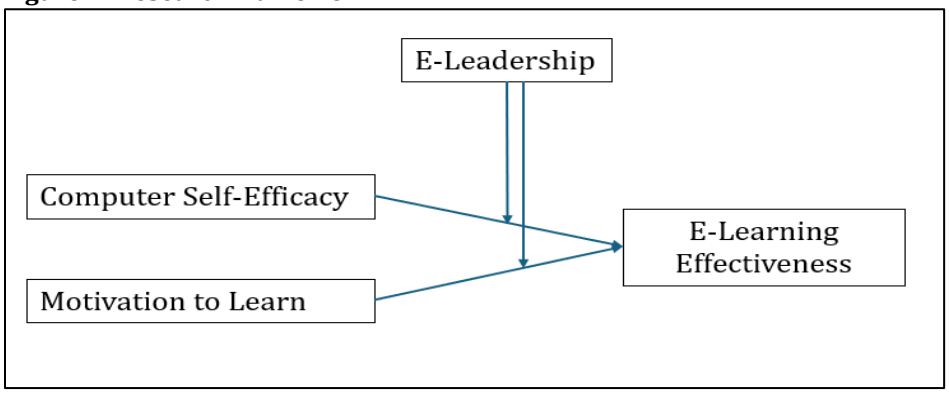
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In the context of Malaysia, researchers have highlighted the unique socio-economic and cultural factors that present additional challenges for e-leadership in the e-learning domain (Abdullah & Kassim, 2008; Hashim & Mahmood, 2012). Understanding the specific learning preferences and challenges faced by Malaysian executives is crucial for e-leaders to adapt their approaches and ensure the success of e-learning programs. Therefore, this research posits the mediation hypothesis as below:
H3: There is a mediation effect of e-leadership between trainee dimensions on e-learning effectiveness among executives in Malaysia.

Underpinning Theory
The e-leadership theory and the social cognitive theory guide this study. The e-leadership theory emphasizes the unique challenges and skills required for leaders to effectively guide and influence virtual teams and leverage digital technologies to achieve organizational goals. The social cognitive theory, on the other hand, provides a framework for understanding the cognitive and behavioral factors that influence the effectiveness of e-learning, such as self-efficacy, motivation, and engagement. By integrating these two theoretical perspectives, the study explores the interplay between e-leadership and e-learning effectiveness, considering the unique contextual factors of the Malaysian executive environment.

The conceptual framework for this study is illustrated in Figure 1:

Figure 1: Research framework.



Source: (Authors)

Research Methodology

This study utilized the snowball sampling technique to collect the data. Snowball sampling works best when the target population is difficult to access or identify. This sampling technique involves starting with a few known participants and then asking them to refer other potential participants who meet the study criteria. This method is beneficial for reaching hidden or hard-to-reach populations, as it leverages existing social networks and connections to build the sample size (Samkange-Zeeb et al., 2019; Kirchherr & Charles, 2018). Using the snowball sampling approach, researchers can efficiently access a broader range of participants that may not be easily identified through other sampling methods. An online questionnaire was distributed to executives in Malaysia through various professional networks and associations. The variables were operationalized and adapted from past research; CSE and MTL (Shiau et al., 2020), EL (Roman et al., 2019), and EE (Wang et al., 2021). Overall, the data was collected from 191 participants. To analyze the data, the study employed structural equation modeling using SmartPLS Version 4 to examine the relationships between the critical constructs of e-leadership and e-learning effectiveness and the moderating role.

4. Results

Respondent's Profile

Table 1 summarizes the respondents' demographic information, including gender, age, marital status, and highest education level. Most respondents are female (49.2%), followed by male (50.8%). The age group of 31-35 years old is the most represented, with 34% of respondents falling within this category. Most respondents are married (53.4%), while a smaller proportion is single (46.6%). Regarding education, a significant majority (86.9%) hold a Bachelor's degree, followed by a Master's degree (11.5%). Only a tiny percentage (0.5%) have completed SPM, Diploma, or Advanced Diploma.

Table 1: Respondent's background and profile

Variables	Descriptions	Frequencies	Percentages
Gender	Male	97	50.8
	Female	94	49.2
	Total	**191**	
Age	21 – 25 years old	38	19.9
	26 – 30 years old	46	24.1
	31 – 35 years old	65	34.0
	36 – 40 years old	34	17.8
	41 years old and above	8	4.2
	Total	**191**	
Marital Status	Married	102	

	Single	89	
	Total	**191**	
Highest Education	Sijil Pelajaran Malaysia (SPM)	1	0.5
	Diploma	1	0.5
	Advanced Diploma	1	0.5
	Bachelor's degree	166	86.9
	Master's degree	22	11.5
	Total	**191**	

Measurement Model

Reliability and Validity: Overall, the results in Table 2 suggest that the measurement model is of good quality. The high loadings, acceptable AVE values, and satisfactory Cronbach's Alpha and composite reliability coefficients indicate that the variables are valid and reliable constructs. This provides confidence in the use of these measures in the research study.

Table 2: Measurement model analysis

Variables	Items	Loadings		AVE	Cronbach's Alpha	Composite Reliability
Computer Self-Efficacy (CSE)	**TCS1**	0.830	38	0.7	0.647	0.662
	TCS2	0.887				
Motivation to Learn (MTL)	**TML1**	0.795	89	0.5	0.655	0.656
	TML2	0.750				
	TML3	0.755				
E-Leadership (EL)	**ELE1**	0.759	31	0.6	0.854	0.857
	ELE2	0.789				
	ELE3	0.816				
	ELE4	0.780				
	ELE5	0.824				
	ELE6	0.772				
	ELE7	0.735				
	ELE8	0.761				
	ELE9	0.771				
	ELE11	0.761				
E-learning Effectiveness (EE)	**EE1**	0.817	78	0.5	0.817	0.818
	EE2	0.818				
	EE3	0.819				
	EE4	0.820				
	EE5	0.821				
	EE6	0.822				
	EE7	0.823				
	EE8	0.824				
	EE9	0.825				
	EE10	0.826				
	EE11	0.827				
	EE12	0.828				
	EE13	0.829				
	EE14	0.830				
	EE15	0.831				
	EE16	0.832				
	EE17	0.833				
	EE18	0.834				
	EE19	0.835				
	EE20	0.836				
	EE21	0.837				
	EE22	0.838				
	EE23	0.839				
	EE24	0.840				
	EE25	0.841				
	EE26	0.842				
	EE27	0.843				
	EE28	0.844				
	EE29	0.845				
	EE30	0.846				
	EE31	0.847				
	EE32	0.848				
	EE33	0.849				
	EE34	0.850				
	EE35	0.851				
	EE36	0.852				
	EE37	0.853				
	EE38	0.854				
	EE39	0.855				
	EE40	0.856				
	EE41	0.857				
	EE42	0.858				
	EE43	0.859				
	EE44	0.860				
	EE45	0.861				
	EE46	0.862				
	EE47	0.863				
	EE48	0.864				
	EE49	0.865				
	EE50	0.866				
	EE51	0.867				
	EE52	0.868				
	EE53	0.869				
	EE54	0.870				
	EE55	0.871				
	EE56	0.872				
	EE57	0.873				
	EE58	0.874				
	EE59	0.875				
	EE60	0.876				
	EE61	0.877				
	EE62	0.878				
	EE63	0.879				
	EE64	0.880				
	EE65	0.881				
	EE66	0.882				
	EE67	0.883				
	EE68	0.884				
	EE69	0.885				
	EE70	0.886				
	EE71	0.887				
	EE72	0.888				
	EE73	0.889				
	EE74	0.890				
	EE75	0.891				
	EE76	0.892				
	EE77	0.893				
	EE78	0.894				

However, several items from the variables were dropped due to an unmet threshold below 0.7. One item was dropped from CSE; TCS2, one item was dropped from EE; EFE1 while 13 items were dropped from EL; ELE1, ELE2, ELE3, ELE4, ELE5, ELE6, ELE7, ELE8 and ELE9ELE11, ELE12, ELE13, ELE16. Though 13 items were excluded from the subsequent analysis, this study conforms to the past research, which particularly mentions that the fragmented nature of E-leadership research limits its applicability in certain settings (Wart et al., 2017). Additionally, the validity of the constructs must be assessed when considering item reduction. Sohail and Chen Sohail and Chen (2022) emphasize that the items retained should contribute meaningfully to the construct's content validity. If certain items do not align well with the theoretical framework or do not correlate strongly with the construct, they may be candidates for removal.

The reliability and validity analysis results show that the criteria for both components have been achieved. The loadings represent the correlation between each item and its corresponding variable. A high loading indicates a strong relationship between the item and the variable. For instance, the loading of 0.830 for TCS1 on CSE suggests that TCS1 is a good indicator of Computer Self-Efficacy. Next, the Average Variance Extracted (AVE) measures the convergent validity of a construct. It indicates the proportion of variance in a construct explained by its indicator variables. A higher AVE value suggests that the construct is well-represented by its items. In Table 2, all AVE values are above 0.5, indicating acceptable convergent validity for each construct.

Meanwhile, Cronbach's alpha measures the internal consistency reliability of a scale. It assesses the extent to which the items in a scale measure the same underlying construct. A higher Cronbach's Alpha value indicates higher internal consistency. In Table 2, all Cronbach's Alpha values are above 0.6, suggesting good internal consistency for each construct. Lastly, composite reliability is another measure of internal consistency reliability. It is considered a more robust estimate than Cronbach's Alpha, especially for scales with a small number of items. Like Cronbach's Alpha, a higher composite reliability value indicates better internal consistency. Table 2 shows all composite reliability values above 0.6, indicating good internal consistency for each construct.

Discriminant Validity

HTMT (Heterotrait-Monotrait Ratio) is a statistical measure used to assess the discriminant validity of constructs in a structural equation model (SEM). It compares the correlations between a construct's indicators and those of other constructs to ensure that the constructs are distinct and not overly correlated. Generally, an HTMT value below 0.85 indicates acceptable discriminant validity. In this case, all HTMT values except for CSE-MTL are below 0.85. This suggests that the constructs of CSE, EL, and EE are reasonably distinct from each other. However, the HTMT value of 1.008 between CSE and MTL is above the recommended threshold of 0.85. This indicates a high correlation between these two constructs, suggesting they might not be as distinct as intended. It might be necessary to re-examine the conceptualization and measurement of these constructs to ensure their discriminant validity. Further investigation may be needed to address the correlation between CSE and MTL and ensure their distinctness.

Table 3: HTMT Criterion Analysis

	CSE	EL	EE	MTL	EL x CSE	EL x MTL
EL	0.503					
EE	0.684	0.692				
MTL	1.008	0.533	0.684			
EL x CSE	0.042	0.209	0.064	0.07		
EL x MTL	0.021	0.111	0.024	0.077	0.792	

Collinearity Statistics (VIF)

The table presents the VIF (Variance Inflation Factor) values for the independent variables in the structural equation model. VIF measures the degree of multicollinearity among the predictors. A VIF value below ten is generally considered acceptable. In this case, all VIF values are below 10, indicating that multicollinearity is not a significant issue in the model. Therefore, the inclusion of these variables in the PLS-SEM analysis is permissible.

Table 4: Collinearity Statistics (VIF)

Collinearity Statistics - Inner Model	VIF
Motivation to Learn -> E-learning Effectiveness	1.851
E-Leadership x Motivation to Learn -> E-learning Effectiveness	2.719
E-Leadership x Computer Self-Efficacy -> E-learning Effectiveness	2.814
E-Leadership -> E-learning Effectiveness	1.295
Computer Self-Efficacy -> E-learning Effectiveness	1.796

Structural Analysis

Table 4 provides the results of the structural model analysis, which examines the relationships between the independent variables (CSE & MTL), the moderating variable (EL), and the dependent variable (EE). In contrast, The graphical output for the PLS-SEM analysis is illustrated in Figure 1. The results suggest that CSE, EL, and MTL directly and positively influence EE. The moderating effects between EL and the other variables were not found to be significant. The R^2 value of 0.458 indicates that the model explains 45.8% of the variance in EE, suggesting a moderately strong fit.

Table 4: Structural model analysis and hypothesis testing

	Path Coefficients	p-value	f^2 value	Decision	R^2 values
CSE → EE	0.210	0.004	0.046	Supported	
EL → EE	0.435	0.000	0.270	Supported	
MTL → EE	0.198	0.022	0.039	Supported	0.458
EL X CSE → EE	-0.053	0.635	0.003	Not supported	
EL X MTL → EE	0.004	0.973	0.000	Not supported	

To reiterate, the direct relationships of CSE → EE: Computer Self-Efficacy (CSE) has a positive and significant relationship with E-learning Effectiveness (EE). This parallels the study by Nguyen et al. (2020), which emphasized that individuals possessing robust computer skills are more inclined to adopt e-learning systems as they exhibit greater confidence and motivation to interact with the technology. Next, EL → EE: E-Leadership (EL) has a positive and significant relationship with E-learning Effectiveness. Past research indicates that e-leadership practices can directly impact the effectiveness of e-learning by improving managerial competencies and fostering a supportive environment for learning. For instance, Jumaiyah et al. (2021) highlight that e-leadership facilitates data-driven decision-making and enhances monitoring capabilities, which is essential for effective school management and, by extension, e-learning outcomes. Effective e-leaders cultivate trust among team members, vital for enhancing collaboration in virtual environments. Jawadi (2013) noted that high levels of trust fostered by e-leaders lead to improved team performance, which is critical for successful e-learning initiatives. Lastly, MTL → EE: Motivation to Learn (MTL) has a positive and significant relationship with E-learning Effectiveness. This is similar to the study by Siregar (2022) and Wang et al. (2021), which mention that motivation and e-learning monitoring can influence the better outcomes of e-learning effectiveness.

However, the moderating effects of E-Leadership were not found in all the interactions. It has been suggested that e-leadership does not significantly moderate the influence of digital culture on employee performance, indicating that while e-leadership is beneficial, it may not always serve as a moderating variable in every context (Sapta et al., 2023). This finding aligns with the notion that while e-leadership can enhance certain aspects of team dynamics, its moderating effects may be limited or context-dependent. Similarly, research has shown that the relationship between e-leadership and team performance is influenced by factors such as corporate culture and technology self-efficacy, suggesting that the effectiveness of e-leadership may be contingent upon these contextual elements (Weerawardane & Jayawardana, 2022).

Figure 1: Graphical output of PLS-SEM

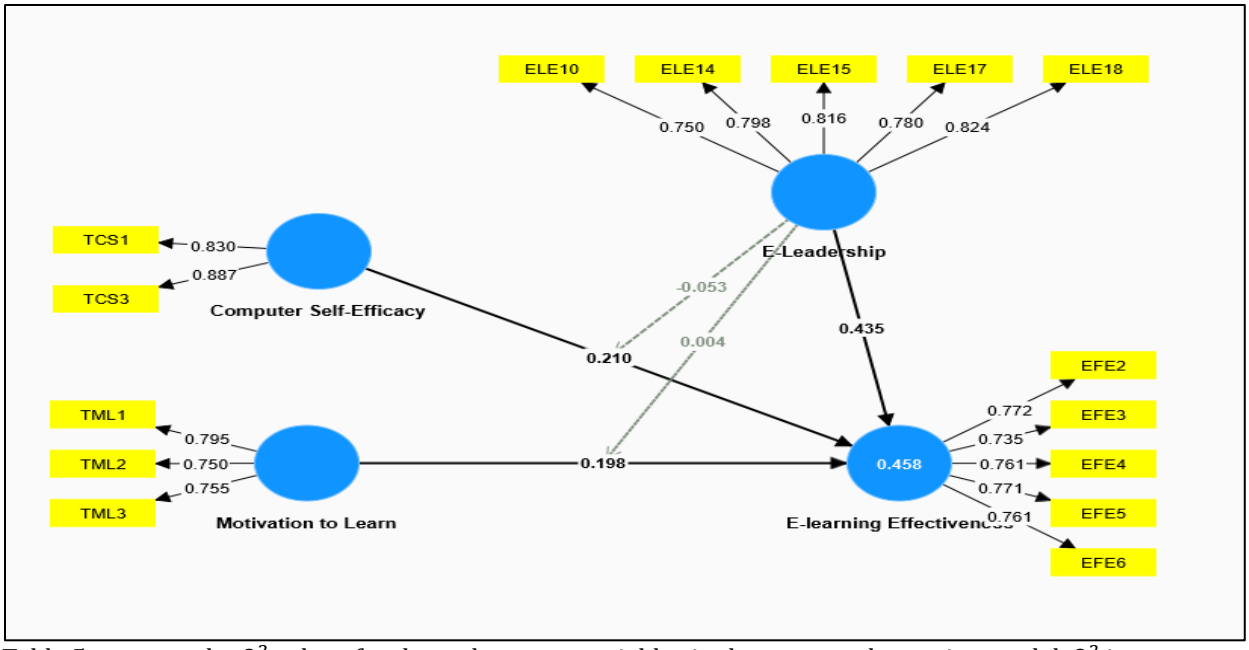


Table 5 presents the Q^2 values for the endogenous variables in the structural equation model. Q^2 is a measure of the predictive relevance of a model, indicating the degree to which the model can predict the variance in the dependent variable. A Q^2 value greater than 0 indicates the model has predictive relevance, while a Q^2 value close to 0 suggests that the model has limited predictive power. In this model, only E-Learning Effectiveness has a value above 0. The Q^2 value for EE is 0.254, suggesting that the model has some predictive relevance for EE. This means that the model can explain a portion of the variance in EE. The results suggest that the model has limited predictive power for CSE, EL, and MTL. However, it shows some predictive relevance for EE, indicating that the model can explain some of the variance in E-learning Effectiveness.

Table 5: Q^2 values

Variables	Q^2 values
Computer Self-Efficacy (CSE)	0.000
E-Leadership (EL)	0.000
E-Learning Effectiveness (EE)	0.254
Motivation to Learn (MTL)	0.000

5. Conclusion and Recommendations

Based on the analysis of the data provided, the study successfully investigated the relationships between Computer Self-Efficacy (CSE), E-Leadership (EL), Motivation to Learn (MTL), and E-learning Effectiveness (EE). The results indicate that CSE, EL, and MTL significantly influence EE. However, the moderation effects between EL and the other variables were not found to be significant. The model demonstrated moderate predictive power for EE, suggesting that the included variables can explain a portion of the variance in E-learning Effectiveness. However, the model had limited predictive power for CSE, EL, and MTL.

This research has provided practical insights to institutions in influencing better outcomes of e-learning effectiveness. First, institutions may enhance CSE among employees by offering preemptive training programs like user briefing or focal training to help learners develop the necessary technical skills and confidence to use E-learning platforms effectively. Second, institutions may boost motivation to learn among employees. Creating engaging and relevant course materials aligned with learners' goals better connects their motivation. Lastly, institutions may strengthen their e-leadership knowledge and capabilities. Though no moderating effect was presented, the data showed a direct effect between e-leadership and e-learning effectiveness. Therefore, institutions may train e-learning leaders on effective instructional strategies and techniques for online

environments. This will ensure that E-learning leaders have the resources and support to manage and facilitate online learning effectively.

To further advance the understanding of trainee-related factors, e-leadership, and e-learning effectiveness, future research could explore additional variables or refine existing ones to enhance the model's predictive power. Note that this research only focuses on the trainee aspects, which measure CSE and MTL as the independent variables. Future research should include more context in the parameters, such as measuring the e-learning content and considering measuring the organization's context. Additionally, investigating potential interaction effects between variables, employing longitudinal research designs, and examining cultural and contextual factors could provide deeper insights into these relationships. Furthermore, focusing on practical implications by developing strategies and interventions based on the findings can improve E-learning experiences in various educational settings.

This framework provides a clear understanding of what drives successful e-learning outcomes, highlighting the importance of these elements in designing and implementing effective e-learning programs (Nguyen et al., 2020). Additionally, the research underscores the critical role of e-leadership in managing and facilitating e-learning initiatives. Effective e-leadership can directly enhance engagement, learning outcomes, and the overall adoption of e-learning programs, making it a pivotal factor in the success of these initiatives (Avolio et al., 2014). The study acknowledges the unique socio-economic and cultural factors that impact e-learning by focusing on the Malaysian context. This localized approach ensures that the findings are relevant and applicable to the specific needs of Malaysian executives, addressing the challenges and preferences unique to this demographic (Bahar et al., 2020). Finally, integrating these theoretical insights will significantly aid organizations in formulating policies aimed at enhancing the effectiveness of e-learning within their structures.

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The Impact of Job Satisfaction and Organizational Commitment on Employee Turnover Intentions in the Malaysian Manufacturing Industry

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Abstract: One of the primary resources of an organization that can provide a worthy contribution to the achievement of the organization's strategies is human resources. A significant problem in most manufacturing organizations is the desire to leave. Given this, the objective of this study will be to assess and measure the impact of job satisfaction and organizational commitment on employee turnover intention in the manufacturing sector. Of 200 questionnaires, 179 were filled out by a manufacturing organization (response rate = 89.5%). Demographic profiles were described using frequency count and percentages of the respondents. Descriptive and inferential statistics were adopted for the analysis of specific data gathered. Regarding inferential statistics, the measure used in the study was the Pearson Correlation Coefficient, which was used to determine the strength of the relationship between dependent and independent variables. According to the results of the analysis, it can be concluded that the independent variable job satisfaction is related to the sub-variable satisfaction with compensation and satisfaction with career development opportunities, which has a low negative correlation with employees' turnover intention. However, no significant relation was found between organizational commitment and the turnover intention of employees within the organization. This research offers valuable information to organizations within the manufacturing industry regarding the factors influencing turnover intention, including job satisfaction and organizational commitment.

Keywords: *Job Satisfaction, Compensation, Career Development Opportunity, Organisational Commitment, Employee Turnover Intention.*

1. Introduction

Human resources in an organization are probably the most critical assets, as they can provide a strategic contribution to its achievement. For example, the development of human resources is translated and practiced in any company through human resource allocation to the development functions of the organization (Marthalia, 2022). This effectively provides employees with greater job satisfaction and increases their commitment to their jobs to reduce turnover intentions. In the contemporary workplace, issues of employee turnover have become quite extensive. These issues will probably affect the human resource functions of recruitment and selection, training, and maintenance of the employee base.

Moreover, if the employee turnover is high, it can increase the level of work of employees remaining within the organization. It will cause an increase over time, further decreasing their productivity level as they would not have good morale. It is important to remember that a happy employee is a productive employee. Moreover, apart from the fact that it will harm the employees, a high employee turnover rate in an organization can also affect its overall performance. Hence, organizations must achieve high productivity and employee performance to enjoy their support and contribution.

There have always been extensive studies and research about turnover issues. Several researchers have studied organizational commitment, and it has been found that various factors, including employee empowerment and teamwork, can potentially influence organizational commitment. Meanwhile, satisfactory salary, a pleasant environment in the workplace, cooperative colleagues, career advising, and training and development opportunities have been reported as some factors that can promote employee satisfaction (Daileyl & Kirk 1992). Similarly, The Mobley model (1977) has theorized the potential causal relationship between job dissatisfaction and employees' decision to quit. Discontented employees would eventually exit the organization, and at the same time, the organization would lose the knowledge that those employees carried in. An employee has different reasons for quitting a job, including the existing work environment not matching up to criteria or

expectation aspirations or simply subjective interpretation based on an employee's perspective to find a better opportunity and fulfillment. Nevertheless, replacing employees who have left the organization with new employees without knowing the reasons behind the factors causing employee turnover will still be detrimental to the organization's daily activities, leading to a vicious cycle from employee recruitment to employee turnover.

Therefore, to understand the factors impacting the retention of employees in an organization, this paper studies the impact of job satisfaction (satisfactory compensation and career growth opportunities) and organizational commitment.

2. Literature Review

Job Satisfaction: According to Akhtar et al. (2010), job satisfaction refers to individuals' emotions and perceptions regarding their work. Positive and supportive attitudes towards the job reflect job satisfaction, while unfavorable attitudes signify job dissatisfaction. Although several external factors influence job satisfaction, this concept is still internal because, ultimately, it is how an employee feels. In other words, job satisfaction is a set of factors creating a sense of satisfaction. Ghuman (2011) considers job satisfaction to be one of the most critical factors in the effectiveness and efficiency of organizations. The apparent reasoning for this is that when analyzing job satisfaction, a contented employee equals a happy employee, and a happy employee means successful employment, which is the goal of human resource management within all organizations. The Expectancy Theory claims that a person evaluates their satisfaction with the job based on the fulfillment of their goals, achievement, and attaining well-being. The more expectations can be met, the higher the satisfaction an employee will derive from their production outputs (Perry et al., 2006). This theory is grounded in the belief that people make decisions about their work behavior based on three key factors: expectancy, instrumentality, and valence. The expectance factor believes that if employees feel their hard work will be recognized and rewarded, their motivation to perform will increase. The instrumentality factor believes that if employees perceive that performance will lead to meaningful rewards, their job satisfaction increases. Lastly, the valence factor suggests that rewards that align with personal goals or needs will have a higher valence and thus increase job satisfaction. Thus, job satisfaction becomes more so predominant if employers keep in mind the various adverse effects of job dissatisfaction, such as disloyalty, absenteeism, and an increased number of industrial accidents.

Compensation: According to Bhattacharyya (2023), compensation, also known as pay, represents the exchange between the employee and the organization, each giving something in return for something else. The most common form of compensation for labor is wages, which represent payment accrued over some time (week, month, year).

Unsatisfactory compensation, higher compensation or wages from other organizations, and unstable work status can induce an employee to turnover intentions from the current organization. Compensation is either satisfactory or unsatisfactory due to the incompatibility between what one individual receives and what another receives. Compensation satisfaction helps reduce absences and employee turnover rates. According to Weldeyohannes (2016), salary is another factor that adversely affects turnover intention. Per the above descriptions, we can conclude that a reasonably decent salary would enable an employee to remain loyal to the company or organization. Previous research by Nadiri and Tanova (2010) has suggested that employees are affected by the rationality of pay and rewards, and subsequently, the employee's turnover intentions follow. Moreover, past studies have indicated that higher remuneration encourages employees to remain in the organization longer (Murtiningsih, 2020).

Therefore, the first hypothesis of this study is to see whether or not compensation received by the employee has significance on their turnover intention in the organization.
H1: There is a negative relationship between job satisfaction with compensation and employee turnover intention.

Career Development Opportunities: A career comprises work-related experiences and possibly other life experiences represented by the individual's whole life. With the increasing changes seen in the workplace during the last several decades due to globalization, which has transformed the nature of work in many

organizations, the career pathway has become increasingly dynamic and variable (Thaller et al., 2023). Individuals make career decisions in increasingly uncertain organizational, societal, and global environments (Hedge & Rineer, 2017). As a result, various organizations have addressed this issue by introducing career development programs in their workplace. This concept relates to an organization's actions to improve the progress of talent (Baruch & Peiperl, 2000), achieve growth and salary increases, and support employees' movement into higher managerial positions (Vinkenburg & Weber, 2012). Organizations that have such programs say they retain more employees.

Today, internal factors in the workplace, such as the desire for fulfillment and personal satisfaction, are not only sought but also demanded from employees (Sirgy et al., 2001). To survive in this competitive environment, all organizations need to develop a workplace that enhances employees' organizational loyalty and provides job satisfaction, reducing employee turnover rate and complaints (Werther & Davis, 1985).

Career development is a process in which an individual progresses toward a better career by increasing one's employability to meet future job requirements or improve current performance per desired objectives. An adequate experience at work will encourage someone to be satisfied with the job, affecting employee performance (Dziuba et al., 2020). Hence, providing employees with room to grow and advance their careers will ensure they perform at their best within the organization. Career development refers to employment efforts to give an employee a plan of where he can go in the company and allow the organization and its employees to grow together (Jumawan & Mora, 2018). In addition, career development is a way for companies to increase the productivity of their employees and prepare them for future job positions.

Based upon most of the former research, this work suggested the reverse association between career development and turnover purpose. This indicates that if employees perceive enhanced career development through training within the organization, they are less likely to exit the organization.
H2: There is a negative relationship between career development opportunities and employee turnover intentions

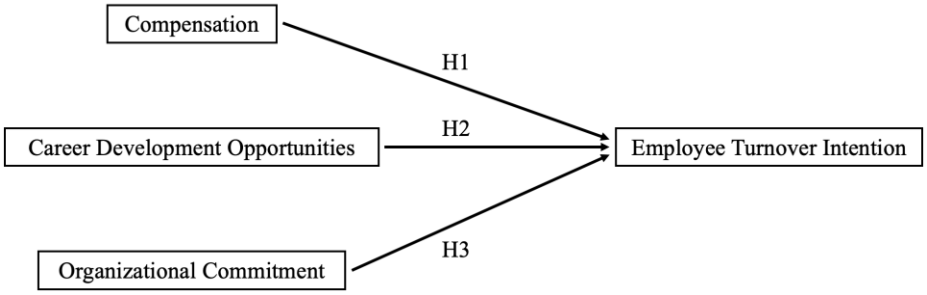
Organizational Commitment: According to DeCenzo et al. (2016), organizational commitment is the degree to which employees identify with a particular organization and its goals and want to maintain membership. Historically, past research has reported that organizational commitment is regarded as one of organizations' turnover and turnover intentions factors (Ramalho et al., 2018). Employees with a solid bond to the organization will have high participation and output. They should exhibit relatively low rates of absenteeism, tardiness, voluntary turnover, and heightened levels of operational efficiency. An organization with committed employees will enjoy lower turnover, more dedication, and effort put forth on behalf of the organization, as well as efforts toward achieving organizational goals (Mowday et al. 1979). A three-dimensional model by Meyer & Allen (1997) includes affective, normative, and continuance commitment. Affective commitment refers to the emotional bond with the organization, that is, positive organizational identification and a belief and acceptance of organizational goals and values to provide optimal effort to spread on behalf of the organization. The second type is normative commitment, meaning employees feel they must stay with the organization. Third, continuance commitment: willingness to remain in the organization in fear of losing desired incentives. All three types of commitment impact an employee's intention to turnover.

Notably, organizations have examined a growing employee turnover rate due to the extensive competition among companies and the heightened need for employees with a particular skill set or experience (Al-Suraihi et al, 2021). Therefore, various researchers have conducted studies to comprehend the association of these two variables and declared that organizational commitment plays a significant role in employee turnover intentions (Maertz & Boyar, 2012). For instance, Thrassou et al. (2020) found a negative association between the turnover intentions of employees and organizational commitment.

Drawing from the previous literature, this study derives its third hypothesis from investigating whether organizational commitment will impact employee turnover intention.
H3: There is a negative relationship between organizational commitment and employee turnover intentions

Conceptual Framework of the Study

Figure 1: Proposed Conceptual Framework



The conceptual framework suggests that job satisfaction (through compensation and career development opportunities) and organizational commitment influence employee turnover intention. The framework proposes that job satisfaction and organizational commitment work as key factors contributing to or mitigating employees' intention to leave the organization. It suggests that higher satisfaction with compensation (H1) is expected to reduce turnover intention, and higher satisfaction with career development opportunities (H2) is also expected to reduce turnover intention. The framework also hypothesizes that organizational commitment is expected to influence turnover intentions. The arrows in the diagram visually depict the hypothesized causal relationships between these variables.

3. Methodology

To conduct the research, a survey questionnaire was created according to the purpose of the study and used as a tool to collect accurate and unbiased responses. The questionnaire had a total of 5 sections; the first section deals with demographic information and is followed by four other sections on job satisfaction, organizational commitment, and employee turnover intention factors. Close-ended questions were employed in the first section, which was on participants' demographic information to obtain more objective and replicable results for further evaluation. Management and non-management employees were asked to fill out the questionnaire at any point during their work hours. Two hundred questionnaires were distributed, and feedback was received from 180 employees in the organization. The sections related to the study's variables consisted of questions measured using a five-point Likert scale, where 1 means Strongly Disagree and 5 signifies Strongly Agree. A five-point Likert scale gives clear-cut and precise answers, which helps a lot in situations like online surveys where individuals cannot write down their thoughts but merely select the answer they want.

Procedure: Demographics such as participant's age, gender, educational level, monthly income, and service tenure working the organization were analyzed using descriptive statistics. They were reported as frequencies and percentages to facilitate the interpretation of results. Inferential analysis, in contrast, was employed to assess the association between independent and dependent variables. The study's independent variables are job satisfaction, which includes compensation and career development opportunities and organizational commitment, while the dependent variable is employee performance turnover intention. This set of hypotheses was analyzed using Pearson's Correlation Coefficient, where the positive and negative signs of the correlation indicate the strength and direction of the relation between two variables. This data was analyzed using the IBM SPSS Software with descriptive and inferential statistics. In designing the survey question, this research used some of the previous researchers' survey questions by combining and slightly adjusting them to suit current research.

Ethical Considerations: A consent form was distributed to participants to consider their willingness to participate in the study, and the aim of data processing was specified within the body of research articles and consent forms. Participant names and information were not collected to protect anonymity and privacy during this questionnaire, and participants had the right to Brexit (remove themselves from the questionnaire). Before filling in the questionnaire, all participants had signed a consent form.

4. Results

Demographic Information of Participants: Table 1 shows the descriptive statistics of the participants' demographic information based on the first section of the survey. Among the 180 participants, 102 (56.7%) were male, and 78 (43.3%) were female. This indicates that the majority of the respondents were male. The participants were mainly between the age category of 21 to 30 years old, with 68 participants (37.8%) being within that range. Only 11 participants (6.1%) were above 50 years old. Approximately half of the total participants possessed a secondary certificate, which was 93 participants (51.7%). On the other hand, only 3 participants (1.7%) hold a Doctoral degree. Table 2 also illustrates the service tenure of employees, with 67 participants (37.2%) having served the organization for more than 5 years. Those who have served the organization for less than 1 year show the second-highest frequency, which consists of 59 participants (32.8%). This shows a drastic difference in the service tenure of employees within the organization. Finally, the income level of employees shown in Table 1 indicates that 83 participants (46.1%) have a monthly income of less than RM 1,000.

Table 1: Demographic Data of Participants

Demographic Information	Frequency (f)	Percentage (%)
Gender		
Male	102	56.7
Female	78	43.3
Age		
20 years old and below	29	16.1
21 to 30 years old	68	37.8
31 to 40 years old	53	29.4
41 to 50 years old	19	10.6
50 years old and above	11	6.1
Educational Level		
Secondary	93	51.7
Diploma	38	21.1
Bachelor Degree	23	12.8
Master's Degree	10	5.5
Doctoral Degree	3	1.7
Others	13	7.2
Service Tenure		
Less than 1 year	59	32.8
1 to 3 years	29	16.1
3 to 5 years	25	13.9
5 years and above	67	37.2
Income Level (MYR)		
Less than 1,000	83	46.1
1,000 to 2,000	69	38.3
2,001 to 3,000	15	8.3
More than 3,000	13	7.2

Reliability Analysis: In this study, the reliability of the survey items was evaluated using Cronbach's alpha coefficient, a measure of internal consistency that indicates how closely related a set of items is as a group. A higher Cronbach's alpha value (closer to 1.0) indicates higher reliability, with values above 0.7 generally considered acceptable for most social science research.

The reliability of the constructs (i.e., job satisfaction, compensation, career development opportunities, and organizational commitment) was assessed using the Pearson correlation coefficient as outlined in Table 3. Additionally, the survey items related to each construct were tested for internal consistency by calculating Cronbach's alpha for each variable

The correlation coefficient and strength of the relationship are based on Table 2 below.

Table 2: Correlation Coefficient and Strength of Relationship

Correlation Coefficient	Strength Relationship
0.90 < r < 1 (-0.90 < r < 1)	Very Strong
0.70 < r < 0.90 (-0.70 < r < -0.90)	Strong
0.5 < r < 0.7 or (-0.5 < r < -0.7)	Medium
0.3 < r < 0.5 (-0.3 < r < -0.5)	Weak
0 < r < 0.3 (0 < r < -0.3)	Very Weak

Table 3: Correlation Coefficient between Independent Variables and Dependent Variable

Variable	Mean	Standard Deviation	Pearson, r	Level of Significance, p
Job Satisfaction				
Satisfactory Compensation	3.1235	0.6483	-0.342*	0.029
Career Development Opportunities	3.4252	0.6912	-0.381*	0.018
Organizational Commitment	3.7642	0.6105	0.0017	0.839

*Correlation is significant at the 0,05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Job satisfaction was measured in two dimensions: satisfactory compensation and career development opportunities. The relationship between these factors and turnover intentions was evaluated using Pearson's r correlation. The correlation values for compensation and career development opportunities were significant at the 0.05 level (p = 0.029 and p = 0.018, respectively), indicating a weak but statistically significant relationship.

Organizational commitment did not significantly correlate with turnover intention (r = 0.0047, p = 0.839). This indicates that organizational commitment, as measured in this study, has little to no impact on employees' turnover intentions in this sample. The lack of significant correlation may suggest issues with the internal consistency or reliability of the organizational commitment construct in this specific context, potentially warranting further review of the items used to measure it.

Hypothesis Testing: Table 3 shows the results of the Pearson Correlation analysis used to analyze the relationship between the independent variables of job satisfaction (satisfactory compensation and career development opportunities) and organizational commitment with the dependent variable of employees' turnover intention.

Hypothesis 1

H1: There is a negative relationship between satisfaction with compensation and employee turnover intentions

Based on the results shown in Table 3, there is a negative relationship between the compensation employees received and the employees' turnover intention with r = -0.342* and p = 0.029. This negative relationship

indicates that when an employee gets higher compensation, the turnover intention of employees is lower. Additionally, the strength of the relationship is relatively low, where the r value is 0.342, falling into the range of a weak relationship category (-0.3 < r < -0.5). Hence, it can be concluded that Hypothesis 1 (H1), which states a negative relationship between satisfaction with compensation and employee turnover intentions, is verified and accepted. The results have shown that the amount of compensation is crucial in affecting the employees' turnover intention.

Weldeyohannes (2016) supported these findings by explaining that compensation's effect on teachers' turnover intention in Tigray was due to salary satisfaction. This confirms the argument that rewards, specifically the salary an employee earns from providing services to the employer, affect an employee's turnover intention. Similarly, the research on factors affecting turnover intention in the marketing division, which has been conducted and published by Maska & Riyanto (2020) found that financial compensation will affect employee turnover intentions and trigger employees to find new jobs.

Hypothesis 2

H2: There is a negative relationship between career development opportunities and employee turnover intentions

Referring back to Table 3, the Pearson correlation analysis on career development opportunities and employees' turnover intention indicates a negative relationship between both independent and dependent variables (r = -0.381, p = 0.0018). This highlights that when employees perceive a higher chance of career development opportunities, the turnover intention will decrease accordingly. The r value observed for this relationship is 0.381, which falls under the weak relationship category (-0.3 < r < -0.5). This means that the chances for career development opportunities have a weak negative relationship with employees' turnover intentions. This leads to the acceptance of Hypothesis 2 (H2), which states that there is a negative relationship between career development opportunities and employee turnover intentions. The expectation of opportunities for career growth is one of the factors that determine employees' turnover intention.

This argument is also supported by Purba & Ruslan's (2020) research, which concluded that career development variables have a negative and significant effect on turnover intention, meaning that the better the career development given by the company, The lower the turnover intentions. The other research from Puspita & Susanty (2017) showed that career development and work motivation together contribute 343% influence to turnover intention, while the remaining 65.7% are all attributed to other factors not examined in this study. This implies that providing career development opportunities can improve organizational support and subsequently reduce the likelihood of turnover intention.

Hypothesis 3

H3: There is a negative relationship between organizational commitment and employee turnover intentions.

As shown in Table 3, the results of the Pearson Correlation analysis for the relationship between organizational commitment and employee turnover intention, no significant relationship is identified (r = 0.0047, p = 0.839). The r value of 0.0047 shows a fragile positive relationship, which indicates that organizational commitment and turnover intention are independent, and one variable will not influence the other. This means that Hypothesis 3 (H3), which states that there is a negative relationship between organizational commitment and employee turnover intentions, is rejected, contradicting findings from past research.

Unlike the study, multiple past researchers have found a significant relationship between organizational commitment and turnover intention. Satardien et al. (2019) surveyed 240 employees from an aviation organization in Istanbul, reporting a significant correlation between organizational commitment and turnover intentions. This highlights that organizational commitment is an important predictor of turnover intention. On the other hand, research conducted by Faloye (2014) supports the hypothesis of this study, suggesting that there is a statistically insignificant relationship between organizational commitment and turnover intention. This suggests that organizational commitment is not a predictor of employees' intentions to quit.

Discussion

The findings of this study align with previous research (Tsai & Wu, 2010), indicating that higher job satisfaction correlates with lower turnover intentions, reinforcing the idea that compensations or career development opportunities are factors taken into consideration in employee turnover. However, the weak correlation suggests that compensation and career development opportunities are neither the sole nor most powerful factors. Other elements that were not evaluated within this research paper, such as workplace environment, work-life balance, and leadership styles, may still influence an employee's decision to remain with or leave an organization.

Not only that, the results suggest that providing employees with career advancements can act as a strategy for employee retention. Previous studies corroborate this result (Nwokeocha, 2024; Smith et al., 2011), highlighting that organizations that invest in employee development tend to experience lower turnover rates. In contrast to the above-mentioned studies, the results do not show implicit bias but rather a contributing factor. By fostering an environment where employees can feel growth in their careers, organizations can cultivate employee loyalty and commitment and reduce turnover rates.

Contrary to the hypothesis and expectations, the results indicate that organizational commitment does not directly affect turnover intentions and may not be a reliable control variable over turnover intentions in this context. While some studies (Wasti, 2003; Ausar et al., 2016) have shown that high levels of organizational commitment can potentially reduce turnover intentions, the current findings indicate the opposite, encouraging further studies on other factors that may be more influential and relatable. This discrepancy highlights the need for additional discovery into the dynamics of organizational commitment and its actual impact on turnover intentions.

Limitations

This study focused on only one single organization located in the area of Kuala Lumpur, Malaysia, causing the sample to only focus on one organization with a selected background. Hence, due to the limitation of the small sample size and spread, it might limit the ability to generalize this research to represent the entire population of the manufacturing industry. However, the results obtained from this study are suitable and can measure the effect of job satisfaction and organizational commitment on employee turnover intentions for organizations with similar backgrounds or industries.

As this study was mainly focused on one single industry within the manufacturing industry, future research can potentially study similar research frameworks with the inclusion of different sectors and population groups, such as hospitality, retail, banking, and governmental industries. This might increase the difficulty of the research, but involving more than one industry within the study can potentially improve the results and findings in comparison to researching a single sector, as it would allow researchers to identify industries with a higher turnover intention among employees. It is also advisable for future researchers to conduct interviews or open-ended questionnaires to gain a more in-depth understanding of the factors that contribute to employee turnover intentions.

Implications for Behavioral Science

The practical implications of this research are substantial for organizational leaders and human resource managers. By recognizing that compensation and career development significantly affect employee retention, organizations can develop targeted strategies to enhance these areas.

Human resource managers in the manufacturing sector in Malaysia are advised to regularly review and adjust the compensation packages offered to employees to ensure that they remain competitive within the industry (Kang & Lee, 2021). This includes both direct and indirect compensations. Direct compensations include employee salary, bonuses, commission, and financial rewards. In contrast, indirect compensation includes stock options, employee benefits, and non-monetary compensations such as childcare, company phones or laptops, and meals. A combination of multiple types of compensation can improve employees' motivation to work and reduce the chances of turnover.

Additionally, with the increasing attention being put on self-development and professional growth, organizations need to implement effective career development initiatives within the company to maintain engagement with employees, increase job satisfaction, and reduce turnover rates (Memon et al., 2020). Providing employees with career development opportunities through training and workshops not only allows employees to gain a sense of intrinsic satisfaction from their jobs but simultaneously allows the organization to improve the quality of work produced by each employee, hence improving the productivity and efficiency of the organization.

Although the study did not find a significant relationship between organizational commitment and turnover intentions, it is essential to note that fostering a supportive culture to ensure that employees feel secure may enhance overall employee satisfaction. Hence, human resource managers and organizational leaders should regularly conduct employee feedback surveys to understand employees' thoughts and areas of improvement.

Theoretical Advancements

This study contributes to the previous literature by emphasizing the significance of compensation and career development as strong supporting forces influencing employee turnover intentions. It extends prior research by providing relevant evidence that supports the negative relationships posited in Hypotheses 1 and 2 while challenging the established narrative around organizational commitment's role in turnover intentions.

The findings suggest potential refinements to existing theories on employee retention by integrating insights about demographic factors and their influence on perceptions of compensation and career development opportunities. Moreover, the study advocates for a more nuanced understanding of how various factors shape employee attitudes toward their organization.

Based on the components of job satisfaction identified within this study, it underscores that financial compensation serves as a critical extrinsic motivator that can reduce turnover intentions. This finding reinforces that competitive compensation packages remain a fundamental factor in employee attraction and retention (Sorn et al., 2023). This research has also identified a negative relationship between career development opportunities, aligning with the Social Exchange Theory, which proposes that employees who feel a sense of support for professional growth have a lower tendency to turnover from an organization (Meira & Hancer, 2021). Despite the weak relationship, this study contributes to the theoretical understanding by emphasizing the long-term impact of career development opportunities on employee retention.

These findings support contingency theories of organizational behavior, suggesting that the factors affecting turnover intentions may vary significantly depending on the industry, organizational structure, or regional employment norms. Future research can build upon this by exploring how such contextual factors moderate the relationships between traditional turnover predictors and actual turnover rates.

5. Conclusion

This study, therefore, points to the compelling need for compensation and career development opportunities as contributing factors that aid in decreasing turnover intentions of employees from the manufacturing sector. These findings are consistent with the job satisfaction literature that indicates high levels of job satisfaction may buffer against turnover, suggesting employees will only leave if presented with a competitive compensation package and an obvious pathway for career growth. The lack of evidence via this research between organizational commitment and turnover intentions allows for the possibility of higher organizational commitment due to environmental or leadership variables aiding in retention while maintaining a good workplace atmosphere.

This is valuable information for human resource managers and those in organizational leadership. Proper pay is essential, but setting an environment for professional growth can help improve employee retention. Regular employee feedback and engagement initiatives also ensure that strategies are formed keeping in mind organizational goals and what employees expect.

This study has made a significant contribution to the field of research regarding factors affecting turnover intentions, focusing on job satisfaction and organizational commitment. It focuses on employees employed within the manufacturing sector in Malaysia, comprising approximately 2.8 million individuals (Siddharta, 2024). The results show that job satisfaction, in particular, compensation and career development opportunities, negatively correlates with turnover intentions for employees in the manufacturing industry. On the other hand, organizational commitment now shows a significant impact on employees' turnover intentions. Regardless, additional research can be conducted on different factors that have a potential effect on employee turnover intentions to expand on these findings and gain a more comprehensive understanding of factors influencing turnover intentions.

The results of this research carry some important policy implications that affect organizational leadership and human resource management. Companies should adopt competitive compensation structures and career development paths to reduce turnover intentions and increase job satisfaction. Due to this, cultivating continuous feedback and engagement can synchronize organizational objectives with employee needs. HR policies must include long-term career development, mentorship, and training initiatives to retain these employees for as long as possible. These strategies would mitigate the burdens of turnover and will ensure potential productivity and competitiveness in 2024.

Future research can broaden the scope of this study by including various industries and geographical locations, providing us with greater insight into turnover drivers in different organizational settings. Similarly, the impact of technological advances on job satisfaction could uncover insights into how organizations can maximize profit through technology while keeping employees around. These insights will help to better strategize in managing turnover intentions and ensure organizational sustainability and productivity.

The inclusion of other factors, such as leadership style, workplace interactions, and work-life balance, can be considered to evaluate the potential impact of these factors on employee turnover intentions. Future researchers can also consider the impact of technological advancements and increasing usage of artificial intelligence in the workplace, which can potentially impact employees' job satisfaction as increasing numbers of tasks are being replaced with artificial intelligence. Hence, with the increasing prevalence of technology in the workplace, researchers need to evaluate how job roles can be modified to effectively incorporate technological advancement and artificial intelligence within the workplace to improve efficiency and productivity while ensuring that employees have high levels of job satisfaction and organizational commitment to reduce turnover intentions.

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Smart Farming: Challenges and Adoption Factors among Paddy Farmers in IADA Barat Laut, Selangor

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Abstract: Enhancing farm production through smart farming technology is crucial for addressing the challenges of achieving food security and improving the well-being of farmers. Aligned with Sustainable Development Goal 2 (SDG2), which is intended to tackle food insecurity and malnutrition while improving livelihood, smart farming integrates technologies such as IoT, drones, and artificial intelligence into agricultural practices. This innovation optimizes input like water, fertilizer, and pesticide, reduces operation costs, and increases productivity and profits. Food security in Malaysia is measured based on the adequacy of the population's domestic rice supply. Smart farming offers a transformative approach to modern agriculture, focusing on increasing value while reducing costs. Therefore, this study aims to explore challenges and adoption factors among paddy farmers in Barat Laut Selangor, under the administration of the Integrated Agriculture Development Area (IADA). An exploratory qualitative study involved the interview approach with selected rice farmers who applied smart farming as suggested by IADA. The thematic analysis was used to understand the factors that contribute to the adoption of smart farming among rice farmers and its challenges. This research is critical, given Malaysia is moving towards a high-income country, where sustainability becomes the main agenda in any sector specifically agriculture; and the country has acknowledged the importance of food security assurance. By identifying the challenges and adoption factors, this study aims to provide actionable insights to support sustainable agricultural practices and strengthen Malaysia's food security framework.

Keywords: *Smart farming adoption, rice farmers, smart farming challenges*

1. Introduction

Rice is a critical determinant of national food security; therefore, the country's rice production must align with the growing population. Malaysia's total population in 2022 was 32.4 million, an increase of 1.1 percent (356,400) compared to the year 2017 (Department of Statistics Malaysia, 2023). The increase in demand for rice parallels the increase in population. Therefore, to meet the increased demand for rice, the country needs to import rice. Based on the National Agrofood Policy 2021-2030, by the Department of Agriculture (2021), the level of rice self-sufficiency in 2021 is 73.4 percent, forcing Malaysia to import rice to meet the demand of its population. Therefore, efforts to increase rice production need to be proactive in reducing dependence on imported rice to meet domestic needs, thereby ensuring food security in Malaysia in line with SDG2, which is to achieve zero hunger.

Efforts to deal with the food security issue should not ignore the issue of the uncontrolled use of chemical fertilizers and pesticides in the agricultural sector, because Malaysia is known for the intensive use of fertilizers and chemical pesticides (Adnan et al., 2020). This situation will not only cause pollution to the environment but also affect the health of farmers. In addition, the intensive use of fertilizers and chemical pesticides also causes soil fertility to decline and crop productivity will also decrease from time to time. Therefore, the use of technology that can measure the rate of soil nutrients is important to be applied so that fertilizers or other agricultural inputs can be applied according to the rate required by the plant. With this approach, the use of agricultural inputs can be reduced and indirectly reduce the operating costs that farmers have to bear.

The utilization of smart farming technology in the country's rice production is believed to be an effective effort to achieve one of the priorities outlined in the 12th Malaysia Plan which is to strengthen the application of smart farming in the agro-food sector to meet the Industrial Revolution 4.0 (4IR) wave. This is also in line with

our new National Agrofood Policy 2021-2030 (DAN 2.0) where modernization and smart agriculture are the key game-changers for the transformation of the Malaysia agro-food sector. This is echoed by Mohd Nadzuar et al. (2024), who state that the implementation of smart agriculture has many benefits for the agriculture sector, especially for major plantations. In addition, the use of smart farming technology will provide synergy to the transformation of agriculture towards the next level of productivity and profitability. Through smart farming, all functioning parts in the agri-food production chain will be modified because it involves the processing of related data in a large amount in an instant which will enable more efficient work, good economic returns, greater environmental benefits and better working conditions in the field (Sadiku et al., 2020). In addition, Abang Ahmad et al. (2024) emphasized that smart farming is a new approach to farm management that is gaining attention from various players in the agricultural sector.

The agricultural sector is currently transforming modern technology integration that can improve the quality and productivity of agricultural products and reduce production costs. This can be accomplished by implementing new technologies that can increase the productivity of agricultural operations through the establishment of cost-effective sensor and network platforms meant to cut down on the consumption of energy and water resources and lessen the environmental impact of agricultural activities (Alqarni et al., 2022). Apart from that, smart farming technology, also known as precision farming, can reduce operating costs through water, fertilizer and pesticide input optimization (Gabriel & Haritharan, 2020). Smart farming is an emerging farm management approach to multiply the productivity and quality of agricultural products through the application of modern technology that combines information and communication technology into devices such as IoT, drones, and artificial intelligence (AI). In addition, the use of smart farming is able to reduce production costs and subsequently increase farmers' income (Balafoutis et al., 2020).

The application of smart farming technology in the Malaysian rice cultivation sector started in 2001 in Sawah Sempadan, Tanjung Karang, Selangor. The smart farming technology is known as PADDY-GIS. PADDY-GIS is a decision support system (DSS) tool that helps farmers manage paddy fields (Abdul Aziz et al., 2008). This tool helps farmers in making the right decisions towards reducing input wastage and increasing their profits without marginalizing the quality of the environment. In addition, the Malaysian Agricultural Research and Development Institute (MARDI) as a research institution has developed several smart farming technologies such as land leveling systems and seed sowing with conversion rates (Rahim et al., 2018). The land leveling system is based on the precise land leveling ratio with setting index and seed sowing which contribute to the increase in seed germination in the whole plot uniformly. Besides that, Kamal and Amin (2010) developed a Geographical Information System (GIS) which is a smart farming technology that uses a user-interface technique to control the water balance in paddy cultivation areas. Furthermore, smart farming technology in the form of autonomous robots and drones is also used to monitor crop biomass, pest damage, and weed conditions at high spatial solutions (Mat Lazim et al., 2020). This technology benefits farmers by saving time and increasing rice yields. According to Bujang and Abu Bakar (2019), smart farming technology applications have more potential to be introduced to farmers in granary areas because granary areas are under the management of an agency (e.g., IADA). In addition, the usage of smart farming technology can directly address the problem of land, labor shortage and rising costs faced today in the rice sector in Malaysia (Che Omar, Shaharudin & Tumin, 2019; Najim et al., 2007).

In Malaysia, there are twelve rice granary areas operated by several agencies, namely MADA (Muda Agricultural Development Authority), KADA (Kemubu Agricultural Development Authority), IADA Kemasin Semerak (Integrated Agriculture Development Area Kemasin Semerak), IADA Barat Laut Selangor, IADA Pulau Pinang, IADA KETARA, IADA Pekan, IADA Rompin, IADA Seberang Perak, IADA Kerian, IADA Kota Belud and IADA Lupar. The country's paddy granary area is a strategic intervention by the government to strengthen the nation's food security. Therefore, many rice yield improvement programs including the application of smart farming technology are conducted in granary areas (Abdul Aziz et al., 2008). The use of smart farming technology in farms has benefited farmers in such a way that operating costs are reduced, the quantity and quality of farm products are increased and the environment is protected from potentially harmful farm waste or chemicals used in farm operations (Mat Lazim et al., 2020; Dung & Hiep, 2017). Recognizing these benefits, farmers are encouraged to adopt smart farming technology to ensure agricultural productivity can be increased without jeopardizing biodiversity, the environment, and human health. Therefore, this study is conducted to explore

challenges and adoption factors among paddy farmers. This study was conducted in the country's rice granary area which is in the Integrated Agriculture Development Area (IADA) North West Selangor.

The need to meet the objective of food security is concurrent with the Sustainable Development Goals (SDG) of the United Nations because it focuses on the eradication of poverty and hunger through the approach of sustainable agricultural practices taking into account economic, social and environmental issues. Furthermore, food security plays an important role in improving health outcomes, as inadequate nutrition can lead to malnutrition and increase the prevalence of diet-related chronic diseases.

Hunger and malnutrition are widely regarded as among the most pressing global challenges of the 21st century. In 2019, approximately 690 million individuals were affected worldwide (FAO, 2019). The COVID-19 pandemic further intensified the crisis, with an additional 132 million people facing hunger in 2020 due to the widespread disruptions caused by the pandemic (Klassen & Murphy, 2020). The string from the issue of food insecurity can lead to disruption of the country's social and political order. Recent studies emphasize the need to address food safety using a multidimensional and interdisciplinary approach. There is increasing recognition of the importance of food systems in achieving food security, along with the need to transform them for greater sustainability and resilience (Gabriel & Harithran, 2020).

It is important to address the social and economic factors that lead to food insecurity, such as poverty, inequality and conflict (FAO, 2019). Poverty remains a fundamental barrier to food security as individuals and households with limited income often cannot afford nutritious food, leading to malnutrition and long-term health complications. Inequality, whether in terms of income distribution, access to resources, or opportunities, exacerbates food insecurity by marginalizing vulnerable populations, including women, children, and rural communities. If the issue of food security is not overcome it will lead to a global scale issue which is a threat to human health, economic development and social stability. Therefore, to effectively address this challenge, it is important to use a multidimensional and interdisciplinary approach. This approach must take into account the holistic and complex interactions between food systems, social factors, economics, and environmental sustainability.

The existing body of research on food security highlights its multifaceted nature, calling for a comprehensive, interdisciplinary approach to address this critical issue. Contemporary studies have identified various factors influencing food security, such as food waste, climate change, socioeconomic disparities, agricultural policies, access to nutritious food, and the principles of food sovereignty and security (Wolfson et al., 2020; FAO, 2019). Despite these insights, substantial gaps remain in the literature that hinder progress toward sustainable development. For instance, topics like food sovereignty and food waste have not received adequate attention. Moreover, the interplay between food security and other global challenges, such as gender inequality and environmental sustainability, remains underexplored. Additionally, limited research focuses on the lived experiences and perspectives of marginalized communities (Paslakis et al., 2020), leaving critical dimensions of the issue insufficiently addressed.

To bridge these gaps, recent studies advocate for integrating a variety of perspectives and voices into food security research. They also highlight the need to focus on less-explored topics and their connections to broader global challenges. Moreover, fostering stronger partnerships and collaborations between researchers, policymakers, and practitioners is essential. Enhancing methods for data collection and analysis is also critical to effectively addressing the multifaceted nature of food security challenges (FAO, 2021). The prevailing body of food security literature underscores the pressing need to tackle this significant global challenge through an integrated and interdisciplinary framework. Such a framework should account for the intricate relationships between food systems and a range of social, economic, and environmental dynamics. It should also incorporate insights from recent studies addressing related issues, including food waste, climate change, socioeconomic disparities, agricultural policies, equitable access to nutritious food, and the principles of food sovereignty and security. This article aims to deepen the understanding of food security as a vital global concern while providing valuable guidance for researchers, policymakers, and practitioners. It seeks to address existing gaps in the literature and propose strategies to enhance global food security, fostering a more sustainable future.

2. Methodology

This study uses a qualitative approach. The data required to meet the objectives of the study were obtained and collected through interviews with rice farmers. An in-depth interview of about 1-2 hours with farmers was conducted after receiving a list of potential farmers as respondents suggested by IADA, Barat Laut, Selangor. A total of seven farmers have been involved as respondents for this study. The characteristics of the respondents are rice farmers who have used smart farming technology in rice planting activities for at least 1 season. The interviews were conducted either on the participants' paddy farms or at locations convenient for them. Each session was audio-recorded and subsequently transcribed to facilitate data analysis. Respondent's demographic information was gathered after the interviews. The initial segment of the interview aimed to capture participants' experiences as paddy farmers and their perceptions of smart farming. The latter portion delved into the internal and external factors that influence their readiness to adopt or the challenges they face in implementing smart farming practices. Interviews were conducted according to methodological guidelines up until the point of data saturation (Bryman, 2016). Every interview was analyzed using thematic analysis, involving searching the recurring themes across the data set. The thematic analysis is driven by a few particular analytic questions. In this case, the identified themes, codes, and patterns served as accurate reflections of the content of the entire data set in the interviews (Levitt et al., 2017; Corbin & Strauss, 2008). Themes or patterns within data were identified in a theoretical or deductive or 'top-down' way (Levitt et al., 2017). The analysis in this study is primarily guided by the researchers' theoretical and analytical interests, making it inherently more analysis-driven. Themes were identified at a latent or interpretative level, allowing for an exploration of the deeper significance of observed patterns, their broader implications, and their connection to existing literature. This approach involved examining the underlying ideas, assumptions, and conceptual frameworks that shape and inform the data's semantic content. Thematic analysis was particularly suitable for this study, given the relatively novel nature of the research area and its alignment with the study's objectives.

3. Findings and Discussion

Smart Farming Practice Among Farmers

Seven respondents who were interviewed used smart farming technology, which is drones. Based on interviews conducted, most of the smart farming technology that farmers are exposed to is drones. Many technology-based companies also promote drones to farmers. Therefore, farmers' awareness of using drones is higher than other smart farming technologies. In the interview, the respondents recognized several benefits of using this technology in agriculture based on their experience and intuition. These advantages include spraying pesticides and fertilizing crops, detecting disease in the paddy field, monitoring climate change, and accessing the health of the crop.

Adoption of Smart Farming

Based on interviews and analyses that have been carried out, the themes related to smart farming adoption that have been identified are (1) awareness, (2) engagement, (3) perceived usefulness, and (4) attitudes.

The use of smart farming technology is the latest trend in the agricultural sector, especially in rice cultivation. Therefore many technology-based companies are advertising and promoting smart farming technology and increasing farmers' awareness of this technology. According to Akpojotor (2016), awareness encompasses comprehension or observation of a circumstance, facts, awareness, identification, realization, grasp, and acknowledgment. In addition, information obtained from farmers who have used drones also provides awareness to farmers regarding technology.

I know this drone technology from technology companies that do demonstrations in this area (Respondent 6 and Respondent 7)

Farmer friends also talk a lot about this drone technology (Respondent 3)

The second theme is the engagement factor. Engagement of rice farmers with the application of smart farming technology or drones is from courses and workshops organized by extension agencies and collaborations with technology base companies. Although the knowledge of smart farming technology among extension agency

officers is still new, the extension agency has taken initiatives by collaborating with the technology-based company.

Learned a lot from companies that promote drones during courses organized by IADA (Respondent 2 and Respondent 4)

Perceived usefulness among rice farmers towards the use of smart farming technology or drones is from the point of view of this technology being able to apply fertilizers and pesticides in the right quantity. Fertilizers and pesticides to be sown in rice fields using drones have been accurately measured and the spread of pesticides and fertilizers is also even. In addition, the use of drones for pesticide application can also prevent farmers from being exposed to it. The use of drones can also save time for work in the rice fields, especially the work of applying pesticides and fertilizers.

We can see the advantages of using this drone...Fertilizers and pesticides are spread evenly throughout the rice fields and the measurements are also accurate (Respondent 1).

If fertilizing and pesticide are applied manually, the estimated time required for 1 hectare of rice fields is 2 to 3 hours. With the use of drones, 1 hectare takes only 30 minutes...a lot of time can be saved (Respondent 3).

The last theme is attitude. A positive attitude is one of the important factors in the acceptance of smart farming technology. The farmer's attitude towards the desire to try something new is the driving force for the adoption of smart farming. In addition, encouragement from family, farmer friends and development agencies have also formed a positive attitude towards the use of smart farming.
At first, I was not sure about the use of drones but my farmer friends and family encouraged me and convinced me...even though my friends are still new to using drones the advantages and benefits of using drones have made me want to try. (Respondent 4 and Respondent 5)

Challenges of Smart Farming Adoption
Based on interviews that have been conducted with rice farmers, the challenges stated can be summarized into several categories, namely high costs, complicated and difficult-to-understand handling, and no comprehensive disclosure related to the use of drone technology from the development agency.
The high cost is associated with the high price of owning a drone. Respondents stated the price of a drone unit is in the range of RM 20,000 to RM 25,000. Although the government provides incentives to farmers who want to buy drones, the price is still high.

The price of a drone is very high and farmers can't afford to buy it. If the farmer is a full-time rice farmer, it is quite burdensome to have a drone. Most of the farmers who can afford drones are farmers who have jobs other than rice farming. Therefore, farmers who do not own drones can only rent drones from drone owners to perform certain activities such as applying pesticides and fertilizers. (Respondent 3)

In addition, the challenge to adopt drones expressed by farmers is the complicated handling. Drones are advanced and it is synonymous with youth. Although older rice farmers acknowledge the advantages of using drones such as being able to save time on work in the rice fields, especially the work of sowing seeds, fertilizing and poisoning, the obstacle to the adoption of drones is the difficulty in understanding how to operate them.

Drones are complicated to use. Even if we want to learn, it's hard for us to understand. Unlike young people who like technology. (Respondent 4 and Respondent 5)

The next challenge is the lack of comprehensive exposure to drone applications among farmers. This challenge is linked to low knowledge about drones among extension agencies. Drones are the latest technology that is still new in the agricultural sector. Therefore, time is needed to increase knowledge about this technology among development agencies.

The extension agency has created a course to increase farmers' awareness about drones. But the course is not hands-on. Officers are also new to this technology. (Respondent 1 and Respondent 2).

4. Conclusion

Rice farmers recognize the benefits of drones, including the precise application of inputs and monitoring of crop health. Key adoption factors include awareness, engagement through courses, perceived usefulness, and positive attitudes toward trying new technologies. According to the research findings, several recommendations and policy implications can be proposed to address the challenges of adopting smart farming among rice farmers. First, to effectively reduce the high costs of smart farming technologies such as drones, the financial assistance programs should be expanded, including subsidies and low-interest loans. Apart from that, farmers who have financial constraints to buy smart farming technology can take the initiative by forming a pool of resources through a cooperative so that the costs incurred to buy technology can be shared. This step can foster collective problem-solving and reduce individual financial burdens. This will ensure that smallholder farmers are more accessible and can benefit from these innovative tools. Second, training programs should be implemented in hands-on sessions to address the complexity of operating advanced technologies, particularly targeting older farmers who may require additional support. Third, collaboration between development agencies and technology providers must be heightened to ensure comprehensive exposure and knowledge transfer regarding smart farming applications. Finally, policymakers should create a clear framework to promote smart agriculture and ensure sufficient resources and effective extension services to support its implementation. These measures can significantly improve food security, align with Malaysia's sustainable development agenda and help modernize the agricultural sector.

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The Consequences of Emotional Intelligence on Various Organizational Outcomes

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Abstract: Research has consistently shown that emotional intelligence (EI) is positively correlated with various organizational outcomes. EI incorporates one's ability to recognize, express, understand, and manage their own emotions and the emotions of others. Studies have shown that employees with high EI can successfully steer the challenges and dynamics of the workplace; in achieving both personal and organizational outcomes. There are various organizational outcomes associated with emotional intelligence that have been extensively studied across many fields. EI has demonstrated a positive correlation with organizational citizenship behavior, job performance, job satisfaction and organizational commitment. Conversely, various studies found EI to have a negative relationship with job stress. This review paper focuses on four important consequences of organizational outcomes namely organizational commitment, organizational citizenship behavior, job satisfaction and job stress. In conclusion, a wide range of disciplines have extensively studied EI as a predictor of many organisational outcomes, including work satisfaction, organisation commitment, and citizenship behaviour. Conversely, EI are found to negatively correlated with job stress in which the higher EI that employee possessed, the less stress they have towards job. In conclusion, EI are also essential for keeping a motivated and productive employee, which eventually benefits the company as a whole.

Keywords: *Emotional Intelligence, Organizational Commitment, Job Satisfaction, Organizational Citizenship Behaviour (OCB) and Job Stress*

1. Introduction

According to Mayer & Salovey (1990), emotional intelligence (EI) refers to a person's capability to identify their own emotions and those of others and in return facilitating constructive relationships. EI also known as an important factor that influence employees' work attitudes and their perceptions of workplace environment (Miao et al., 2021; Mustafa et al., 2023). The study of EI has become gradually noteworthy in various fields since the 1990s, including psychology, management, organizational behaviour, leadership, education and marketing (Doğru, 2022). This is a result of the growing significance of emotional intelligence in employees which is considered a vital asset to an organization. There is a contention that businesses that successfully handle emotions inside their organization achieve superior performance and greater rates of return compared to organizations that disregard emotions (Brundin et al., 2022). Effective management of emotions in an organization can be achieved by a comprehensive understanding of employees (Dasborough et al., 2015) and fostering empathy within the organization's climate (Petrovici & Dobrescu, 2014).

2. Literature Review

Emotional Intelligence

Mayer & Salovey (1990) were the first to develop a method of measuring EI, which they defined as a person's capacity to observe and manage their own emotions as well as others. Van Rooy & Viswesvaran (2004) described EI as an ability involving verbal and non-verbal receiving and processing of affective information from oneself and others. In the realm of EI, there has been an ongoing debate among scholars on whether emotional intelligence should be classified as a trait or an ability. Some studies claim it is ability or competency as proposed by Mayer & Salovey (1990) and Austin (2010). On the other hand, others consider it a trait, as suggested by Baron, (2006) and Petrides et al., (2007). Beyond that, a number of assessments have been constructed to measure the various approaches to EI. Boyatzis et al., (2011) are using the Emotional and Social Competency Inventory (ESCI) as the assessment tools. Meanwhile, Mayer & Salovey, (1990) introduced the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) in 2002, followed by the MSCEIT V2.0, which had 141 items, introduced a year later (Mayer et al., 2003).

EI was earlier believed to be a subset of social intelligence. However, as more research was being conducted, the authors modified their view and proposed the four-branch model of emotional intelligence. It involves perceiving and expressing emotions, assimilating emotions in thought, understanding emotions, and managing emotional responses reflectively (Mayer & Salovey, 1993). As explained by the researcher, the first branch, which is the recognition and expression of emotion, involves perceiving and accurately expressing emotions and discerning the difference between genuine and fraudulent feelings. Branch two is related to emotional intelligence and involves the ability to generate emotions that facilitate decision-making processes, consider multiple perspectives, and solve problems using a broad spectrum of emotional experiences. For example, happiness can enhance creative problem-solving. The capacity to comprehend emotions, as outlined in branch three, entails understanding the progression of emotions and recognizing their underlying causes. Lastly, the fourth component, emotional regulation, entails maintaining self-awareness throughout adverse emotions and addressing emotional challenges without repressing bad feelings (Mayer & Salovey, 1993).

Accordingly, many researchers are recognizing EI as a skill in their investigations, and more recent studies have offered more evidence on both the skill and integrative model methods in this field (J. D. Mayer et al., 2008). Researchers have already shown a connection between specific employee results and emotional intelligence. The factors that have been studied about work include performance (Yoke & Panatik, 2015), job satisfaction (Masrek et al., 2014), organizational commitment (Anari, 2012), burnout (Gong et al., 2019), stress (Sarrionandia et al., 2018), leadership (George, 2000). Nonetheless, Harms & Credé (2010) discovered a direct relationship between EI with either transformational or transactional leader style. O'Boyle et al., (2011) contributed to the existing body of knowledge by introducing a three-stream strategy for studying EI and its association to job performance. Even though there are many organizational outcomes found to be associated with EI, however, this study will only review the relationship that exist between EI and organizational commitment, job satisfaction, organizational citizenship behaviour and job stress; in order to explore notable employee outcomes.

3. Framework of the Study

Empirical evidence demonstrates that Emotional Intelligence (EI) has a substantial impact on the various organizational outcomes.

Figure 1: Framework for reviewing the relationship between EI and various organizational outcomes

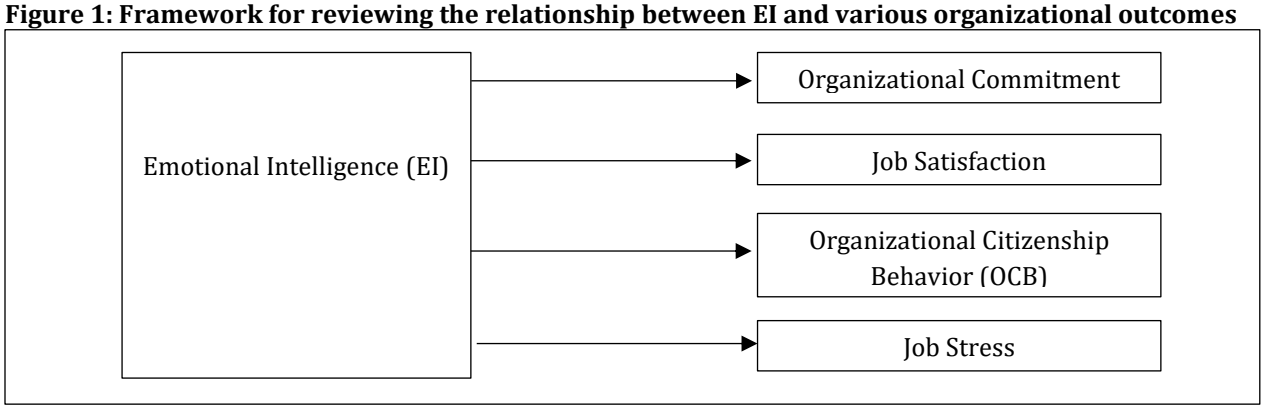


Figure 1 illustrates the link between the investigated constructs. This framework is demonstrated as foundation in reviewing the impact of EI on various outcomes in organization.

4. Findings and Discussion

EI and Organizational Commitment

Organizational commitment refers to an employee's recognition and acceptance of the conditions within the organization (Steers, 1977). The fundamental attributes of organizational commitment encompass acknowledgment of company's regulations, engagement in actions that support the organization as well as endorsement of organization's objectives and ideals (Porter et al., 1974). There are several significant employee attitudes and behaviours have been linked to organizational commitment such as turnover, knowledge sharing, role stress and absenteeism (Doğru, 2022). Erdheim et al., (2006) categorised organizational commitment into affective, normative, and continuance commitment, based on its multidimensional structure. Employees' emotional attachment to their company is referred as affective commitment, whereas their sense of moral obligation to stick with the company is regarded as normative commitment. Conversely, continuance commitment describes an employee's desire to remain with the company because they fear negative outcomes if they quit (Erdheim et al., 2006).

Employees with a higher level of EI are thought to have more control over their own emotions, resulting in a greater level of emotional resilience and commitment to their organizations. Therefore, individuals with a higher degree of EI have a reduced inclination to leave their organizations in comparison to employees with a lower level of EI (Mustapha et al., 2012). Various studies are conducted to investigate the association between these two variables. According to Qadar et al., (2015) there is a relationship between EI and organizational commitment among workers who believe that their needs are met by the organization and experienced improved in skills and abilities through appropriate training and development programs provided by their organization. Furthermore, Alavi et al., (2013), found a significant relationship between EI and organizational commitment among employees. The findings is similar to studies conducted by Chao Miao et al., (2017) and Alismail et al., (2022) in which EI are also found to have correlation with organizational commitment. On the other hand, Alsughayir (2021) and Hameli & Ordun, (2022) in their studies has found that self-efficacy and job satisfaction mediates the relationship between EI and organizational commitment.

EI and Job Satisfaction

Job satisfaction refers to indicative and evaluative judgment or affective reaction that an employee has toward a job (Abebe & Singh, 2023). Ever since the introduction of job satisfaction concept, various of its consequences on employees have been studied. These includes job performance(Ziegler et al., 2012), turnover intentions (Chen et al., 2019), job burnout (De Oliveira et al., 2018), organizational commitment (Kaplan et al., 2012), and organizational citizenship behaviour (OCB) (Berbaoui Kamel et al., 2015). It is observed from the studies that, job performance, OCB and organizational commitment are reported to correlate with job satisfaction. Conversely, job satisfaction hurts intentions to leave and experiences of burnout since it is an important predictor of a person's overall happiness and motivation to contribute in work-related activities (Alam & Asim, 2019).

Emotional Intelligence is considered a crucial determinant influencing the satisfaction of employees from their jobs. For example, Tagoe & Quarshie, (2017) found a positive relationships between EI and job satisfaction. Likewise, Suleman et al., (2020) found that EI acts as a predictor for the job satisfaction of school leaders. Furthermore, a study among call centre employees by Çekmecelioğlu et al., (2012) also found EI as the strongest determinant in predicting job satisfaction. Meanwhile, Abebe & Singh, (2023); Tagoe & Quarshie, (2017) also revealed a significant relationship between EI and job satisfaction in their studies. Additionally, Chao Miao et al., (2017) in their meta-analysis found that EI had a positive effect on job satisfaction regardless of demographic factors.

EI and Organizational Citizenship Behavior

The organizational citizenship behaviours (OCB) demonstrated by employees in organizations are generally related to the social and psychological phenomena of organizations, as well as a kind of behaviour extending beyond the formal job requirements in organizations (Organ, 1994). For example, taking additional responsibilities and workloads, putting in more hours of work, adhering to and abiding by the rules and regulations of an organization, and providing helping hands to coworkers when needed (Smith C et al., 1983). Organ (1994) conceptualized OCB and categorized it into five dimensions such as conscientiousness, altruism,

sportsmanship, civic virtue and courtesy. Each category represents a specific behaviour shown by employees inside an organization. Altruism is manifested when employees take the initiative to help their colleagues through a particular problem they may be experiencing. Conscientiousness relates to adherence to the organizational rules and policies, including keeping to the allowed hours of work. Using constructive means by employees to solve organizational problems and not grumbling due to the inconveniences caused is a manifestation of sportsmanship. It is also considered a courtesy for the employees not to violate others' rights within the organization. Finally, civic virtue refers to the performance of activities that benefit the organization such as volunteering as committee in a company's event. EI can strengthen the employees' organizational citizenship behaviours in an institution. A professional with higher level of EI usually takes the initiative of helping others at the workplace through volunteering. Indeed, previous research has already determined the positive correlation of emotional intelligence with organizational citizenship behaviour. This is reflected in studies conducted by Korkmaz & Arpaci, 2009; Turnipseed & Vandewaa, 2012; Yaghoubi et al., 2011.

Emotional Intelligence and Job Stress

Job stress is a shift from an employee's regular psychological state caused by difficulties related to his or her work (Colligan & Higgins, 2006). Causes of distress as stated by Mcvicar (2003) in his study among nurses are mainly contributed by workload and leadership or management style. Job stress is primarily associated with several negative consequences, including poor job commitment (Nayomi, 2016), low motivation (Khalil Wani, 2013), low job satisfaction (Ahsan et al., 2009), increase emotional exhaustion (Golparvar et al., 2012), and higher turnover intentions (Ahn & Chaoyu, 2019). Conversely, numerous factors such as relationship development, knowledge sharing, organizational support, and clear role clarification can help to reduce an employee's stress level. Furthermore, employees' personalities (Desa et al., 2014), perceptions, and emotions are crucial contributors to job-related stress, along with various environmental and organizational factors (Sur & Ng, 2014). Employees who possess effective emotional management skills demonstrate reduced levels of job stress, as shown by Mann's research in 2004. However, it is crucial to acknowledge the correlation between EI and job stress. According to Lee, (2010), it was discovered that there is a negative correlation between EI and occupational stress among nurses in four hospitals in Korea. This is supported by Yamani et al., (2014) which concluded their research findings by emphasizing that individuals with higher level of EI are experiencing job stress less. In addition, Shukla & Srivastava, (2016) also discovered that there is a negative correlation between trait EI and occupational stress among retail employees.

5. Conclusion

This paper reviewed the impact of emotional intelligence (EI) on important employee outcomes in an organization. Various studies have proven that all aspects of EI exhibit a positive correlation with organizational citizenship behaviour, job satisfaction and organizational commitment. Meanwhile, EI are negatively correlated with job stress. The significance of emotional intelligence is increasing steadily for managerial and supervisory position especially in human resource. Typically, recruitment board are more inclined to choose and position applicants who possess a greater level of EI (Ming Chia, 2005). According to Gong et al., (2019), line supervisors express contentment with the performance of employees with greater level of EI as these individuals are able to effectively regulate their own emotions as well as the emotions of their colleagues. On a related note, emotional intelligence is expected to enhance employees' job happiness (Gholipour Soleimani & Einolahzadeh, 2017), organizational commitment (Alsughayir, 2021) and job performance (Joseph et al., 2015).

Accordingly, it can be concluded that employees who possess strong emotional self-management skills and the ability to manage their colleagues' emotions exhibit higher levels of commitment to their organizations. They also demonstrate a greater willingness to engage in organizational citizenship behaviour, experience job satisfaction, and achieve better job performance. Additionally, these employees tend to experience reduced levels of job stress. Given that these outcomes are all positive for employees, managers should create development programs aimed at enhancing the emotional intelligence of employees inside the organization. Furthermore, they should specifically choose and assign people who possess exceptional emotional intelligence, in addition to other job-related skills. Human resource departments should devise ways such as through training and development programs to enhance the emotional intelligence of their staff due to these

factors. Furthermore, human resources managers specifically have the authority to establish regulations and criteria for recognizing and compensating employees who exhibit positive behaviour in the workplace.

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The Influence of Spiritual Intelligence on Drug Abuse Tendencies among Residents of Rehabilitation Centres

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Abstract: This study focuses on the spiritual intelligence towards drug abuse tendencies among residents of rehabilitation centres in the Alor Gajah district, Melaka. This survey study was conducted with 113 respondents. The study findings were obtained by distributing the Spiritual Intelligence Questionnaire (SIQ) and the Drug Abuse Screening Test 20 (DAST 20). The data was analysed using the Statistical Package for Social Science (SPSS) version 27. The results showed that there was no significant association between spiritual intelligence and drug abuse ($r = .003$, $k > .05$). The data correspondingly indicate that there is no difference in spiritual intelligence across age groups [$F(2,110) = 1.353$, $p > .05$]. There is also no difference in drug abuse across age groups [$F(2,110) = .904$, $p > .05$]. This study is expected to provide useful insights for the government and the general public in identifying drug-related tendencies in Malaysia.

Keywords: *Spiritual intelligence, Drug Abuse, Rehabilitation Centres, Residents, Addicts, Drug dependent*

1. Introduction

Drug abuse is a problem that has been occurring for quite some time in Malaysia. This issue is difficult to eradicate, despite various efforts made by the authorities to address it seriously in terms of prevention, law enforcement, rehabilitation, and so on. The issue of drug abuse and addiction, as well as illegal substances in this country, has shown an increase of 27 per cent from January to June 2023, compared to the same period in the previous year (Hasimi, 2023). The misuse of drugs is a serious problem that has negative effects on individuals, families, and society. It is often associated with various social, health, and economic issues. Drug rehabilitation centre residents are individuals who are striving to overcome their addiction and seek a path to a drug-free life (Smith, 2020).

Mohd Jailani and Osman (2015) stated that drug abuse is a combination of diseases involving biological, psychological, social and spiritual aspects. Each of these four aspects can be seen as a factor in an individual's involvement with drug abuse. In terms of recovery, one should not focus solely on one or two methods; rehabilitation treatment should be carried out comprehensively. The government, through the National Anti-Drug Agency (NADA), has undertaken various responsibilities to address drug addiction. This effort is not easy because drug addiction issues involve dependency that requires continuous treatment. The recurrence of addiction even after leaving rehabilitation centres occurs due to various factors such as peer influence, environment, personal factors, and so on.

Based on statistics from the National Anti-Drugs Agency in 2024, the age category of drug abuse is 0.001% for children (0-12 years old), 0.7% for adolescents (13-18 years old), 59.3% for youth (19-39 years old) and 40% for adults (>40 years old) (NADA Website, 2024). According to statistics released by the official website of the National Anti-Drugs Agency (NADA) in 2020, a total of 15087 per case and 14850 per individual were between the ages of 19 to 39 years. This shows that many drug addicts among youth dominate the chart compared to drug addicts among adolescents (18-19 years old) and adults (40 years and above). This age group also constitutes the highest population residing in drug rehabilitation centres in Malaysia.

Many factors contribute to someone's tendency to be involved in drug addiction, including peer pressure, family issues, and personal struggles. However, some studies indicate religion and spirituality play a role in drug-related problems. According to Giordano et al., (2015), religion becomes a spiritual force that can shape the mental strength of humans or psychology in facing health problems, alcohol addiction, drugs, and sex. Khalid

(2008) also believes that a strong spiritual life not only prevents someone from getting involved with drugs but can also provide effective treatment and recovery for drug addicts. This is because spiritual fulfilment provides spiritual strength to prevent repeated addiction. However, what is even more saddening is that the percentage of addiction in Malaysia consists of those who are Muslim, where in terms of religious practice itself, religious values are based on the understanding of faith. Are those who are Muslims just in name without practising the teachings of Islam in their lives?

This study can provide a better understanding of how spiritual intelligence influences individual decisions in facing life's pressures and challenges, including the temptation of drug abuse. It can also enhance awareness of the importance of spirituality in mental well-being. Education about this aspect can help individuals recognize the sources of support they have. Research on the relationship between spiritual intelligence and substance abuse can support the development of a more holistic recovery model that integrates.

In addition, there is a literature review that concludes that it is very important that a detailed study of the Islamic psycho-spiritual approach can be implemented in prevention strategies. The Islamic psycho-spiritual approach that encompasses the dimension of faith has been proven to enhance the resilience of youth and establish effective prevention (Engku Fauzi et al., 2023). Therefore, this study is conducted because there is still insufficient research on the impact of spiritual intelligence on drug abuse among residents of rehabilitation centres. The importance of this study contributes to understanding the use of spiritual intelligence as a recovery therapy. The research findings can assist in designing effective prevention and recovery programs by responsible parties such as NADA, particularly in the aspect of spiritual intelligence, as well as tailored interventions to meet individual needs.

Objectives

This study is conducted to examine the spiritual intelligence's impact on drug abuse tendencies among residents of rehabilitation centres. Therefore, several research objectives have been formulated:

- To study the relationship between spiritual intelligence and drug abuse tendencies.
- To study the differences in spiritual intelligence based on age factors.
- To examine the differences in drug abuse based on age factors.

2. Literature Review

King (2008) defines spiritual intelligence as a set of mental capacities that involve awareness, integration, and self-adjustment, are non-material, and address aspects of existence that promote reflection, meaning enhancement, and self-examination towards spirituality. The level of spiritual intelligence in a person can determine their inclination towards drug use. Zohar and Marshall (2000) state that spiritual intelligence is the intelligence to confront issues of meaning or value, namely the intelligence to place our behaviour and life in a broader and richer context of meaning, and the intelligence to assess that someone's actions or life path are more meaningful than others.

Norhayati (2011) indicates that adolescents without social behavioural problems have higher scores in emotional intelligence, spiritual intelligence, and social relationships compared to adolescents with social behavioural problems. There is a significant positive relationship between emotional intelligence, spiritual intelligence, and relationships with parents and peers towards positive social behaviour. Conversely, negative relationships will be found with negative social behaviour. Young people, especially teenagers, also experience the impact of these psychosocial changes and must face various challenges and pressures in adapting to the occurring changes (Alhafiz et al, 2020). Preliminary data as of March 2024 (NADA, 2024) shows that the number of abusers and addicts of drugs and substances among the male gender is 1116103 people compared to 5067 women only, covering the age category monopolized by the youth group aged 19 to 39 years.

Roy et al. (2019) in their study on spirituality found that an individual's spiritual development can prevent them from falling into the trap of drug addiction. This is because spirituality and inner strength are integral parts of resilience and have significant contributions. This is as stated by Galanter et al. (2007) that drug treatment programs in the form of religion or spirituality help in forming self-endurance and stronger personal characteristics of individuals.

The spiritual approach based on the theory of spiritual intelligence by King (2008) emphasizes four main components: critical thinking, personal meaning-making, spiritual awareness, and conscious development. This has been applied and continued in the study by Noor Azniza & Wan Nurayunee (2021) using the Therapeutic Consultation Module for Families (TCMF) by Dougherty's Model (2009) on family functioning and spiritual intelligence among delinquent adolescents. The improvement of spiritual intelligence can help delinquent teenagers make positive changes through therapeutic consultation as an intervention. Meanwhile, in the Islamic scholarly approach, figures like Imam al-Ghazali emphasize that individuals with noble character are the result of inner peace.

The study by Hamzah (2007) indicates that the moral reasoning process of Malaysians has a significant relationship with age groups, as well as attitudes and adherence to social norms. At the age of 16 and above, students are capable of distinguishing between good and bad. Similarly, Padzil's study (2021) also suggests that during adolescence, behaviour is shaped by information received through the social system, particularly from family and friends.

3. Methodology

Research Design

The researcher has used a quantitative research approach for the design of this study. The survey design has been employed by the researcher to collect data from the involved respondents. The sampling method used by the researcher is purposive random sampling. According to Piaw (2014), purposive sampling refers to the sampling procedure in which a group of subjects with specific characteristics is selected as respondents. Therefore, this study focuses on the residents at the Rehabilitation Centre in the Alor Gajah District, Melaka. Furthermore, the distribution of the questionnaire used in this study assists researchers in obtaining results more quickly and accurately. The use of questionnaires makes it easier to get cooperation from respondents (Tuckman, 1988). To analyse the data, the researcher used the Statistical Package of Social Science (SPSS) version 27.

Population and Sample

The study population possesses the characteristics desired by the researcher, specifically among the residents of the Rehabilitation Centre in the Alor Gajah District, Melaka. The total population data of residents is 127 individuals. However, the study sample taken is 113 individuals.

Instrumentation

The distributed questionnaire consists of four sections, namely Part A, Part B, and Part C. Part A contains demographic information such as ethnicity, age, place of residence, and employment status. Meanwhile, Part B is a survey on Spiritual Intelligence, specifically using the Spiritual Intelligence Questionnaire (SIQ) developed by Abdollahzadeh et al. in 2009. This tool was utilized in the study to assess the level of spiritual intelligence among participants. There are 29 items in the questionnaire, assessed using a 5-point Likert scale.

The following section C is a survey that examines the tendency of drug abuse among respondents. The Drug Abuse Screening Test 20 (DAST-20), modified by Skinner in 1982, has been chosen to assess drug abuse tendencies. This inventory consists of 20 questionnaire items using the Guttman Scale, which is either Yes or No.

4. Findings and Discussion

Descriptive Results

Table 1: Number and Percentage of Respondents Based on Ethnicity

Race	Number	Percentage (%)
Malay	107	94.7
Chinese	2	1.8
Indian	3	2.7
Others	1	0.9
Total	113	100.0

Table 1 shows the number and percentage of respondents according to ethnic categories in the Rehabilitation Centre. From the table above, it can be observed that Malays represent the average number of respondents, which is 107 people, equivalent to 94.7%, while the Chinese comprise only 2 individuals, accounting for a mere 1.8%. Furthermore, there are 3 Indian respondents, making up 2.7%, and for others, there is 1 respondent, which is 0.9%.

Table 2: Number and Percentage of Respondents Based on Age Ranking

Age	Number	Percentage (%)
20 to 29 years old	31	27.4
30 to 39 years old	52	46.0
40 years and older	30	26.5
Total	113	100.0

Table 2 shows the frequency and percentage of study respondents based on their age. The majority of respondents in this study were in the age range of 30 to 39 years old, which was 52 people (46.0%), followed by the number of respondents aged 20 to 29 years old was 31 people (27.4%). Next, the lowest number of respondents aged 40 years and above was 30 people (26.5%).

Table 3: Number and Percentage of Respondents by Place of Residence

Residence	Number	Percentage (%)
City	59	52.2
Rural Area	54	47.8
Total	113	100.0

Table 3 shows the distribution of frequency and percentage of respondents based on place of residence. There are two categories of areas assessed where the results of the study found that the majority of respondents live in urban areas which are 59 people (52.2%). For respondents who live in rural areas, a total of 54 people (47.8%).

Table 4: Number and Percentage of Respondents based on Employment Status

Employment Status	Frequency (f)	Percentage (%)
Unemployed	7	6.2
Employed (Public Sector)	2	1.8
Employed (Private Sector)	37	32.7
Self Employed	67	59.3
Total	113	100.0

Table 4 shows the frequency and percentage of respondents based on their employment status. The majority of study participants are self-employed, totalling 67 individuals (59.3%), followed by those working in the

private sector, totalling 37 individuals (32.7%). Additionally, 7 individuals (6.2%) are unemployed and 2 individuals (1.8%) work in the public sector.

Inference
Significant Relationship between Spiritual Intelligence and Drug Abuse

Table 5: The correlation between Spiritual Intelligence and Drug Abuse

Variable	Drug Abuse
Spiritual Intelligence	. 003

K>.05

Table 5 shows the results of the correlation coefficient value (r = .003) and the probability value of .978, tested at a confidence level of .05 (k > .05). This analysis proves that spiritual intelligence does not lead respondents to experience drug abuse tendencies. Furthermore, the probability value indicates insignificance, as it is greater than the confidence level. Therefore, this hypothesis is rejected, and there is no relationship between spiritual intelligence and drug abuse (r = .003, k > .05).

The research findings indicate that there is no significant relationship between spiritual intelligence and drug abuse tendencies (r=.003, p > .05). These findings align with the research by Giannone and Kaplin (2020), which also showed no significant relationship between spiritual level and substance use. According to the researchers, this may be due to other factors being the main cause of drug abuse.

Similarly, the study by Esmaili Shahzade et al (2020) on patients undergoing maintenance treatment with methadone has shown that mental and spiritual health does not exhibit a significant relationship with any demographic variables or substance use. However, the majority of them have low and mild spiritual health.

However, these findings contradict or differ from the study by Armani Kian et al (2020), which states that there is a significant relationship between spiritual well-being variables and the tendency towards substance abuse and addiction potential. This implies that a lack of emphasis on the internal self, such as a spiritual fulfilment approach, could lead individuals to easily fall into addiction problems.

Significant Differences in Spirituality Intelligence Based on Age Factor

Table 6: ANOVA results for Spiritual Intelligence based on Age Factor

	JKD	Dk	MKD	F	Sig.
Between Groups	646.639	2	323.320	1.353	.263
In Groups	26276.954	110	238.881		
Total	26923.593	112			

k >.05

The results in Table 6 above show the difference in spiritual intelligence by age among the respondents. The results show that the statistical value of F obtained is 1.353 with the significant value obtained being .263. This value exceeded the significant level of .05. These results show that there is no difference between spiritual intelligence by age [F(2,110) =1.353, K >.05]. Thus, this hypothesis was rejected.

The results of this study indicate that there is no difference in spiritual intelligence across age groups [F (2,110) = 1.353, p > .05]. This suggests that individuals of various age levels, from early adulthood to middle adulthood, have similar levels of spirituality.

The study by Pragya, Shalini & Khwairakpam (2021) found supporting evidence that there is no significant difference in the components of spiritual intelligence among different age groups. The data collected indicates that all categories of spiritual intelligence were assessed across various age groups, with the highest level

(18.04) observed in the 65-70 age group, while the lowest level, which was very low to the point of having no respondents, was also noted.

The findings from Ghada Saad (2020) further support the researcher's conclusion that there is a significant difference in spiritual intelligence and specialization in the field of college, but there is no significant difference in age and gender.

The Significant Differences in Drug Abuse According to Age Groups.

Table 6: ANOVA results for Drug Abuse According to Age Groups

	JKD	dk	MKD	F	Sig.
Between Groups	47.938	2	23.969	.904	.408
In Groups	2916.703	110	26.515		
Total	2964.640	112			

K > .05

The results in Table 6 above indicate differences in drug abuse according to age groups among respondents. The findings show that the obtained F statistic value is .904 with a corresponding significance value of .408. This value exceeds the significance level of .05. These results suggest that there is no significant difference in drug abuse across age groups [F (2,110) = .904, p > .05]. Therefore, this hypothesis is rejected.

This result indicates that there is no difference in drug abuse across age groups [F (2,110) = .904, p > .05]. This means that drugs are taken regardless of whether one is young or old. Various age groups are exposed to drugs, whether they are employed, single, or married. They have the choice to either avoid or become entangled in the drug scene.

The findings from the study conducted by Roslee and Sharif (2005) revealed that there is no difference in knowledge among youth regarding drugs based on age. This indicates that currently, knowledge about drug abuse and types of drugs has widely expanded and can be obtained from various sources such as social media and search engines such as Google.

Conversely, based on the study by Wu and Balzer (2011), it was found that adults aged 50 to 64 have a higher incidence of drug and substance abuse compared to adults aged 65 and above. Researchers believe that this later adult stage represents a financially stable phase, and therefore, it is possible that during this stage, they may try something to find satisfaction and 'peace' for themselves.

5. Conclusion and Recommendations

Overall, this study examines the relationship between spiritual intelligence and drug abuse tendencies among residents of the Alor Gajah district rehabilitation centre in Melaka. Although the findings indicate no significant connection between spiritual aspects and drug abuse tendencies, initial steps should be taken, such as implementing religious programs according to each individual's faith. This can fill the internal void of an individual's soul, making them strong enough to resist and not fall into the trap of drugs, especially individuals aged 30 to 39, as data shows that this age group is the most prevalent in rehabilitation centres. Through the findings of this study, it is hoped that it can provide significant implications for various parties such as the police, parents, the community, and the AADK (National Anti-Drug Agency), especially in assisting the recovery process of those involved in drug abuse and reducing the addict statistics in Malaysia. This study can also assist NGOs or non-NGOs managing drug addicts in implementing a plan or module that encompasses spiritual aspects to address this issue.

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An Empirical Study on Customer Retention: A Case Study of Melaka Tourism Industry

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Abstract: Customer retention has been emphasized as a significant subject of study in the competitive landscape of tourism destinations. Despite the extensive study on customer retention, the reasons for repeat visits and the factors influencing respondents to become repeat visitors remain unclear. This research seeks to uncover characteristics that influence customer retention in the tourist business of Melaka. The survey indicated that respondents were inclined to return and endorse Melaka as a vacation location to others about their views on customer retention. Melaka is among the most frequented sites in Malaysia by both local and foreign tourists. It features a combination of heritage attractions that reflect its designation as a World Heritage Site by UNESCO. This study examines the determinants of customer retention in Melaka empirically. Questionnaires were employed to gather pertinent information from the tourists to know the factors affecting their repeat visitation to Melaka. The objective of the study is to examine the relationship between Destination Attributes, Motive, Cost, and Promotion Strategy related to customer retention in Melaka. The results indicate that Destination Attributes, Motive, and Cost have a positive relationship to customer retention meanwhile Promotion strategy was not related to customer retention empirically. The findings of this study suggested that "cost" was the primary factor influencing customer retention in Melaka. In conclusion, first-time and returning tourists possess distinct expectations yet exhibit comparable pleasure about the aspects of heritage attractions in the Heritage City of Melaka. Future researchers are advised to explore additional factors such as service quality and attraction management to increase the scope of the study. Expanding the sample size would also provide more robust insights, allowing for a broader generalization of findings. By refining the research design, future studies can contribute to a deeper understanding of customer retention in the tourism sector.

Keywords: *Customer retention, Tourism industry, Customer satisfaction, Customer loyalty & Revisit*

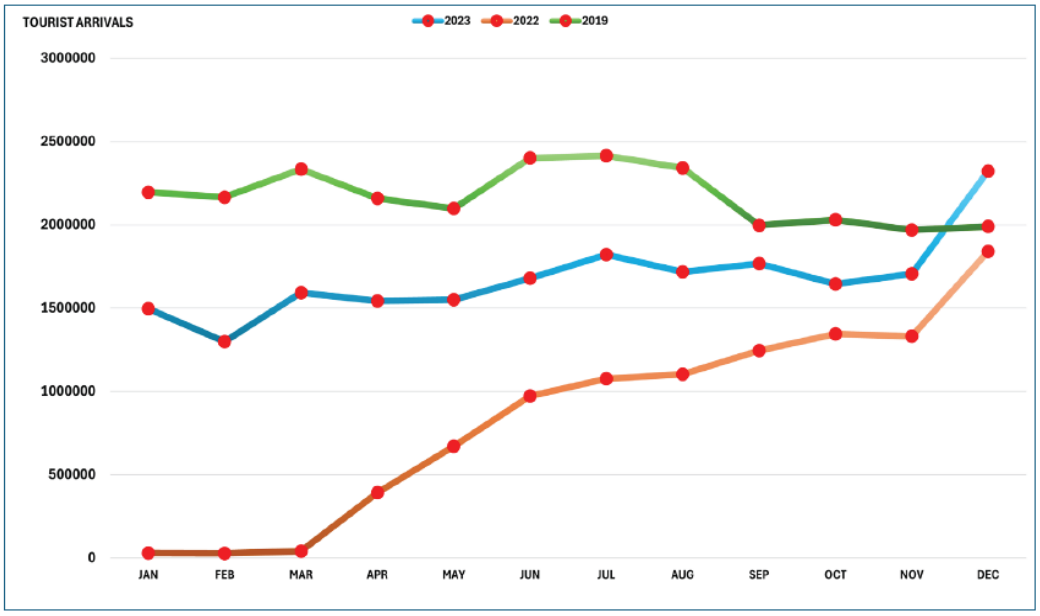
1. Introduction

Malaysia's domestic tourism performance in 2023 has been remarkably robust, with domestic visitor arrivals reaching 213.7 million, marking a 24.6 percent increase from 171.6 million in the previous year. Moreover, domestic tourism revenue saw a 32.5 percent surge, totaling RM84.9 billion, highlighting the positive effects of the full resumption of economic activities. The social and demographic profile of domestic tourists revealed that nine states in Malaysia including Johor, Melaka, Negeri Sembilan, Pahang, Pulau Pinang, Selangor, and the Federal Territories of Kuala Lumpur, Labuan, and Putrajaya, predominantly attracted visitors from households with monthly incomes between RM5,001 and RM10,000. (Department of Statistics Malaysia (DOSM), 2024). The tourism sector is among the greatest sectors globally. In the expanding domestic tourist industry, the creation of diverse new locations, characterized by superior infrastructure and aesthetic appeal, secures a competitive advantage through repeated visits.

The robust performance of the tourism sector has fueled economic growth and generated employment opportunities in various regions worldwide. Consequently, countries that rely on tourism should formulate policies that promote sustainable tourism growth by enhancing tourism products, and facilities, and developing human resources. (Zainal et al., 2021). As a result, many of these countries have adopted tourism as a strategy for the eradication of poverty. In numerous notable results, well-managed tourism enterprises have directly benefited the poor by providing employment opportunities (Breugel, 2013; Zaimah, Er, Sarmila, Habibah, Hamzah, Nurain & Nadiah, 2016).

The tourism industry in Melaka, a UNESCO World Heritage Site, is influenced by various factors that contribute to customer retention. Understanding these factors is essential for developing effective marketing strategies

and enhancing the overall tourist experience. Melaka recorded 5.12 million tourists arriving between January and April 2024, in conjunction with the Visit Melaka Year 2024 (BERNAMA, 2024a). At the end of the third quarter year 2024, the tourist arrival in Melaka reached nearly 10 million visitors surpassing the target of 8.7 million for Visit Melaka Year 2024 (BERNAMA, 2024b).



Source: Strategic Planning Division, Tourism Malaysia with the cooperation of the Immigration Department, Malaysia

Melaka has been selected as the research location owing to its status as a premier tourist destination in Malaysia. (Ferdous Alam *et al.*, 2015; Department of Statistics Malaysia (DOSM), 2024). Melaka encounters rivalry regarding visitor arrivals from other UNESCO-recognized places, including Myanmar, Cambodia, and Indonesia (Tung, Noor & Azila, 2016). The study primarily targets tourists in Melaka, since they significantly contribute to the overall number of tourist arrivals (Tourism Melaka, 2023).

This study focuses on the significance of various factors influencing tourist satisfaction and their likelihood of revisiting. It examines the impact of environmental quality, destination attractiveness, accessibility, and facilities on tourists' satisfaction and intentions to return. Melaka serves as the research setting, with visitors to this destination being selected as the respondents. The findings of this study give better knowledge about the determinants of customer retention in the tourism industry in Melaka. This study explores four constructs, i.e. destination attributes, motive, cost, and promotion strategy.

2. Literature Review

In this study, the researcher develops a theoretical framework based on an integrated independent construct, which provides a more suitable conceptual model for explaining customer retention. Various factors can influence customer retention in Melaka's tourism industry. To better understand these influencing factors and examine the determinants of customer retention, this study focuses on four key constructs: destination attributes, motives, costs, and promotional strategies.

From a marketing perspective, customer retention refers to maintaining long-term relationships with customers. Identifying customers who show signs of potentially ending their relationship with a company enables timely intervention to address their concerns and encourage continued loyalty (Peelen, 2005). Customer retention occurs when customers purchase a product or service again and again (Getz and Thomas, 2001). Developing customer retention strategies requires managers to set clear priorities and make informed

strategic decisions. Their role involves identifying key focus areas and implementing actions to enhance customer loyalty and satisfaction (Cravens et al., 1996), emphasizing that the organization's customer base represents a vital strategic resource (Schmittlein, 1995). According to Ramakrishnan (2006), customer retention is a critical factor in achieving strong business performance, as it directly influences profitability, operational efficiencies through economies of scale, and other elements essential for sustaining a competitive edge. Research suggests that the cost of acquiring a new customer is significantly higher—ranging from five to 25 times—than the cost of retaining an existing one. Additionally, increasing customer retention by just 5% can result in a profitability boost of 25% to 95%, as loyal customers tend to make repeat purchases and contribute to long-term revenue stability (Mittal & Lasser, 1998; Gallo, 2014) As businesses face rising competition and increasing costs to attract new customers, they are prioritizing customer retention as a key strategic focus. Effective retention efforts enable companies to meet their goals more efficiently while optimizing costs. The research underscores that acquiring a new customer can cost five to 25 times more than retaining an existing one, and even a modest 5% increase in retention rates can boost profits by 25% to 95% due to factors like repeat purchases and greater lifetime value (Gallo, 2014; Experian Annual Report, 2023). Stewart (1996) highlighted that heightened competition and the demand for sustained growth necessitate a strong emphasis on retaining existing customers as a primary objective for service managers. More recently, customer retention strategies have expanded to include leveraging data analytics, enhancing customer experiences, and fostering loyalty programs to create a more cost-effective and sustainable competitive advantage.

According to Jones et al. (2002), customers are more likely to continue using a service if they are happy with the quality of the items and services offered. Customer retention is one of the most essential criteria for increasing the competitiveness of the tourism industry. This needs to be taken seriously. According to Deng (2013), tourists who have a strong desire to visit again are more likely to share pleasant experiences with friends and family via word-of-mouth referrals. Retaining such clients is a cost-effective method for generating future market growth. Loyal consumers frequently promote the company on social media, boosting its reputation and recruiting new clients through positive recommendations (Santouridis & Trivellas, 2010; Gallo, 2014). This supports the dual benefits of keeping customers: it reduces acquisition expenses and creates natural marketing opportunities that expand the brand's audience.

Delivering high-quality services effectively and efficiently is a key factor in determining customer happiness, which in turn increases customer retention (Nischal, 2015). High-quality service delivery has a direct correlation with customer satisfaction (Cronin and Taylor, 1992). Therefore, to get a high level of client retention, service organizations must continue to provide exceptional service quality at every stage of customer interactions.

Destination Attributes

Conceptually, Destination qualities are best defined by the tourist's perceived appeal as a cognitive appraisal of the attitude structural model. Different visitors may have varying judgments of a destination's attractiveness due to differences in culture, age, experience, marital status, and financial position (Bowie and Chang, 2005). A destination characteristic has a significant impact on tourists' destination selection decisions. According to Klenosky (2002), a location's features become more visible and contribute to the destination when viewed by tourists, influencing their decision to go or avoid. Thus, the attractiveness of destination attributes could influence the tourist a destination selection. According to Ferdous et al. (2015), 15 important elements influence how satisfied travellers are with a place. These consist of distinctive architectural and artistic features, rich greenery, and the beauty of nature. Religious attractions, historical landmarks, and ancient ruins all contribute significantly to a destination's allure. Practical factors that were emphasized included leisure activities at night, good lodging, and the easy physical distance or travel time to the location. Overall happiness is also influenced by the accessibility of local tour guides, the kind demeanor of the locals, and necessary facilities like ATMs, banks, and utilities (water, electricity, and sewage). Reasonably priced hotels and transportation are also valued by tourists, making them essential components of a satisfying trip. This extensive collection of characteristics captures the variety of factors that influence how a visitor views and enjoys a place.

Mostafavi Shirazi and Mat Som (2010) have identified repeat visits as a sign of commitment to a tourist location that is significantly influenced by destination features. Furthermore, a variety of attractions has been identified in their study as one of the prerequisites for explaining return visits. The association between image and

destination loyalty has therefore been the subject of several research (Rittchainuwat et al., 2001; Ross 1993; Tasci and Gartner, 2007; Wang et al., 2011).

Motive

Physical and mental relaxation, trying new things, seeking excitement, visiting tourist sites, and enjoying natural resources were some of the reasons that Ahmad Puad et al. (2012) found to be the most common reasons or motives for intending to return to a place. Relaxation is one of the primary goals or motives that travellers hope to accomplish when they travel to another location for vacation (Ngoc and Trinh, 2015; Hassan and Shahnewaz, 2014; Al-Ababneh, 2013). Having a sense of belonging or being in the correct location might boost visitor satisfaction and encourage them to return (Yuksel et al., 2010). In addition, visitors can be pleased by thrilling experiences (Banki et al., 2014; Ragavan et al., 2014; Toyama and Yamada, 2012) since they can build good impact and memories (Huang et al., 2015; Asgari and Borzooei, 2013; Ballantyne et al., 2011), which will increase their contentment and want to return.

Cost

Costs, which may be thought of as a mix of money, time, and effort, are frequently practical considerations affecting a customer's decision to visit a site (Lu et al., 2011). Cost is a significant factor in determining perceived value, as noted by Deng (2013). Furthermore, pricing has a direct and indirect effect on consumer behavior, with opinions about price justice having a big impact on whether or not a customer plans to return. This, in turn, is essential for promoting client retention and loyalty. Destinations may improve perceived value and increase tourist attraction by addressing these cost-related variables.

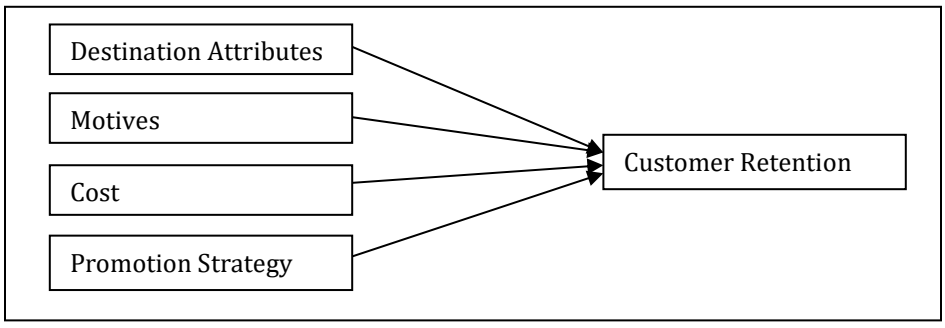
Promotion Strategy

To provide pertinent information to target visitors and encourage positive behaviors, such as making a reservation or paying for a service, promotions are an essential activity for organizations that run tourist attractions (Dick et al. 1996). Location marketers employ strategic promotion, similar to consumer product marketing, to craft persuasive messaging to encourage travellers to select their location (Chen & Sambath, 2013). Promotional tactics affect future traveller behaviors, such as referrals and return trips, after the original decision-making stage. It is frequently less expensive to retain existing tourists with focused marketing than to draw in new ones. Because they understand the long-term advantages of developing enduring connections with returning visitors, many attractions and destinations make repeat business a key component of their marketing campaigns.

Research Framework and Hypotheses Development

The discussion in this part addressed the research framework for this study. The elements being studied include destination attributes, motives, cost, and promotion strategy which are expected to have a favorable impact on customer retention. Thus, the study framework is displayed in Figure 1.

Figure 1: Research Framework



The following hypotheses were generated to guide this research:

H1: There is a positive relationship between destination attributes and customer retention
H2: There is a positive relationship between motives and customer retention

H3: There is a positive relationship between cost and customer retention
H4: There is a positive relationship between promotion strategy and customer retention

3. Research Methodology

This study uses a quantitative technique and a cross-sectional research design (Sekaran & Bougie, 2013). To gather information on the underlying constructs suggested in the theoretical model, a self-administered questionnaire has been used. Since the data was gathered from the chosen respondents at a single point in time, the cross-sectional method is employed (Creswell & Creswell, 2017). Using these techniques might result in high-quality, accurate, and less biased data. The convenience sampling method is used to gather information from the respondents. The unit of analysis is the individual tourist. The sample size was determined using guidelines from Krejecie and Morgan (1970) to ensure a representative subset of the population for analysis. According to Krejecie and Morgan's table, the appropriate sample size would be 384 respondents as it is enough to represent the whole population. Data for this study is collected from the visitors or tourists using a questionnaire. In this study, the researcher distributed the questionnaires directly to randomly selected respondents who came to visit the state of Melaka. The researcher distributed about 384 questionnaires to the area of visitors or tourist attraction areas such as Portuguese St Paul's Church, Jonker Walk, Stadthuys, and Christ Church.

Survey Instruments

The questionnaire consists of seven (7) sections. Section A contains demographic questions that relate to gender, age, marital status, annual income, education level, and occupation. Section B focused on the travel characteristics such as number of visits, purpose of visit, travel characteristics, source of information, type of accommodation, and tourism types. Further, Sections C, D, E, and F consist of items regarding destination attributes, motive, cost, and promotion strategy respectively. Finally, factors pertaining to the dependent variable—customer retention—are included in Section G. The respondents were asked to score the questions that look at the link between destination attribute, purpose, cost, and promotion approach to customer retention using a five-point Likert scale with the anchors of (1) "strongly disagree" to (5) "strongly agree." Using IBM SPSS software version 24, conventional multiple regression, univariate analysis, and descriptive statistics are the data analysis methods employed.

4. Results

Table 1: Reliability Analysis of Each Variable

Factors	No of Items	Cronbach's Alpha	Strength
Customer Retention	3	0.717	Acceptable
Destination Attributes	19	0.933	Excellent
Motive	18	0.933	Excellent
Cost	13	0.924	Excellent
Promotion Strategy	9	0.916	Excellent

Table 1 indicates the reliability of variables based on Cronbach's Alpha, assessing the strength of association for each. Destination attributes and motive both show a Cronbach's Alpha of 0.933, indicating excellent reliability, while cost has a value of 0.924 and promotion strategy 0.916, both also demonstrating excellent strength of association. The dependent variable, customer retention, has a Cronbach's Alpha of 0.717, reflecting an acceptable level of association. Overall, the results show that the variables—destination attributes, motive, cost, and promotion strategy—exhibit excellent reliability, and customer retention is reliable with an acceptable strength of association.

A demographic profile was collected to identify the characteristics of the respondents in terms of gender, age, marital status, annual income, education level, occupation, and nationality. The result shows the majority of the respondents were female about 57% and male, around 43%. As for the age group of tourists and visitors in Melaka shows that they were from the age group of 21 – 30 years old which is 60.9%, which is the largest number of respondents collected. Followed by 41 – 50 years old and below 20 years old about 14.8% and 12.2%

respectively. The fourth highest is 31 – 40 years old which is 9.9%. Meanwhile, the least is 51 – 60 years old which is 1.3%, and lastly above 60 years old which is 0.8%. The majority of the respondents were single and the data shows around 75.5% of them. The highest annual income group is below RM 20,000 which consists of 63.0%. The second highest is from the group of RM 20,001 to RM 40,000 and the third is from the group of RM 40,001 to RM 60,000 which consists of 14.1% and 11.50% respectively. The fourth is the group of RM 60,001 to RM 80,000 which is 6.5% meanwhile the fifth is the group of RM 80,001 to RM 100,000 which is 2.6%. There are 2.3% of the respondents that earned annual income more than RM 100,001 and that means that the lowest is from the group of above RM 100,001. As for the educational level of the respondents, the highest educational level of the respondents is from bachelor's degree which consists of 36.2% of them. Followed by the diploma and secondary which about 33.1% and 20.8% respectively. In addition, the respondents who hold a master's degree were about 5.7% and the least is the doctor of Philosophy (Ph.D.) around 2.3%. The private sector employees who came as tourists or visitors were about 32.3%, the next was self-employed tourists around 10.2%, and for the government employees and professionals were 7.8% and 6.0% respectively, and others were students about 38.3% of them. Furthermore, there were also business owners (2.3%), housewives (1.6%), and retirees (1.3%) were among the visitors who came to Melaka as the destination of their choice.

The result for the frequency implies the number of visits by the respondents that have come to Melaka showing that about 37.8% visits more than 6th times. Followed by the 2nd times visits about 18.2%. Furthermore, the frequency for the 3rd time is slightly lower than the 2nd time which consists of 17.2%. In addition, the 4th time and the 5th time-frequency are 10.9% and 8.3% respectively. This showed Melaka has many things to offer to tourists as they are willing to revisit many times. The purpose of the visits was leisure around 56.5%. Second, the respondents were coming to Melaka to visit a friend or relative which consists of 18.5%. Others (15.9%) show high frequency compared to the business which is about 9.1%. As for the source of information, the highest frequency number is coming from their previous trip(s) which is 27.9%—followed by the internet which is 24.2%. Next, is word of mouth, which is around 22.1%, and lastly from the travel agencies 9.9% respectively. Meanwhile, information from travel guidebooks and tourist information centers share the same result of 1.8%, and the lowest is brochures which is about 1%.

Table 2: Regression analysis

Variable	Std. β	t.	Sig.
Destination attributes	-.243	-3.263	.001
Motives	.231	2.832	.005
Cost	.313	4.503	.000
Promotion Strategy	.039	.569	.570
F-Stat		16.624 (0.00)	
R-squared		0.149	

Based on the findings, the R-square is 0.149. Therefore, the result shows that 14.9% of customer retention can be explained by independent variables (destination attributes, motive, costs, and promotion strategy). Meanwhile the rest 85.1% can be explained by other factors that are not included in this research. The result in the table also indicates f-stat is 16.624 (sig < 0.00). Based on the findings of the multiple regression analysis above, the highest Beta (β) value is cost with 0.313. That shows that cost (variable) is the most influential factor variable towards customer retention among all independent variables (destination attributes, motive, and promotion strategy) in this research.

5. Conclusion and Recommendations

This chapter provides a summary of key findings, conclusions, and recommendations from the research conducted on factors influencing customer retention in the tourism industry of Melaka. The study aimed to identify the influence of variables such as destination attributes, motive, cost, and promotion strategy on customer retention. Data were analyzed using Pearson's correlation and regression analysis to determine the relationship between these independent variables and the dependent variable (customer retention).

The findings revealed that cost had the strongest correlation with customer retention (0.348), followed by motive (0.271), while promotion strategy (0.259) and destination attributes (0.134) showed weaker

associations. However, multiple regression analysis indicated that all variables, including destination attributes, were significant in influencing customer retention. Although cost was the most significant factor, the study highlighted the importance of understanding visitor motives, as tourists tend to be selective about destinations that meet their personal or recreational goals.

Based on the results, the researcher recommends that local businesses in Melaka should focus on affordable pricing, ease of access, and cleanliness to maintain customer retention. Additionally, the rich diversity of local food in Melaka can be promoted internationally through food festivals. Improving the quality of tourist attractions, museums, and cultural spots with unique features and experiences and providing visually appealing settings for social media sharing could further enhance tourism.

Future researchers are advised to explore additional factors such as service quality and attraction management to increase the scope of the study. Expanding the sample size would also provide more robust insights, allowing for a broader generalization of findings. By refining the research design, future studies can contribute to a deeper understanding of customer retention in the tourism sector.

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Ontology of Protection Motivation Theory on Digital Risk–A Systematic Literature Review

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Abstract: The world of technology is advancing at a breakneck pace. There is no doubt that the convenience of this technology simplifies and expedites everything. The services made available with digitization technology are vast to start with, such as government services, online sales, e-learning, e-banking and many more. Among the areas of importance that shall be highlighted via this article would be any routines involving digital payments. The availability of digital payments facilitates the buying process, business transactions, and bill payments, among other things. Risks related to digital payment usage shall be accelerated if individuals lack experience, disclosure, and much more information related to the procedure of digital payments itself. Not to mention, the risks of cyber security hacking which also on the rise courtesy of the increasing usage of digitalized technology per se. As a result, risks that occur will negatively affect the public's perception, trust and confidence. Simultaneously, this will impact the economic environment, business, and society. As a result, precautionary behavior among customers shall be studied rather than technology acceptance. The protection motivation theory (PMT) shall be adopted for this study since it is well-suited to identifying users' adaptive behavior towards the usage of technology as well as determining whether or not they are aware of the risks associated with the relevant technology involved. The study uses the method of Systematic Literature Review using 11 extant studies to evaluate the protection behavior of digital payment risk.

Keywords: *Digital payment, cyber risk, protection behavior, protection motivation theory.*

1. Introduction

The breakneck pace in 1995 when the internet was introduced to the world and the surreal changes it represents influence all aspects of human life is profoundly astounding. The internet has undoubtedly grown staggeringly over the last several decades, causing crucial changes in society, business, and technological systems. Based on the Malaysia Cyber Security report, Internet users in 2020 will be 88.7%, up from 87.4% in 2018 (MKN, 2019). This shows the encouraging numbers who used the internet as a main matter in their daily activities.

The importance of digital payment cannot be denied especially to the government and financial institutions which will certainly have serious implications for the sustainability of the global economy holistically. As digital technology has been embraced in a significant manner nowadays, it certainly reflects significantly on the economic growth of all countries including Malaysia. The digital economy has boosted Malaysia's economy as emphasized by (Morgan, 2020), especially during the Malaysian Control Order (MCO) in Mac 2020 whereby increased the internet users for education, remote working situations, and related business activities. The services made available with digitization technology are government services, online sales, e-learning, and e-banking among many others. The availability of digital payments facilitates the selling and buying process, business transactions, and bill payments. It is reported that online purchases in 2020 are increasing due to the pandemic event where people take caution by staying at home and buying online (Khazanah Report, 2020). Hence, digital payments such as online banking and electronic wallets get more attention and popularity (Sartiges et al., 2020). Hence, the level of user acceptance of digital payment is increasing staggeringly and provides a tremendous effect on the digital section.

According to Rohiman (2020), any behavior change is highly influenced by the current surroundings. Digital payment is associated with both potential risks and opportunities. Wong & Mo (2019) posited that the technological advancement environment rather than user safety will influence an individual's behavior. The adaptive behavior of digital payment is highly influenced by their knowledge, beliefs and hold on. As more people know digital payment gives more advantages and relies on the security emphasized by the financial

providers thus they tend to make purchases and pay bills online. At the same time, digital risks such as internet fraud and data breaches are also on the rise.

It has to be mentioned that all digital operations involve a technological component (Jansen & van Schaik, 2018). Alsaad & Al-Okaily (2021) said that human decision-making is influenced by the dangers and threats they are aware of. In addition to that, about 49.8% of online users are feeling uncertain or insecure while using the internet (Malaysian Communications and Multimedia Commission, 2020). However, despite the feeling of insecurity, most people are unaware of the digital risk and potentially are at risk whilst using it (Medeiros et al., 2020) which led to the increasing number of using digital payments resulting in fraud risk (Afridi et al., 2021). Interestingly, according to Afridi et al., (2021), studies on the security of digital transactions are still scarce, especially during the pandemic season. This study therefore set out to assess the parameters involving the whole issues related to security and precaution from previous journals related to PMT towards digital risks.

2. Theoretical Background

Most of the studies concerning technology usage and technological advancement revolve around the acceptance of the related issues and adopting related theories such as UTAUT, TAM and DOI to gain a clearer version of it. However, it mostly provides variables concerning security and technology partially and it lacks parameters involving the whole issues related to security and precaution. According to Rogers (1975), most of the theories mentioned above had been focused on the technologies themselves rather than explaining the individual response towards the risk or threat associated with them (Alsaad & Al-Okaily, 2021). This paper is focused on the Protection motivation theory (PMT). PMT is frequently used to study health behavior. According to Westcott et al. (2017) "any hazard for which the individual can carry out an effective recommended reaction". The goal of PMT is to determine an individual's beliefs that drive them to decide in a stressful situation. A complete assessment of threats needs to be carried out to recognize the protection motivation action (i.e., whether people take protective activities against prospective hazards) including perceived severity (the feeling that a thing will have severe consequences).

Jansen & van Schaik (2018) highlighted that PMT is very useful in identifying the cognitive response that mediates the individual adaptive behavior toward the digital risk while they face their associated risk. In the same vein, in his study, (Kuhlicke et al., 2020) also note the same. Tsai et al. (2016) also stated that PMT is one of the most powerful explanatory theories for predicting protective action intention. PMT was established by having four (4) constructs perceived vulnerability, severity, response efficacy, response cost, and self-efficacy. These constructs have a possible effect on the intention to take adaptive behavior (van Bavel et al. 2019). The outcome shall analyze, evaluate, and recognize the protective measures taken to avoid the threat (Rogers, 1975, Afridi et al. 2021, Chen et al. 2017) vulnerability (perceived likelihood) and fear arousal (assessing how much fear has been evoked as a result of perceive (Wong & Mo, 2019). Perceived severity and vulnerability reflect on how serious an existing risk is perceived to be and perceptions of how susceptible an individual is to the existing threat respectively. In this study, the adoption of the four PMT elements namely the perceived severity is used to assess the feeling toward knowledge of digital payment benefits and risk related to the impact of digital payment service quality, while the vulnerability shall refer to the habit or activities with digital payment. Response efficacy on the other hand caters to an individual's belief that it a recommended in engaging certain behaviors that will effectively avert a threat. Self-efficacy is a person's expected capability to perform a recommended coping behavior (Yoon et al., 2012). Response cost refers to all perceived costs associated with protective measures or actions, including both monetary and non-monetary costs (e.g., effort, time, and inconvenience).

Research Questions

This digital payment literature is discussed to recognize the adaptive pre-caution behavior among the users. The analysis focused specifically on investigating, the following research questions; -

RQ1: What are the demographics of the present studies of adaptive behavior on digital payment adoption including the sample of the study, number of years and the variables?
RQ2: What is the construct used in the existing studies of adaptive behavior on digital payment risk?

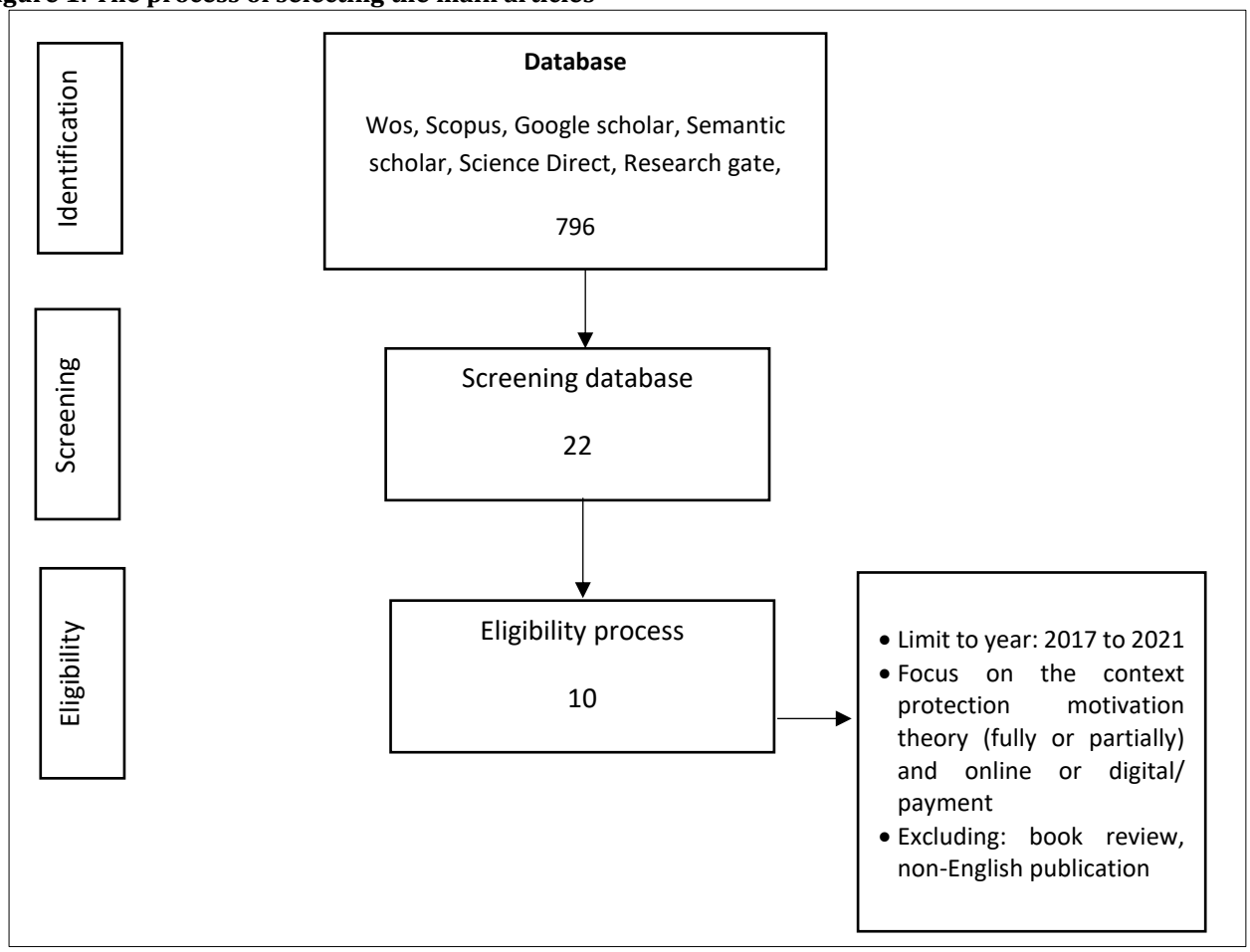
3. Research Methodology

This study used the Preferred Reporting Items for Systematic Reviews and Me-ta-Analyses (PRISMA) guidelines. There are a few stages or processes involved. This is to ensure all the findings are guided based on the limitation adjustment for the study. Identification, analysis and interpretation of all available evidence related to a specific research question can be verbalized via the Systematic Literature Review (SLR). To meet our research objectives and to address the research questions, we carried out an SLR to study the adaptive behavior toward digital payment risk. SLR is known to improve the likelihood of generating a clearer, more objective answer to research questions. As SLR considers study design (sampling strategy and data collection methods), data and analytical methods used, the reviews are effective at gauging the robustness of evidence. The use of the SLR procedure enabled the study to obtain an overall conclusion regarding the relationships between individual self-efficacy and IS security adoption.

This study is guided by the research question "What are the main demographics and constructs for adaptive precaution behavior among the users? The main purpose of this study is to explore the areas of past study in the context of protection motivation theory and digital payment or digitization. In the literature search, this study has used databases or digital libraries including Web of Science, Semantic Scholar, Google Scholar, Science Direct (Elsevier), DOAJ and Emerald Management Xtra. There are two (2) processes involved in the article selection in this study. The first process is the process of identifying the database to adaptive precaution behavior. The second is database screening and the eligibility of an article according to the main objective.

Among the keywords are: “Protection motivation theory” AND “Digital money” “Protection motivation theory” AND “Digital payment” Protection motivation theory” AND “online banking” “Protection” AND “electronic payment”, “precaution” AND “ Digital payment” The search of articles ranged in between year 2015to 2021, and the details of each article are shown in the Figure 1.

Figure 1: The process of selecting the main articles



The preliminary search yielded 668 articles that involve all the context and construct. Hence, this study inclusively limits by excluding all the studies that are not related to protection motivation, digital or online payment. After the process of screening and assessing the eligibility, about 22 articles were chosen to fit in.

The criteria for SLR were:
C1: The articles must be an empirical study that used protection motivation theory.
C2: The results of the studies related to digital payment risk.

The C1 will be manually scanned and only focus on an empirical study of the protection motivation theory on digital payment risk and exclude any articles out of context and construct. C2 meets all the criteria examined the adaptive behavior (actual behavior) will evaluate the sample, year, experience and age of the user.

Research Themes
The process of reviewing studies entails analyzing the content of each selected article. The content analysis can be classified into six broad dimensions: theoretical basis, number of years, variables, location, sociodemographic characteristics, methodological perspective, and result variables of interest. We conducted a statistical analysis using frequencies and percentages to combine and summarize the variables collected.

Distribution of Studies by Year
Table 1 shows the literature distribution by publication year of the studies. Data from the SLR shows the adaptive behavior of digital payment adoption literature from 2015 to 2021. Table 1 shows that from 2015 to 2022 research on the protection motivation theory and online payment had been focused. It showed a varied number of papers produced. For 2021, the number of studies is high compared to other years because the Coronavirus happened globally and the attention to contactless payment was high.

Table 1: Distribution studies by year.

Year	No. of studies
2015	1
2017	1
2018	2
2019	2
2020	1
2021	3
2022	1
TOTAL	**11**

Sampling
For the unit of analysis, the majority of the paper was researched on an individual basis with the varieties of numbers of sample size. Table 2 shows the sample size for ten papers while one conceptual study highlighted the importance of conducting a study on PMT and digital payment areas. Based on the pattern of the studies, it can be summarized that the fluctuation numbers in the sample size seemed to follow the population. It provided various values of results that match with the concurrent issues and problems.

Table 2: Sampling

Sample Size	No. of Studies
0-100	2
101-200	-
201-300	1
301-400	2
401-500	2
501-600	2
601-700	-
701-800	-
801-900	-
901-Above	1
TOTAL	10

Socio-demographic

Social demographics shall focus on gender, age, and level of education. The highest percentage that used digital payment are female due to their characteristic of shopping and buying a thing. Young people are potential digital adopters since they are more tech-savvy and comfortable with payment methods (Wei et al., 2021). While Baby boomers are inexperienced with digital payment (Fatokun et al., 2019). Despite having social media experience, they were hesitant to use it owing to a lack of expertise. However, Medeiros et al., (2020) & (Fatokun et al., 2019) Noted that young people are most susceptible to falling for cybercrime since they lack information inexperience and expertise.

Variables

The variables used that had been adopted under this study vary by their preference and setting. As below mentioned, the variables have been used to identify the individual's adaptive or maladaptive behavior toward digital payment risks and the country involved in the study using PMT and digital payment: -

Table 3: Variables

No.	Title	Construct				
		Vulnerabilities (V)	***Severity (S)***	***Response cost (RC)***	***Response Efficacy (RE)***	***Self-efficacy (SE)***
1.	Testing A Model of Precautionary Online Behaviour: The Case of Online Banking	/	/	/	/	/
2.	User Awareness Design for Electronic Money User Using Protection Motivation Theory and NIST 800-50 Framework	/	/	/	/	/
3.	Determining Factors and Impacts of The Intention to Adopt Mobile Banking App in Cameroon: Case of SARA By Afriland First Bank	/	/			
4.	Consumer Preference for Adopting Online Payment Methods-The Influencing Role of Consumer Trust, Self-Efficacy and Satisfaction Among Urban Indian Adults in Bengaluru					/
5.	Investigating Maturity of Mobile Commerce Adoption: A Qualitative Study					
6.	The Effects of Protection Motivation and Perceived Innovation Characteristics on Innovation Resistance and Innovation Acceptance in Internet Primary Bank Services	/	/			/
7.	Adoption of Online Retail Banking Practices as A Precautionary Protective Behavior During the Covid-19 Pandemic	/	/		/	
8	Security Behaviour of Mobile Financial Service Users					/
9.	Studying Safe Online Banking Behaviour: A Protection Motivation Theory Approach	/	/	/	/	/

10.	The Mediating Role of Perceived Security on The Relationship Between Internet Banking Users and Their Determinants	/	/		/	/
11.	Security Risk Tolerance in Mobile Payment: A Trade-off Framework	/		/		/
12.	Evaluating the sustainable use of mobile payment contactless technologies within and beyond the COVID-19 pandemic using a hybrid SEM-ANN approach	/	/	/	/	/

4. Discussion and Conclusion

SLR has been used to identify adaptive behavior by using the Protection Motivation theory (PMT). There are significant gaps in the prior literature that were identified during a systematic review of the selected studies. The gaps in knowledge related to the know-how and the accompanying areas for further research are highlighted in this research. The use of PMT and digital payment will show the right direction in the study. The results of the research according to the publication by year, the beginning of the publication in 2017 have been selected for this study. This is because digital technology first became popular in 2010, therefore, it is more appropriate to study the behavior years after that.

Studies involving the adaptation of behavior on digital payment risks have been conducted on different groups such as individuals, organizations, and across the country. This is to identify to what extent the adaptation of safe behaviors that use this PMT theory according to the group type can be valued by the factors that influence the behavior. Numerous studies use individuals in assessing safe adaptive behaviors. Based on the sample size, the target sample (respondents) varies from 300 - 1,200 respondents. The numbers normally influence the accuracy and reliability of the data.

PMT's construct is deemed to be fully or partially used which suits the aims of studies. A study used security rather than a main construct to measure the effect adoption of mobile commerce due to users' concerns about the safety of data transmission and storage, and privacy while transacting wireless. The additional constructs proposed such trust, perceived risk, perceived cost, fear, and emotion. As a result, the use of constructs is required based on the feasibility of the studies as well as the ability to measure the protection behavior of the users. Several studies indicate that a practitioner, financial provider, or fintech organization should prioritize security education and training, as well as increasing user perception of the use of digital payments. This is critical for gaining the trust and satisfaction of the user. Positive experience, awareness, and government support will influence adaptive behavior among the user (Ojo et al., 2022).

As for the conclusion, the study of PMT and digital payment risk as the basis underlying theory has been accelerated ever since the COVID-19 implication in early 2020. However, the issue of security in digital payment remains the strongest drawback and it could contribute to the declining number of users if this issue is not been addressed effectively in the future (Sahi et al., 2022). Therefore, reviewing the pattern of studies on behavior adaptation with related issues will help in understanding the individual perception and belief toward the usage of digital payment risks. For future research, researchers could review from different angles of digital payment such as the usage of debit or credit card or e-wallet. Most of the paper focused on quantitative research, thus it's suggested to have qualitative research on PMT and digital payment studies. In addition, the adoption on another theoretical basis shall also encouraged.

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