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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 a special issue in collaboration with Universiti Teknologi MARA, Malaysia and comprises papers of scholars from different universities of Malaysia, Sri Lanka Australia and Philippines. Lean Six-Sigma Approach for Sub-Contract Licensing and its Process Improvement, Determinants of Financial Inclusion, Economic Theory Assumption and Utility Maximization Model, Agripreneurial Intention among Young Business Graduates, Recent Development on Information System Capabilities and Sustainable Competitive Advantages, Development, validity, and reliability of a questionnaire on psychological factors of organic food consumption, Determinants among Muslim Contributors to Adopt Shariah Funds Decision, Factors Influencing Green Product Purchase Behavior among University Students, A Conceptual Paper on the Relationship between GHRM and Pro-Environmental Behavior, Factors Affecting Financial Well-being of Millennials, Investigating the Factors Influencing Students' Acceptance of Esports as a Career Choice, Effects of Foreign Labor on Labor Productivity, Effect of Social Media Influencers on Fashion Counterfeit Purchase Intention, An Application of Lean Principle in a Call Center, 4th Industry Revolution Digital Marketing Adoption Challenges in SMEs, Staff Burnout and Leadership Styles towards Job Performance during Critical Period, The utilization of CAMEL framework in analyzing the financial soundness of commercial banks, Disabled Entrepreneur Empowerment through Leadership Entrepreneurship Acceleration and Development League, Effect of Structural Break on Financial Development and Economic Growth Nexus, Breast Cancer Management Research Trends and The Work from Home Revolution are some of the major practices and concepts examined in these studies. All the submitted papers were first assessed by the committee of Universiti Teknologi MARA and editorial ream of the journal for relevance and originality of the work and then blindly peer-reviewed by the 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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Lean Six-Sigma Approach for Sub-Contract Licensing and its Process Improvement across the Manufacturing Supply Chain using GUT Priority Matrix

Veera Pandiyan Kaliani Sundram[1], Farha Ghapar[2], Mohd Firdaus Osman[2], Chew Li Lian[3], Azlina Muhammad[4*]
[1]Universiti Teknologi MARA, Faculty of Business and Management, Selangor, Malaysia
[2]Universiti Poly-Tech Malaysia, Kuala Lumpur, Malaysia
[3]Binary University, Binary Business School, Selangor, Malaysia
[5]Universiti Teknologi MARA and Universiti Teknologi Malaysia, Malaysia
veera692@uitm.edu.my, farha@kuptm.edu.my, mfirdaus@kuptm.edu.my, lilian@binary.edu.my, azlina59@uitm.edu.my*

Abstract: This study aims to examine how Lean Six Sigma as a quality management tool could enhance productivity in a manufacturing organization, ZITRON. In addition, this study also aims to show how DMAIC (defined, measured, analyzed, improved and controlled) is operationalized for overall process improvement in ZITRON manufacturing. Lean management takes care of waste across all processes and focuses on speed and time within a firm while Six Sigma is a strategy that focuses on eliminating defects, reducing costs and also reduces process variability. As such, this study utilizes the Lean Six-Sigma approach as a tool to ensure more efficiency is achieved in terms of source, make, delivery and process efficiency. Methodologically, there are five phases in the Lean Six Sigma strategies which are defined, measured, analyze, improve and controlled (DMAIC). The findings show that Lean Six Sigma can help to eliminate waste, and cost-reduction, and help eliminate variations in processes within the manufacturing. However, SIX SIGMA tools have been used to solve the problem which is a delay in processes in manufacturing. Based on this research paper, focuses on the manufacturing problem which is a delay in processes. By using Six Sigma, the problem that existed in manufacturing has been solved through process improvement. This work is originally following a self-method in which the data is collected by using observation techniques to identify the existing problem and solution-seeking within the manufacturing.

Keywords: *Lean Management, Six Sigma, Supply Chain Management, DMAIC, Quality Improvement*

1. Introduction

Lean Six Sigma is a tool and it is also known as a strategy that helps to reduce overruns and repair cycle time if the tool is effectively integrated within a firm. The first is lean management, which takes care of waste across all processes and focuses on speed and time within a firm while Six Sigma is a strategy that focuses on eliminating defects, reducing costs and also reduces process variability. Therefore, Lean Six Sigma is a tool or strategy that can improve flexibility, cost and process efficiency (Andersson et al., 2006). In addition, to become a successful firm in a market, the firm needs to have something more than a fast delivery while it is of high quality at a minimal cost (Andersson et al., 2006). For the firms to satisfy customer needs, it is a must for the firms to have a balanced combination of their firm's objectives as well as satisfying customer needs. Moreover, lean or lean manufacturing's main idea is also to minimize waste through efficient products that can be achieved with a comprehensive approach. For instance, eliminating excessive production and inventory, waiting and delays, over-processing, rework and corrections. Therefore, lean or lean manufacturing can minimize waste through efficient production.

Six Sigma is a methodology that originated in Motorola manufacturing and the manufacturing uses the DMAIC method which stands for Define, Measure, Analyze, Improve and Control for process improvement (Sundram et al., 2016). The DMAIC is the philosophy that allows manufacturing to make customer satisfaction its top priority. Six Sigma's main objective is to treat the existing deviations in the processes (Vatumalae et al, 2022). While the purpose of this study is to examine how Lean Six Sigma as a quality management tool could enhance productivity in ZITRON manufacturing. As a business process that allows companies to drastically improve their bottom line by designing and monitoring everyday business activities and also minimizing waste and resources (Andersson et al., 2006). Nowadays, most organizations have implemented and developed Six Sigma programs within their manufacturing and across their supply chain. (Andersson et al., 2006).

2. Literature Review and Theoretical Foundation

Lean Manufacturing: The main focus or components of lean manufacturing is the standardization methods of working, making all employees involved and committed, keeping a focus on what the customer wants, and delivering the right quality at the right time, at a minimum cost (Pascal, 2002). Lean also focus on the fundamental of customer value driven and is a continuous improvement process and this is what it makes appropriate for the distribution process. In this theoretical foundation, lean includes five phases (Venanzi, et al., 2017).

Lean manufacturing comes from the Toyota production system in the 80s. From the Toyota production system in the '80s, this methodology has two central points which are removing activities or processes that will not add any value and adding more value as much as possible. The main focus of lean manufacturing is to eliminate excessive waste such as waste of equipment, materials, parts, space and time. This is because lean manufacturing is intended to keep a minimum amount of usable materials, parts, space and time. For instance, the focus is to eliminate "anything other than the minimum amount of equipment, materials, parts, space and time which are essential to add value to the product (Sundram et al., 2016; Bakar et al., 2016). Lean also enables the improvement of the flow of every management-included process and therefore, automatically removes waste and unwanted activities (Venanzi et al., 2017). Moreover, the manufacturing of Toyota has been investing in people is more necessary rather than investing in a lot of big machinery. This is because the manufacturing of Toyota realized that it is more important to invest in people such as continuing employee training throughout the organization as a way to reduce cost and eliminate possible waste. As a result, this inspired and motivated more employees and also will be able to improve the process within the manufacturing. There are conceptual definitions and measurements of lean manufacturing in then factors quantified by the manufacturing of Toyota such as:

- Supplier feedback: Supplier feedback is critics, feedback performance of products and services received from the customers to the suppliers to ensure there is an effective transfer of information.
- Just-in-time (JIT) delivery by suppliers: Required quantity of products that needs to be delivered by the suppliers at a certain time when the customers needed them.
- Supplier development: Suppliers developed along with the manufacturer, to avoid a mismatch or inconsistency.
- Customer involvement: Customers are the main drivers of each and any business, and it is compulsory to meet their requirements and needs.
- Pull production: An initiation of need from the successor through Kanban should enable the flow of production from the predecessor.
- Continuous flow: Focusing on organizing a continuous flow only through the production and should be established in the factory.
- Setup time reduction: Least setup time is required to adapt resources for variations in products.
- Total productive: Prevent any failure of machines and equipment by doing periodical maintenance procedures.
- Statistical process control: The quality of products is important and no defect should be included in the process.
- Employee involvement: Employees with adequate motivation and entitlement can contribute to the firm.

Six Sigma: The Six Sigma was developed by Motorola in 1980 as one of their strategies to increase their profits and as well as improve the effectiveness and efficiency of operations (Meza & Jeong, 2013; Venanzi et al., 2017). Six Sigma is important, especially for operating systems. This is because it can direct the entire organization to the same end. For example, meeting the customer demand or requirements and aligning the process within the manufacturing (Bhargava, 2010). As a result, meeting the customer demand or requirements, aligning the process and client is a fundamental principle to achieve the objective of having better results in a continuous improvement cycle. Moreover, most of the manufacturers are looking at the SIX SIGMA principles to significantly improve operational efficiency and quality, while facilitating compliance (Abdullah & Rawan, 2018). Thus, in this research paper, there are three main focuses of definition ranges

which are error processes to customer satisfaction processes and outcomes and their focus is to improve operations. The neutral of this technique is to reduce costs (Abdullah & Rawan, 2018). In SIX-SIGMA, there are five phases of methodology which are defined, measured, analyze, improve and controlled (DMAIC). The tools of Define, Measure, Analyze, Improve and Control (DMAIC), there are commonly used such as SIPOC, boxplot, capability studies, statistical process control, measurement system analysis, cause and effect diagram, cause and effect analysis, data collection, hypothesis testing, regression, and brainstorming (Narula & Grove, 2015). In the Define, Measure, Analyze, Improve and Control (DMAIC), the phases were to use the tools to analyze and achieve better results. Table 1 displays the Define, Measure, Analyze, Improve and Control (DMAIC) descriptions.

Table 1: Descriptions of Define, Measure, Analyze, Improve and Control (DMAIC)

PHASE	DESCRIPTION
Define	During this defining phase, the main objective is to define and analyze processes or products that need to be improved. For example, defining the most suitable team members or certain members to work with the improvement, defining the customer needs and requirements, based on the internal and external customers and creating a map for the improvement of the process.
Measure	Next, in this measuring phase, the recognition of key factors is a must that key factors that have the most influence on the process. As a result, the deciding needs to be done because it is a need to decide on how to measure them. This is to ensure that the data can be collected to clarify the sources of process variation.
Analyze	Third, analyzing the factors that are necessary to be improved after that it can reduce the factors of process variation.
Improve	In this improvement phase, there is a need to design and also implement the best and most effective or suitable solution. For instance, Cost-benefit analyses should be used to identify the best solution to assure improvement.
Control	Last but not least, after the implementation was successful and also the improvement maintains over time, it is compulsory to use control tools such as a control plan for effective monitoring.

The Define, Measure, Analyze, Improve and Control (DMAIC) helps the firm to manage and lead projects which are supported by the leaders that can generate a safe and visible result for system improvement.

Lean Six Sigma: Lean Six Sigma is the latest generation that has been used by many firms regarding their business improvement methodology. Lean Six Sigma is based on the two concepts of lean manufacturing and SIX-SIGMA. Moreover, it is also based on two previous philosophies lean manufacturing and SIX SIGMA and adopts effective aspects of these respective approaches (Mousa, 2013). In addition, lean manufacturing and even SIX SIGMA techniques, it is a tool that has been used to get a better of the two methodologies which can increase speed and as well as increasing accuracy. Thus, it can help employees in organizations to understand the importance of Lean Six Sigma in determining most of the manufacturing projects (Sreedharan & Raju, 2016). However, there are some of the Lean Six-Sigma benefits as presented in Table 2.

Table 2: Benefits of Lean Six-Sigma Implementation

Lean Six-Sigma Benefits	Explanation
Reduce cost	It can reduce the cost of being a poor quality within the firm.
Quality of product	The quality of the product would be good quality after implementing Lean Six Sigma.
Eliminate waste	It eliminates waste within the processes such as removing non-value-adding steps (waste) in the critical business process.
Meet customer demands or requirements	Ensuring that the services or products the firm provides meet the customer's needs because the customer voice must always be the priority.

Lean Manufacturing and SIX-SIGMA have the same purpose to satisfy customer needs and demands while also improving critical business processes, nonetheless, lean manufacturing and SIX SIGMA each serve different areas of quality (Sreedharan & Raju, 2016). For instance, lean manufacturing's main purpose is to remove activities that do not add value to the business however, SIX SIGMA strives to make the business maximize its productive performance. The scope of Lean is to create a setting to improve the flow and eliminate waste which is approaching ensures smooth and uninterrupted product flow through the organization to produce only what is required by the customer (Anthony & Kumar, 2012). Nevertheless, the SIX SIGMA relies on the suitable selection of projects for both the organization and the customer. The integration of Lean and SIX SIGMA aims to focus on every opportunity for improvements. The Lean Six Sigma methodology is also preferred by many quality excellence methodologies, especially in the service industry (Sunder & Antony, 2018; Ali et al., 2020). There are interconnections between lean and SIX SIGMA as presented in Table 3.

Table 3: The Interconnections between Lean and SIX SIGMA

LEAN MANUFACTURING	SIX SIGMA
Lean manufacturing is wide and it compromises the whole thing.	SIX-SIGMA is complex and its main focus understands the details.
Improve capacity.	Improve the situation by using define, measure, analyze, improve and control (DMAIC) tools.
Focus on continuity and value chain.	Focus on controlling capability to meet customer needs and demands.

Therefore, Lean Six Sigma gives a lot of benefits to the firm or organization to make sure that the firm or organization can achieve its goals such as gaining customer loyalty and continuing to increase the effectiveness and efficiency of critical business processes. In addition, SIX SIGMA was more data-oriented and lean was more to applying principles that are based on knowledge and experience (Antony et al, 2017; Smetkowska & Mngalska, 2018).

3. Research Methodology

This study involves one particular manufacturing organization which is ZITRON, located in Kuala Lumpur, Malaysia. This research includes an improvement of performance regarding the firm or manufacturing management. This organization is selected based on the current prevailing issues of process inefficiency in the manufacturing setting, primarily focusing on the delay in processes. Therefore, to resolve this issue, a SIX SIGMA project was initiated. DMAIC methodological approach was carried out to further investigate the processing delay and its root cause. This quality management method, DMAIC investigates the issues from various perspectives across the manufacturing supply chain which includes supplier, input, process, output and customers (Selvaraju et al., 2019). The data is tabulated using the Suppliers, Inputs, Process, Outputs, and Customer (SIPOC) diagram to ensure that the problem can be recognized from certain processes in the manufacturing supply chain.

Subsequently, the **GUT priority matrix is used to rank the importance of issues and tasks to streamline company operations. T**he GUT priority matrix is used to complete tasks according to their importance. Gravity, Urgency, and Tendency, or GUT, are the characteristics that structure the sequence of work. In an organization, new demands are always arising**.** Although some businesses still function under this urgency-driven mentality, these conditions can result in poor performance and overworked employees. Having an order of priorities and working with a basis on the urgency and importance of actions is essential in establishing a task schedule without overloading employees. As such this study was purported to examine how Lean Six Sigma as a quality management tool could enhance productivity in ZITRON manufacturing. In addition, this study also aims to show how DMAIC (defined, measured, analyzed, improved and controlled) is operationalized for overall process improvement in ZITRON.

4. Results

According to the researcher's findings and discussion, for the researcher to have findings and discussion, the researchers conducted a SIX SIGMA methodology which has five different phases as mentioned above which

are Define, Measure, Analyze, Improve, and Control (DMAIC). The researcher will observe the manufacturing's main problem which is a delay in processes in ZITRON Manufacturing and try to implement the Define, Measure, Analyze, Improve and Control (DMAIC) as a tool to improve critical business processes such as eliminating a range of errors within the processes and also focus on improving the operating system to ensure that the ZITRON Manufacturing meets the customers or contractors needs and requirement regarding their contract license. Last but not least, the researcher will use the Suppliers, Inputs, Process, Outputs, and Customer (SIPOC) diagram as a tool to have an output of this research work.

a) Define Phase

Problem statement: Delay in processes through the online system in ZITRON Manufacturing. Based on the problem statement above which is a delay in processes through the online system of ZITRON Manufacturing. The manufacturing had an issue regarding the delay in making the contractor's license. For instance, approximately one to five months or more for the contractor's license to be fully completed. As a result, some of the contractors would be dissatisfied regarding the processes in ZITRON Manufacturing as they could not do any work without the license. In addition, although there is an online system, the contractor's application for their license would also take a few months. Table 4 is the Suppliers, Inputs, Process, Outputs and Customer (SIPOC) diagram.

Table 4: Suppliers, Inputs, Process, Outputs and Customer (SIPOC)

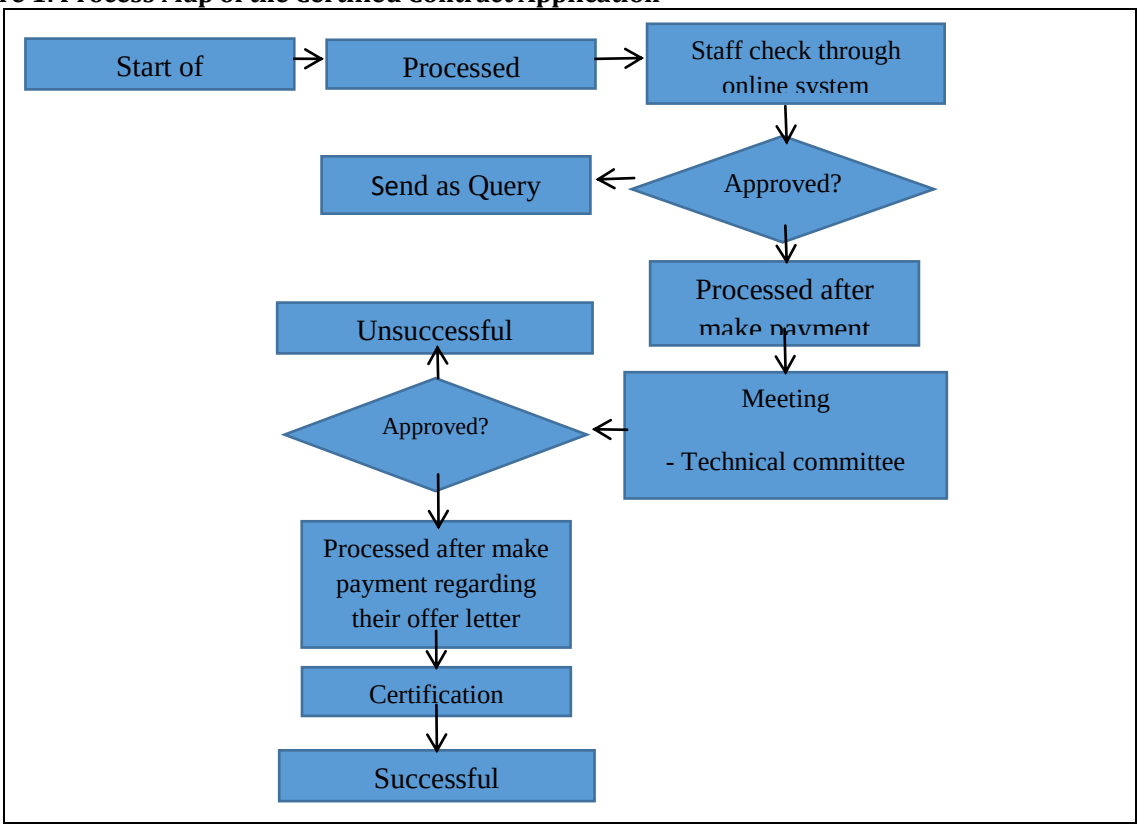
SUPPLIERS	INPUTS	PROCESSES	OUTPUTS	CUSTOMERS
Who supplies the process inputs?	What inputs are required?	What are the major steps in the process?	What are the process outputs?	Who receives the outputs?
Contractor/Customer	Application	Application through the online system	Availability of certified license	Contractor
Local Authority	Trading license	Checking the trading license topic	Availability of Certified license	Contractor
Customs Department [only for tax and licensed manufacturing warehouse]	Certificate of Customs	Checking the Grade and validity of Customs	Availability of certified license	Contractor
Bank and Other Financial Institutions	Bank Statement	Checking the latest and updated money amount	Availability of Certified license	Contractor
Ministry of International Trade and Industry	Bumiputra Status Certificate	Checking the validity of the certificate	Availability of certified license	Contractor
Energy Commission (Only for electrical works)	Competency Form	Checking the validity of the license	Availability of certified license	Contractor

b) Measure

After brainstorming regarding the problem statement and making a Suppliers, Inputs, Process, Outputs, and Customer (SIPOC) diagram to identify the potential root causes of delay in processes in ZITRON Manufacturing, it is a need for the researcher to establish the effect they have on the process and also how these kinds of things are to be measured. For instance, areas that needed to be measured as below;

- When does the contractor make their application 'specific date'?
- The waiting time for the contractor's application is to be discussed during the upper meeting.
- The waiting time for the contractor's application to get payment details regarding their certified license certificate.
- The waiting time for the contractor's Certified license certificate to successfully be made after payment (usually 30 to 45 days of working hours).

Figure 1: Process Map of the Certified Contract Application



c) Analyze

The next step was to analyze the factors that contributed to the delay in processes in ZITRON Manufacturing and find the areas that are needed to be addressed in the measure phase for the researcher to be able to find the root causes of delay in processes in ZITRON Manufacturing. After successfully analyzing and finding the problem of delay in processes in ZITRON Manufacturing, the next step was to design the best solution for the problem which solution should be effective and efficient. By using Lean and SIX SIGMA tools and methods the following changes needed to be implemented as below;

- Cooperate with the main customer to repair the system faulty regarding some of the contractor's application process malfunctions.
- Include more employees to process the certificate.
- Make ideas for business customers to make an online system payment on the certified website.
- Provide training to all of the employees and contractors.
- Meeting with the main committee twice a month for the contractor's new application.

d) Improve

After the implementation of the effective and efficient solution, the delay in processes was successfully reduced. The outcome of the delay in processes is very few after the implementation of the solution. Most of the applications through online systems are quite smooth and there is no fault regarding their application. Table 5 represents the GUT Priority Matrix for this improvement phase.

Table 5: The Gravity, Urgency and Tendency (GUT) Priority Matrix

Problem	Gravity	Urgency	Tendency	GxUxT	Rank
Process delay	5	4	4	80	2
A breach in the online system	3	2	3	18	4
Infrastructure problem	4	3	3	36	3
Lack of workforce	5	5	4	100	1
Lack of technology skills among USER	2	2	3	12	5

e) Control

Controlling the online system is a must such as cooperating with the Sabah State Computer Services Department to ensure that there is no fault regarding the contractor's certified application. To improve lead times, increasing staff in ZITRON Manufacturing helps to solve the root cause of delays in processes in manufacturing.

Table 6: Process Step and Action Plan in the Control Phase

Process Step	Control Item (Input/ Output)	Control Methods	Responsibility	Specification Limits/ Requirements	Response Plan
Checking documents through the online system	Input - system fully functional	Metric	Information Technology	100%	Train employees on how to check documents.
The Administrative Officer approves an application through the online system	Input - system fully functional	Metric	Information Technology	Variable - dependent on the number of applications	The Administrative Officer must accept approval within a short time.
Sub-Contractor applications going through the meeting.	Output - List of successful customers' online application	Audit	Contractor	Variable - dependent on the number of applications	Meeting twice a month with the committees.
The Administrative Officer issues an offer letter through the online system	Input - system fully functional	Metric	Information Technology	Variable - dependent on the number of applications	The Administrative Officer must accept approval within a short time.
Processing certificate	Output - Documentation of each customer's certificate	Audit	Employees	100%	Adding more staff in charge of certificate production.

5. Conclusion

ZITRON Manufacturing is a focal firm (main) manufacturer in Kuala Lumpur, Malaysia. This manufacturer provides a valid and approved license to all of the subcontractors so they can do their work as manufacturing contractors. Without the license which is also known as the Certified Contract Licensing, the contractor cannot execute any work. This is because having a knowledgeable and trustworthy contractor to do the work

is important. This process helped countless contractors to enable them to apply for a contractor license through the seamless application process. Since the facoal firm manufacturer, ZITRON is integrated well with other parties in the manufacturing supply chain, it took quite a long time for the contractor to complete the required documents required by the manufacturer. This study discovered how the Lean Six Sigma strategy could improve flexibility, cost-efficiency, and agility within the processes in manufacturing. Nevertheless, in this research paper, there is only Six Sigma as a tool to make an analysis regarding the delay in processes in Unit Certified and use the Six Sigma tool to solve the problem. This is because the SIX SIGMA and DMAIC can resolve delay in the certification process. For instance, the contractor-certified license application through the online system is very slow and took about three to five months until they can get their license. This will probably ease the contractor's business and also ease the contractor to use the certified license to work. However, the SIX SIGMA tools needed to be implemented extra carefully because it is also involving various parties across the manufacturing supply chain. For example, from the define phase, the researcher needs to do a Suppliers, Inputs, Process, Outputs, and Customer (SIPOC) diagram to ensure that the problem can be recognized from certain processes in the business. From this, it could help the researcher to obtain data easily from the Suppliers, Inputs, Processes, Outputs, and Customer (SIPOC) diagram. Last but not least, each of the Define, Measure, Analyze, Improve and Control (DMAIC) phases are necessary to do by the researcher to achieve an effective and efficient output.

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Determinants of Financial Inclusion in OIC Countries

Nur Diniey Ezzati Zainorin[1], Syuhada Jalaludin[2], Nor Farradila Abdul Aziz[3]* Balachandran Balasingam[4]
[1]Merison Marketing Sdn Bhd, Bandar Baru Seri Alam, Masai Johor Darul Takzim, Malaysia
[2]Arshad Ayub Graduate Business School, Universiti Teknologi Mara Shah Alam, Selangor Darul Ehsan
[3]Faculty of Business and Management, Universiti Teknologi Mara Puncak Alam, Selangor Darul Ehsan
[4]Department of Economics and Finance, La Trobe Business School, La Trobe University, Australia
dinieyezzati@gmail.com, syuhadajalaludin18@gmail.com, norfa503@uitm.edu.my,
b.balachandran@latrobe.edu.au

Abstract: The OIC countries have endorsed financial inclusion as part of their initiatives to uphold the interests of the Muslim world. However, they experience the greatest levels of financial system exclusion, as they are found to have a lower percentage of access to formal bank accounts. Therefore, this study aims to investigate the determinants of financial inclusion in OIC nations. Macroeconomic factors (GDP and the money supply) and bank variables (non-performing loans and the number of internet users) covering the year 2011 to 2020 from 40 OIC nations are included in this paper. Using panel data, the results indicate that both bank variables are positively significant in determining financial inclusion for OIC countries. No significant relationship is found between studied macroeconomic factors and financial inclusion.

Keywords: *Financial Inclusion, OIC Countries, GDP, Money Supply, Internet Users, Non-Performing Loans.*

1. Introduction and Background

Financial inclusion is a process to ensure the individuals, households and businesses in a community have adequate access to formal financial services and products such as transactions, credit cards, payments, saving and insurance and that these are delivered in a sustainable way (Singh & Singh Kondan, 2011). Financial inclusion aims to guarantee that all adults in a community have easy access to an affordable investment instrument (David, Oluseyi, Emmanuel, 2018). A well-developed banking industry, especially one that is adequately linked to banking services, is critical for the whole economy because it contributes to the progression of an investment environment by providing credit, encourages even low-income people to save in financial firms for long-term higher income, and contributes to the generation of people's potential by letting them successfully manage their monies for their future (Datta & Singh, 2019).

OIC nations have agreed to include financial inclusion in their efforts to defend the interests of the Muslim world. To improve consumer rights, financial literacy, and access to financial services, the OIC has resolved to establish a joint committee on financial inclusion. The OIC members also support the alignment of financial operations with international regulatory principles and standards, which would enhance the role and impact of economic growth (Securities Commission & The World Bank Group, 2020). However, they did not show a high commitment toward transformation that provides access to financial services to the public. Furthermore, the majority of research (see David et al., 2018; Abel et al., 2018; Evans, 2016) employs a sample from low-income regions like Nigeria, Africa, and Zimbabwe, and there are not many studies about the OIC nations and financial inclusion.

Many individuals in nations with low levels of financial inclusion, on the other hand, are unable to resolve their financial problems owing to the absence of access to finance. In the ten years from 2011 to 2021, account ownership of financial inclusion grew by 50% globally, reaching 76% of the adult population. The average account ownership rate in developing economies climbed by 8 percentage points, from 63 to 71 percent, between 2017 and 2021 (Asli, Leora, Dorethe and Saniya, 2022). Despite this progress, however, over 1.7 billion people worldwide are projected to be unbanked and disallowed access to financial services, implying that over 30% of the worldwide population still face financially disadvantaged and have difficulties in their financial stabilities (Demirgüç-Kunt et al., 2017). As a result, the sample of commercial bank depositors is utilized as a measure of financial inclusion to determine the effect of other independent variables on financial inclusion.

Furthermore, according to Global Findex 2018[1], member of OIC countries is found to have a lower percentage of access to formal bank accounts, which is 46.3%, compared to the other non-OIC developing countries which is 71.55%. Most of the OIC countries appealed to pursue measures that would increase financial inclusion, however, they did not show a high commitment toward transformation that provide access to financial services to the public. OIC member countries are considered to be the countries with the greatest level of financial system exclusion. The problem becomes more difficult by fact that, on average, just 15.66% of individuals in low-income OIC countries have a bank account with a recognized financial institution (Business et al., 2021). The majority of OIC countries lack awareness of the development of financial inclusion. Hence, that could be the reason why OIC is picked as a population, besides as a way to add value to the current findings. Therefore, this paper focuses on examining the determinants which include macroeconomic variables and bank variables factors that might influence financial inclusion in OIC countries within 10 years period.

The remainder of the paper is structured as follows: in Section 2, the literature review on past empirical studies in the area of financial inclusion is presented, followed by Section 3 on the research design, data set and methodology. In Section 4, we present the result and findings and finally, in Section 5, we summarize the main conclusion.

2. Empirical Studies

Relationship between macroeconomic variables and financial inclusions

Mishra (2012) posits that GDP per capita is a metric of a nation's wealth and prosperity per citizen; it serves as a leading indicator of economic growth. Therefore, an increase in the GDP per capita should theoretically constitute a gain in the quality of life for the citizens of the chosen nations, and may therefore be used as a gauge of economic growth. Furthermore, Nizam et al. (2020) argue that one of the main forces behind the economic expansion is the availability and use of financial services.

Asare Vitenu-Sackey & Hongli (2020) show that GDP per capita has a significant effect on alleviating poverty because economic growth plays a vital role in poverty alleviation. The outcome in line with Anarfo et al (2019) implies that financial inclusion is improved by increasing financial sector development and economic growth. Chikalipah (2017) discovers that the amount of income measured by GDP per capita is a major element in determining a country's degree of financial inclusion.

However, few research papers (see Eldomiaty et al., 2020; Oyelami et al., 2019) revealed the negative relationship between GDP and financial inclusion stating that forward-thinking customers expect an increase in their future incomes and save against it. Based on the literature stated above, hence, the following hypothesis is tested:

H_0: GDP is not significant in determining the financial inclusion in OIC countries
H_A: GDP is positively significant in determining the financial inclusion in OIC countries

On the other hand, the money supply is approximately made up of cash and deposits that may be used almost as rapidly as cash. Evans (2016) posits that money supply has a positive impact on financial inclusion. David et al. (2018) argue that the positive correlations between these variables, imply that broad money increases financial inclusion in the country as the quantity of funds in existence continues to grow.

For some reason, money supply could also be negative towards financial inclusion, due to the fact that Nigeria and African countries that are not OIC members were included in the past research. According to Mujahidin (2019), the money supply in an economy is impacted by monetary policy, which in turn affects interest rates and inflation. He posits monetary policy is the action of the government to influence the macro situation implemented through the money market. This is a general definition of monetary policy, more specifically; monetary policy can be interpreted as the macro action of the government where it is referred to the central bank by influencing the process of money creation. Different countries also have different approaches to

[1] https://www.worldbank.org/en/publication/globalfindex

monetary policy, and there is also a viewpoint on differences between monetary policy in conventional and Islamic economics in research (Mujahidin, 2019). Based on the literature stated above, hence, the following hypothesis is tested:

H_0: There is no significant relationship between money supply is not significant and financial inclusion in OIC countries
H_A: There is a positive and significant relationship between money supply is not significant and financial inclusion in OIC countries

Relationship between bank variables and financial inclusions
According to Anarfo et al. (2020), the non-performing loans (NPLs) held by banks are also a major factor in determining the financial inclusion index. An increase in NPLs diminishes financial inclusion because when an institution is in trouble, it becomes more conservative and eliminates some disadvantaged or underprivileged populations (Wang and Guan, 2017).

In contrast to earlier studies, Ahmed and Shehzadi (2022) discovers a positive relationship between NPLs and financial inclusion which is supported by Musau et al. (2018) who find that the rise in the proportion of banked people as a result of financial inclusion may lead to an increase in the number of risky clients in the banking system. These consumers also have a bad record of default payments on their loans, which eventually increases their exposure to credit risk. Based on the literature stated above, hence, the following hypothesis is tested:

H_0: Non-performing loans are significant in determining financial inclusion for OIC countries
H_A: Non-performing Loans are not significant in determining financial inclusion in OIC countries

On the other hand, Sarma and Pais (2008) suggest that physical infrastructure for connectivity and information is also significantly associated with financial including. Evans (2016) discovers the relationship between internet users and financial inclusion where the internet has increased the opportunities for credit disbursement in Africa's isolated places. It has enabled the provision of home banking services to illiterate clients who manage their savings via mobile phones. The significant results supported by Ofosu-Mensah Ababio et al. (2021) demonstrate how mobile phones are becoming increasingly important in boosting financial inclusion in frontier nations. This finding is in line with

Telephone and internet subscriptions have a beneficial influence on financial inclusion (Sarma and Pais, 2008; David et al., 2018). The more individuals use the Internet, the more financial services are given to a wider number of residents in rural regions (David et al., 2018) which will subsequently increase the level of financial inclusion (Evans, 2018). Based on the literature stated above, hence, the following hypothesis is tested:

H_0: The number of internet users is not significant in determining financial inclusion for OIC countries
H_A: The number of internet users is positively significant in determining financial inclusion for OIC countries

3. Research Design

This paper uses secondary data associated with the economic indicators over ten (10) years, from 2011 to 2020. The data is taken from the World Bank Data official website. GDP, money supply, non-performing loans, and number of internet users, in OIC nations are the variables chosen to investigate this study. There are forty (40) OIC countries are chosen in the study: Afghanistan, Albania, Azerbaijan, Bangladesh, Benin, Brunei, Burkina Faso, Cameroon, Chad, Comoros, Djibouti, Egypt, Gabon, Guinea, Guinea-Bissau, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Maldives, Mali, Mauritania, Niger, Nigeria, Pakistan, Qatar, Saudi Arabia, Senegal,

Sierra Leone, Suriname, Tajikistan, Togo, Tunisia, Turkey, Uganda, the United Arab Emirates, Uzbekistan, West Bank and Yemen.

The data used for this study is explained in the following table:

Table 1: The Variables Information

Types of data	Variables	Proxy	References
Dependent variables	Financial Inclusion	Number of depositors with commercial banks per 1,000 adults	(Agyemang-Badu et al., 2018; Anarfo et al., 2019, 2020; David et al., 2018; Evans, 2016, 2018; Gebregziabher Gebrehiwot & Makina, 2019; Oyelami et al., 2019)
Independent variables	GDP	Growth Annual Percentage (%)	(Anarfo et al., 2019; Asare Vitenu-Sackey & Hongli, 2020; Chikalipah, 2017; David et al., 2018; Eldomiaty et al., 2020; Evans, 2016; Gebregziabher Gebrehiwot & Makina, 2019; Gopalan & Rajan, 2018; Hajilee et al., 2017; Owen & Pereira, 2018; Oyelami et al., 2019; Sarma & Pais, 2008; Senou et al., 2019; Wang & Guan, 2017)
	Money supply	Growth Annual Percentage (%)	(David et al., 2018; Evans, 2016)
	Non-performing loans	Bank Non-Performing Loan to Total Gross Loan (%)	(Anarfo et al., 2020; Sarma & Pais, 2008; Ahmed & Shehzadi, 2022; Musau et al., 2018)
	Number of Internet users	Percentage (%) of the population	(David et al., 2018; Evans, 2016, 2018; Ofosu-Mensah Ababio et al., 2021; Sarma & Pais, 2008; Senou et al., 2019)

Table 3 shows that the dependent variable which is financial inclusion with a proxy of the number of depositors with commercial banks per 1,000 adults and is explained by the total number of resident nonfinancial corporations (public and private) and families with deposit accounts at commercial banks and other resident banks acting as commercial banks. Due to a lack of information on account holders, figures for a number of nations only contain the total number of deposit accounts. Checking, savings, and time deposits make up the three primary types of deposits.

Meanwhile, the first independent variable which is GDP can be explained by the GDP annual percentage growth rate at market prices based on constant local currency and total gross value added by all resident producers in the economy plus any applicable product taxes and less any applicable subsidies not factored into the value of the items. It is estimated without taking into account the deterioration and depletion of natural resources or the depreciation of manufactured assets. The expected coefficient for this variable has a significant effect on financial inclusion in OIC countries.

As for the money supply, the proxy can be explained by the total amount of money held outside of banks, demand deposits other than federal government ones, time, savings, and foreign currency deposits made by non-federal residents, bank and traveller's checks, as well as other securities like Certificates of Deposit and Commercial Paper over a specific time period. This variable is expected to have a significant effect on financial inclusion in OIC countries.

Other than that, the NPL can be measured by the portfolio's entire value divided by the amount of non-performing loans (including nonperforming loans before the deduction of specific loan-loss provisions).

Included in the loan amount from the balance sheet that is designated as a nonperforming loan is the gross value of the loan. The expected coefficient for this variable has an insignificant effect on financial inclusion in OIC countries.

For the last independent variable which is the number of internet users, it can be explained by all users of the

internet during the previous three months (from every location), as well as all types of internet-accessible devices such as computers, mobile phones, personal digital assistants, gaming consoles, and digital TVs. This variable is expected to have a significant effect on financial inclusion in OIC countries.

4. Results

Descriptive Analysis

This paper uses secondary data associated with the economic indicators for ten (10) years, from 2011 to 2020. The data is taken from the World Bank Data official website. GDP, money supply, non-performing loans, and number of internet users, in OIC nations are among the variables chosen to investigate this study. There are forty (40) OIC countries are chosen in the study: Afghanistan, Albania, Azerbaijan, Bangladesh, Benin, Brunei, Burkina Faso, Cameroon, Chad, Comoros, Djibouti, Egypt, Gabon, Guinea, Guinea-Bissau, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Maldives, Mali, Mauritania, Niger, Nigeria, Pakistan, Qatar, Saudi Arabia, Senegal, Sierra Leone, Suriname, Tajikistan, Togo, Tunisia, Turkey, Uganda, and the United Arab Emirates, Uzbekistan, West Bank and Yemen.

Table 2: Summary of the Descriptive Analysis

Variable	Financial Inclusion (Depositors)	GDP (%)	Money supply (%)	NPL (%)	Number of Internet users (%)
Mean	514.1305	3.2300	11.3391	8.3358	37.3666
Minimum	24.6100	-62.0759	-17.4101	0.7092	0.9000
Median	370.8400	3.9555	10.3930	6.0269	26.7184
Maximum	1901.5000	123.1396	62.0543	47.5959	100.0000
Standard Deviation	429.9833	8.8671	9.3640	7.1966	29.2653
Skewness	0.8116	4.6243	1.1693	1.8350	0.5764
Kurtosis	2.7412	95.2320	6.8650	7.4713	2.0707

In Table 1, financial inclusion has a score that ranges from 24.61 depositors to 1901.5 depositors with a mean of 514.1305 depositors and a median of 370.84 depositors. GDP variables range from -62.0759% to 123.1396%, with a high of 123.1396% and a low of -62.0759. It has a score of 3.23% on average and 3.9555 on the median. On the other hand, money supply variables have a maximum score of 62.0543% and the lowest value of -17.4101%. It has an average of 11.3391% and a median of 10.3930%. The NPL variable has a minimum score of 0.7092% and a maximum value of 47.5959%, with an average of 8.3358% and a median of 6.0269%. The last variable, which is the number of internet users, has a score that ranges from 0.9% to 100%, with a mean of 37.36662% and a median of 26.7184%.

Correlation Analysis

Table 3: Summary of the Correlation Analysis

Variable	Financial inclusion	GDP	Money supply	NPL	Internet
Financial Inclusion	1.0000				
GDP	-0.0596 (0.2715)	1.0000			
Money supply	-0.0154 (0.7811)	0.0156 (0.7632)	1.0000		
NPL	-0.3322* (0.0000)	-0.0277 (0.6755)	0.0398 (0.5578)	1.0000	
Internet	0.7448* (0.0000)	-0.1574* (0.0021)	-0.2170* (0.0000)	-0.3926* (0.0000)	1.0000

Note: * Significant at 1%

Financial inclusion and NPL have a correlation of -0.3322, showing that negatively affect each other. As NPL increases, financial inclusion will decrease. The relationship is significant at the 1% level, concluding that NPL and financial inclusion have a negative relationship. According to Anarfo et al. (2020), the NPLs have a detrimental effect on financial inclusion because problematic institutions tend to become more conservative.

Next, the correlation between financial inclusion and the internet is 0.7448, indicating a strong positive relationship. Looking at the internet's p-value, 0.0000, it shows a significant relationship between these variables at a 1% level. This finding suggests that as the number of internet users increases, and financial inclusion level in OIC will increase too. These results are supported by David et al. (2018) which indicate as more individuals use the Internet, then more financial services are offered to a wider number of residents.

Empirical Results

Table 4: Regression analysis on determinants of financial inclusions in OIC countries

Regressors	Independent variable: Financial Inclusion
GDP	-0.0042
	(0.5380)
Money Supply	-0.0018
	(0.601)
NPL	0.01818*
	(0.080)
Internet Users	0.0127***
	(0.008)
Number of Observation	164
P-value of F-Test	0.0059
R-squared	0.3578

Note:
P-values are presented in the parentheses
*,**,*** indicates significance at 1%, 5% and 10% respectively.

Financial inclusion *i,t* = 5.522692 + 0.0041764 GDP - 0.0017572 MS + 0.0181787 NPL + 0.0127394 Int

This study is using Fixed Effect Model (FEM) analysis as compared to Pooled Ordinary Least Squares (POLS) and Random Effect Model (REM) as the study utilizes the F-Chow test to analyze whether the research observation is appropriate for POLS or FEM. The result shows that the p-value is significant at a 10% level with a value of 0.0000, providing the FEM is preferable to POLS for this study. There are heteroscedasticity and serial correlation issues in this study. So, it needs to use a remedy of cluster regression. The result in Table 3 shows that the model is significant at a 5% level with an F-statistic value equal to 0.0059. The R-squared is 35.78% which means the chosen independent variables are explained 35.78% variability of financial inclusion in OIC countries. Another 64.22% might be from another factor that is not included in this study.

The coefficient for GDP is negatively correlated, when the GDP increase by 1%, the financial inclusion will decrease by 0.4177%. This result supports the empirical findings by Eldomiaty et al. (2020) where the forward-looking consumers expect an increase in their future income, they might not see the benefit and advantage of conserving money in the current situation because they believe their income will be sufficient to support them in their future.

The relationship between financial inclusion and money supply is negative with a coefficient value of -0.0018, however, this relationship is not significant in determining the level of financial inclusion in OIC countries. In addition, the findings in Table 3 also show a positive and significant relationship between NPL and financial inclusion. In order words, the result suggests that financial inclusion will grow by 0.01818% when NPL increase by 1%. The findings supported by Musau et al. (2018) which the findings show the increasing result of financial inclusion may lead to an increase in the number of risky clients in the banking system. Additionally, these consumers default on their loans, which ultimately increases the exposure to credit risk

(Ahmed & Shehzadi, 2022).

The coefficient for internet users is 0.0127 and positively significant at the 1% level. This indicates that for every 1% increase in internet users, financial inclusion will rise by 0.0127%. A significant positive relationship is revealed by the p-value of 0.008 supported by previous research (David et al., 2018; Evans, 2016, 2018; Ofosu-Mensah Ababio et al., 2021) which stated that the importance of connectivity and knowledge in this activity. Therefore, the results imply that current technology advancements and financial innovations are important in improving the financial inclusion level in the banking industry (Ofosu-Mensah Ababio et al., 2021). It is also important to note that the influence of the internet's capabilities reaches beyond low-income nations to middle- and high-income nations as well. Since our findings showed that the Internet has a significant influence on financial inclusion regardless of the country's income, it follows that the Internet has a strong, significant impact on financial inclusion in OIC countries.

Thus, this study concludes that the NPL and the internet significantly impact financial inclusion while GDP and money supply, have no significant impact on financial inclusion.

5. Conclusion

Based on the findings obtained in this study, we reject the hypothesis for GDP, money supplies and NPL variables. Meanwhile, for the number of internet users, we accept the hypothesis that the internet is significant with financial inclusion in OIC countries. The result shows that bank variable factors which are NPL are significant because when people are involved with financial services, they are exposed to less quality users which will lead to credit risk. Meanwhile, the Internet also has a significant impact on financial inclusion which indicates most of the people in OIC countries use the Internet to get themselves involved with financial inclusion.

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The Economic Theory Assumption and Utility Maximization Model: The Perspective of Zakat Compliance Behavior

Mohd Rahim Khamis, Mohd Faizal bin Kamarudin*
Senior Lecturer, Department of Economics and Financial Studies, Faculty of Business and Management, UiTM Puncak Alam, Selangor, Malaysia
mfk@uitm.edu.my*

Abstract: The dearth of studies on the economic theory and model from the perspective of zakat compliance behavior is hardly found in the literature and empirical evidence as well. Numerous studies have been explained through utility maximization and compliance behavior especially in the context of taxation based on the economic theory assumption. Discussion on compliance behavior has two basic theories that are associated with compliance; firstly, the psychological and sociological theory, and secondly, the economic theory that is always used to discuss compliance behavior in taxation. Due to that, this study aims to discuss the relevant economic theory and model from the perspective of zakat compliance behavior. In reviewing the relevant literature, this article provides a discussion on economic theory and model as a basis for explaining zakat compliance which includes a number of aspects like the economic aspect, psychological and sociological aspects as well as the Islamic aspect as previously suggested by some studies. Additionally, it demonstrates that economic theory and model also can be used to discuss Zakat compliance behavior and not purposely in the taxation system. Based on the discussion, this study will hopefully shed some light that even though the theory and model mainly discuss conventional perspectives such as the taxation system but it's also can be adapted to discuss on Islamic perspective with some modification.

Keywords: *Zakat Compliance, Rational Choice Theory, Utility Maximization Model*

1. Introduction

Compliance is an important aspect of human behavior or moral codes and has raised various issues in research in the fields of economics, accounting, psychology and much more (Idris, 2002; Veerinderjeet, 2003). Roth, Scholz, and Witte (1989, p. 2) defined compliance as "taxpayer files all required tax returns at the proper time and the returns accurately report tax liability in accordance with the rules, regulations and the court decision applicable at the time the return is filed". Other than that, Alm (1991) and Hijattulah and Pope (2008) described compliance as an individual's responsibility to report the total income and information needed as required by laws, rules and regulations and court judgments. Veerinderjeet (2003) stated that compliance with tax occurs when people declare all their income sources by filling up the tax form from the authorities at the given period. Individuals are fully compliant if they fulfill every aspect of the obligations such as registering with the revenue authorities as required, disclosing all information required and returning the forms on time, reporting their tax liability accurately and maintaining all records as required by governing bodies (Fischer et al., 1992; McKerchar & Evans, 2009). Simply put, compliance behavior can be defined as a human action to complete an activity as required by the authorities, regulatory bodies or the courts.

On the other hand, Juan, Ern, and Kwee (2006) adopted a different view and described compliance as a function of cognitive and affective influences over the taxpayers. Cognitive can be characterized as the person's comprehension of the subject matter and affective can be defined as the person's behavior in taking action. The definition of Cognitive is not only limited to comprehension, it refers to the depth of knowledge on the subject matter, the understanding of technical and legal aspects and the ability to keep updated on the subject matter. Affective then refers to the attitude and behavior of people which includes intentions, perceptions in the context of equity, ethics and morality. By this token, in discussing human behavior, it can be seen that decision-making is influenced by the level of knowledge, understanding, comprehension, intention, perception, ethics and moral stand on the subject matter. From the above explanations, the review on compliance can be recapitulated as human behavior (taxpayers) in deciding to abide by the law to avoid any legal action such as penalties, punishment or fines.

However, zakat compliance behavior according to Islamic doctrine is different from tax as zakat is a mandatory Islamic obligation to satisfy the necessary conditions to achieve purity and goodness of soul (Diabi, 1993). This is clearly described in the Holy Qur'an, Surah 87 and Verse 14 mentioned as:

"He indeed is successful who purifies himself".

Another reference in the Holy Qur'an is mentioned in Surah 9, Verse 9-10 which noted:

"He indeed is successful who causes it to grow and he indeed fails who buries it".

In other words, compliance with zakat is to find the "Barakah" in actions and to simultaneously purify wealth to receive more blessings. As a Muslim individual, the action of zakat compliance is not solely determined by the rules and regulations enforced by the authorities but rather, by the Islamic obligation to find and receive blessings from Allah S.W.T. Idris (2002) mentioned zakat compliance as payment in accordance with fatwa and regulations exacted by zakat authorities. The explanation is adapted from the definition discussed by previous studies in the tax environment. Additionally, Bidin and Idris (2008) described zakat compliance behavior as an action (compliance) by the Muslim individual (target) on employment income (context) for a specific year (time). Another explanation by Saad (2009a) and Abdul-Jabbar and Nashwan (2022) suggested that zakat compliance depends on the reasoning Muslim individuals apply in deciding whether to disobey or comply with the command of Allah S.W.T, Islamic obligations and the rules issued by zakat authorities.

Alternatively, Ahmad and Daud (2010) discussed zakat compliance in terms of payment through official channels. Individuals become more compliant if payment is made through official channels overseen by the relevant authorities such as the Zakat institution. Muslim individuals will assume non-compliance if zakat is paid through an unofficial channel. This explanation is supported by Mohamed et al. (1995) who stated that certain states in Malaysia require Muslim individuals to pay their zakat through an official channel and if any individual is caught paying zakat through an unofficial channel, they may be fined or jailed or both.

The point here is that, based on the number of explanations, the concept of zakat compliance can be concluded as a human behavior (the Muslim community's) in decision-making (compliance or non-compliance) to pay the zakat (official or unofficial channels) according to Islamic obligation and Shariah law to achieve satisfaction in the present life and afterlife (al-falah). This is reinforced by Barizah and Rahman (2007) who mentioned that zakat payers are expected to get returns not just in the present life but also in the afterlife when they comply with Islamic obligations. The decision to comply or otherwise is a measure of the strength of a believer's worship of Allah S.W.T and is an indication of thankfulness (Ahmad Bello, 2008). This clearly shows that zakat compliance is based more on fulfilling obligations to achieve satisfaction in the present and afterlife, to receive blessings from Allah S.W.T, to purify wealth and concurrently receive "barakah" in action whilst compliance with tax is based more on adhering to the law and to avert punishment and penalties (Abdul-Jabbar & Nashwan, 2022). The discussion on the concept of compliance behavior of zakat can also be applied to describe compliance behavior in any type of zakat since it involves similar issues such as action, target, context and time.

Additionally, Hasseldine and Bebbington (1991) suggested that a blend of two approaches; incorporating the economic model and psychological and sociological model provide a better understanding in discussing associated tax compliance. The combination of both approaches explained how individuals act in their economic life and explored the implications of economic issues on individual behavior. This situation is related to the issue of choice and individual decision-making (Pope & Raihana, 2010). Generally, the economic approach is based on the economic theory such as expected utility or a game-theoretical framework which explains the factors such as marginal tax rate, income, penalties and probabilities of detection as factors determining compliance behavior (Kamdar, 1997). In contrast, the psychological and sociological approach is based on respective theories encompassing factors such as attitude and perceptions determining compliance behavior in taxation (Trivedi, Shehata, & Mestelman, 2005). The most popular models of compliance in both studies are the Tax Evasion Model (Utility Function Model) by Allingham and Sandmo (1972) and the Expanded Taxpayer Compliance Model by Fischer et al. (1992). This illustrates that both approaches used are able to explain the subject of compliance.

In the Malaysian context, numerous studies have applied psychological and sociological theories when discussing the subject of zakat compliance namely; the Theory of Planned Behavior (TPB) (Sapingi et al., 2011; Saad, 2009a; Bidin, 2008), the Theory of Reasoned Action (TRA) (Muhammad, 2016; Arif et al., 2011; Bidin et al., 2009), The organizational legitimacy theory (Sawmar & Mohammed, 2021) and Psychology Theory (Cognitive Theory and Social Learning Theory) and Social Perspective (Instrumental and Normative Perspective) with modification on Taxpayer Compliance Model (Idris, 2002). Even though a number of studies have shown that the theories and models in psychology and sociology used are able to explain compliance behavior in Zakat, it is still inconclusive. This is because previous reviews regarding compliance behavior showed that the economic approach is also able to explain compliance behavior in Zakat. This was revealed through the study by Diabi (1993) who discussed the zakat evasion concept, Daud (2011) who studied compliance behavior in zakat on income through official channels in Acheh, Khamis (2014) who discussed factors determining compliance behavior of business zakat among business owner in Selangor and Nashwan et al. (2020) who studied zakah compliance behavior among entrepreneurs based on economic factors approach. Both studies applied the Tax Evasion Model formulated by Allingham and Sandmo (1972). However, it is still inconclusive due to the lack of studies discussing the relevant economic theory and model from the perspective of zakat compliance behavior. Due to that, this paper applies the economic theory and model to discuss 0the compliance behavior of zakat in Malaysia.

2. Literature Review

The Economic Theory Assumption and Compliance Behavior of Zakat

Compliance theories can be explained in a multitude of ways detailing why states, firms 00and individuals comply or do not comply with the laws and regulations. Discussions among these theories are useful as a guide to promote a better understanding of compliance behavior (Mai & Ofori, 2010). As such, Mai and Ofori (2010) found that there is no comprehensive theory in explaining the subject matter. Essentially, two basic theories are associated with compliance; firstly, the psychological and sociological theory, and secondly, the economic theory (Trivedi et al., 2005). According to Richardson (2006), psychological theories become a better approach to discussing tax compliance. This can be proven by various studies using psychological and sociological theories (Akers, La Greca, Cochran, & Sellers, 1989; McKerchar & Evans, 2009; Sutinen & Kuperan, 1999). This is also reflected in the zakat context where psychological theories are often utilized in explaining compliance behavior (Idris, 2002; Idris, 2009; Saad, 2009b; Bidin, 2008; Bidin & Idris, 2008; Bidin et al., 2009).

In microeconomics, the theory and model that explains human behavior are the Rational Choice Theory and the utility maximization concept. This is because the Rational Choice Theory discusses the concept of rationality in decision-making to maximize utility. The theory views individuals as actors who will make choices based on the logic of consequences and rationale based on their calculation of expected subsequences (Mai & Ofori, 2010). The emphasis in this theory is the concept of rationality. The rational concept in microeconomics is closely related to the behavior in a household. Individuals represent the household in consuming commodities to maximize satisfaction (utility) (Wetzstein, 2005). This scenario shows that households have a selection to choose from in terms of goods and services delivered at a specific time and a specific place and that these decisions are made to maximize their satisfaction (utility). From a management perspective, the concept of rationality is discussed more often when an individual has alternatives and needs to decide among all the choices to maximize the probability of achieving the goal. As rational decision maker, individuals will define the issues carefully, study the alternatives that they have and concurrently delineate the specific goal they want to achieve (Robbins & Coulter, 1999; Robbins & DeCenzo, 2008). Robbins and DeCenzo (2008) suggested rationality in decision-making often involves three elements; certainty, risk and uncertainty which is applied in every decision made by an individual. Certainty refers to the outcome of every possible alternative already known to the decision maker, uncertainty can be explained as an outcome of the alternatives that is unknown to the decision maker and the element of risk is the chance of loss incurred by the outcome resulting from the decision made.

Ahmad and Daud (2010) referred to rationality as a process to maximize utility (satisfaction) based on a set of constraints. This is because individuals frequently have alternatives and they need to decide between the alternatives based on their rationale. As rational decision-makers, they measure the whole expected utility

value of each potential and select the alternatives to maximize expected individual utility gain (Friedman & Savage, 1952). The whole expected utility of each potential is the total of utilities related to possible results, influenced by the probability that each result will arise.

Herfeld (2022) identify one of the most dominant theories explaining human behavior as rational choice theory although they have been utilized extensively in the social and behavioral sciences, their application spans fields like philosophy, evolutionary biology, and anthropology in addition to fields like economics, sociology, and political science. Additionally, they serve as the theoretical and conceptual foundation for entire fields of research, including formal decision and game theory. As a result, rational choice theory is widely used in theoretical and practical fields of modern science, philosophy, psychology, and (behavioral) economics. At least five different types of criticism have been levelled at rational choice theory, however: the ideological category, the formal-logical category, the empirical category, the ethical category, and the scope category have all been criticized.

From an Islamic perspective, the principle of rationality is different since rational human behavior is to fulfill their needs to achieve goals in the present and afterlife. Ahmad and Daud (2010) and Nashwan et al. (2020) argued the concept of rationality in the theory needs some modification in line with Islamic principles as discussed by Kahf (1983). They stated that if the same concept was to be used in explaining Islamic economics, it would need to be readjusted to the Islamic rationale where utility is not only maximized in the present life (0duniawi) but also the afterlife (al-falah).

This is depicted by the Muslim individuals who, when deciding to pay zakat, are willing to share their wealth with the community and Islam and at the same time, forgo a part of their0 consumption. Khurshid (2007) supported this and described human beings fulfilling needs for personal consumption based on a concept of maslahat or public welfare rather than their instinctive desires. As such, the decision made is still considered a rational act because the goal of the decision is to reach the highest level of satisfaction (present life and afterlife (al-Falah). This is clearly described in the Holy Qur'an, Al-Qasas (28:77) noted that:

"But seek, with the (wealth) which Allah has bestowed on thee, the Home of the Hereafter, nor forget thy portion in this world: but do thou good, as Allah has been good to thee, and seek not (occasions for) mischief in the land: for Allah loves not those who do mischief."

The second emphasis in the rational choice theory is utility. From a microeconomic perspective, utility can be described as the "ability or power of a commodity (goods and services) to satisfy when a household (individual) consumes the commodity (goods and services) to achieve satisfaction"(Wetzstein, 2005, p. 25). Other research by Wentworth and Ricket (1985) mentioned that utility is derived from the total of expected benefits and expected costs while Gcabo and Robinson (2007) explained utility as weighted from an individual's respective probabilities to maximize their expected utility based on certain assumptions and constraints. Bernoulli (1954) described utility as the level of satisfaction achieved by each individual through their actions. The explanation of utility is based on the assumption that every individual is influenced by various factors in their decision-making to buy goods. This decision is not purely dependent on the price of the goods or monetary values but is influenced by the level of satisfaction they gain. According to Petersen and Lewis (1999) among economists, the term utility has been used to measure and explain satisfaction. This is because utility refers to overall satisfaction that is affected by a number of factors not limited to just physical satisfaction but also other factors such as psychological attitudes, peer group, personal experience and environment (Nicholson, 2005; Nicholson & Snyder, 2008). Even though the level of satisfaction among an individual is virtually impracticable to measure but it will be assumed that it can be done through a hypothetical example.

Based on assumptions and explanations by Bernoulli (1954) the utility desired by an individual is focused on physical utility (satisfaction) without taking into consideration other aspects of life. Nicholson and Snyder (2008) and Nicholson (2005) also defined individual utility as achieving a person's consumption of physical commodities which are influenced by a number of factors. This is proven by Allingham and Sandmo (1972) and Veerinderjeet (2003) who mentioned taxpayers will maximize expected utility based on the cost in deciding to either pay or avoid taxation. To maximize expected utility, the taxpayer will report their lowest

possible income or not report their income at all. If these transgressions are found out the individuals will most likely be penalized. However, if their transgressions remain undetected by the authorities, they will most likely continue with these practices. Becker (1968) also explained that an individual will commit a crime if the utility gained from the crime is greater than the utility gained from doing the right action.

However, for a Muslim individual, every decision is made to maximize utility in the present life and afterlife (Ahmad et al., 2011; Ahmad & Daud, 2010; Khamis, 2014; Abdul-Jabbar & Nashwan, 2022). Every Muslim individual believes that each action will be judged on the day after and this belief may be symbolized by the Muslim individual's compliance with zakat payment. They are willing to share their wealth with the community, especially with the poor and simultaneously forgo a part of their consumption. This is still considered to be rational as the aim is to achieve the highest level of satisfaction either in the present life or the afterlife (al-Falah). With the sharing of wealth, more wealth, kindness and happiness are brought into their lives. The satisfaction gained is the unexpected reward from Allah S.W.T. This is evident in the Al-Baqarah (2:261) which notes that:

"The parable of those who spend their sustenance in the way of Allah is that of a grain of corn: it grows seven years and each ear Hath a hundred grains. Allah gives manifold increase to which He pleased: And Allah careth for all and He knoweth all things".

As such, the obligation to pay zakat is not a burden to the Muslim community but it can be viewed as an investment made in the present life for the afterlife as promised by the Almighty.

From the discussions on Rational Choice Theory, it is evident that the theory is widely utilized by economists and its application stretches into other fields. As stated by Heckathorn (2001) rational choice theory has appeared as the lead in discussing a number of disciplines and has not just been limited to the field of economics, especially in the last two decades. This is evidenced in a multitude of past research where the theory is used in discussing different areas such as criminal activity (Becker, 1968), tax compliance and evasion behavior (Allingham & Sandmo, 1972), producer behavior (Yusof & Amin, 2007), fishermen compliance behavior (Ali & Abdullah, 2010) and zakat compliance behavior (Ahmad & Daud, 2010; Khamis, 2014; Nashwan et al., 2020; Khamis et al., 2011). This illustrates that the rational choice theory is a general theory that can be adapted and applied to explain various cases such as compliance which cannot be explained by one comprehensive theory as mentioned by Mai and Ofori (2010) and Herfeld (2022).

The above discussion has highlighted the significance of rational choice theory in explaining the concept of rationality and the maximization of utility. However, it can also be applied to the Islamic perspective with some modifications in the concept of maximizing utility.

3. Utility Maximization Model and Compliance Behavior

Since Rational Choice Theory is the combination of the rational action concept and maximizing utility, the Utility Maximization Model was used as a model in this study. This is because numerous studies have been explained through utility maximization and compliance behavior, especially in the context of taxation. Pioneering research was conducted by Allingham and Sandmo (1972) who formulated the Tax Evasion Model in discussing tax evasion (Ali, Cecil, & Knoblett, 2001; Alm & McKee, 1998; Alm & Torgler, 2011; Wintrobe & Gërxhani, 2004). The model is derived from the traditional expected utility theory (Torgler, 2003; Zhiyang An, 2006), using standard microeconomic assumption (Chorvat, 2007) and is known as the standard theoretical model in explaining associated tax compliance (Diabi, 1993; Wintrobe & Gërxhani, 2004). The Tax Evasion Model was formulated based on the Economics Crime Approach Model derived by Becker (1968) (Alabede, Zaimah, & Kamil, 2011; Alm & Torgler, 2011; Sour, 2004). This model is favored among economists as it is conducive to explaining utility maximization and compliance behavior (Ali et al., 2001; Clotfelter, 1983). Additionally, the model is able to identify the factors influencing individuals who evade taxation.

It is necessary to mention here that the specific model formulated by Becker (1968) in equation (1) is to explain that a rational individual's decision to either commit a crime or act according to the law is based on

maximizing utility. In maximizing utility, an individual will commit a crime if the expected utility from committing the crime is more than the expected utility acquired from an act according to regulations.

$$EU = pU(Y- f) + (1 - p) U (Y) \quad (1)$$

Where;

EU	An individual expected utility
p	Probability of being caught and convicted
f	The monetary equivalent of the punishment if convicted of the offense
Y	Gain from undetected offense
U	Individual's von Neumann-Morgenstern utility index

Based on equation (1) an individual will commit a crime when the expected utility (EU) achieved becomes positive and will act contrarily if the expected utility (EU) achieved is negative. The expected positive and negative utility of each individual depends on the monetary equivalent of punishment if convicted of the offense (f), gains from being undetected from the offense (Y) and the probability of being caught and convicted (p). For instance, if f >Y and

p is sufficiently high, the EU will be the negative result. From the explanation of the model, it is shown that an individual will try to maximize utility when trying to evade taxation. From the decisions made, individuals compare the benefits that they can get if they succeed in evading tax and the risks they will face if they are caught and fined by the authorities. The model suggested a penalty structure and the probability to be detected or economic factors as the main factors in explaining the criminal activities.

In the case of compliance behavior, Allingham and Sandmo (1972) adapted this model in discussing tax evasion and found that decision-making to either comply or evade taxation is an uncertain decision. This is because failure to report full income to tax authorities does not automatically incur penalty or punishment. Taxpayers have a choice to declare actual income, under-report actual income or not report income at all. Their decisions will depend on the likelihood of being found out by the tax authorities.

The model gives two possible outcomes in maximizing expected utility: the first outcome is the probability of being detected and punished for tax evasion (p) by tax authorities. From this situation, a taxpayer will have to pay tax on the undeclared income (W-X) at a penalty rate (μ) which is higher if compared to the normal tax rate (Θ). The second outcome is the probability of being undetected from tax evasion (1–p). For example, taxpayers will choose whether they pay the tax or avoid tax payment using the maximum satisfaction estimation as follows:

$$E (U) = (1 - p) U (W- \Theta X) + pU (W - \Theta X - \mu [W- X]) \quad (2)$$

Where;

U	Standard utility function
W	Actual income
Θ	Tax rate
X	Declared income
p	Probability investigation by the tax authority
W– X	Amount of tax on declaring amount/income
μ	Penalty rate

In equation (2), U (W- ΘX) is the utility gained from the revenue income on tax evasion with an assumption of not being caught by tax authorities while U (W – ΘX – μ [W– X]) is utility gained by a taxpayer if the tax evasion has been detected and punishment and fines have been imposed by the tax authorities. As such, to maximize utility, a taxpayer is subject to the probability of either being caught or otherwise by the tax authorities which becomes the obstruction. This is outlined below:

$$Y^{nc} = W - \Theta X \quad (3)$$

$$Y^{c} = W - \Theta X - \mu (W- X) \quad (4)$$

Based on equations (3) and (4), the obstruction in maximizing taxpayer satisfaction, the First Order Condition (FOC) from equation (2) can be written as follows:

$$\partial E(U)(X) = -\Theta(1-p)U'(Y^{nc}) - (\Theta - \mu)\, pU'(Y^{c}) = 0 \quad (5)$$

To fulfill the requirement of maximum function, the second order condition (SOC) from equation (5) can be written as follows:

$$\partial^2 EUX^2 = -\Theta^2(1-p)U''(Y^{nc}) + (\Theta - \mu)^2 pU''(Y^{c}) < 0 \quad (6)$$

From equations (2) until (6), to maximize expected utility, a taxpayer will declare income (X) lower than that of actual income (W) or ($Y^{nc} = W - \Theta X$) which depend on the penalty or punishment they will face with (μ [W–X]) and the cost they need to cover if evasion is detected. The taxpayer becomes compliant if they assume that a high cost of penalty and punishment will be incurred if caught so much so that it will affect their level of satisfaction. The degree of compliance becomes lower if the cost of penalty and punishment is lower. Allingham and Sandmo (1972) found that tax audits, penalties and punishment were factors in influencing the taxpayer in tax evasion. Here, through the model of tax evasion, as a rational taxpayer is viewed to maximize expected utility, they are comparable to a gambler who partakes in risky benefits and risky prospects (Alm and Torgler, 2011).

However, the model had been criticized by some researchers because they assume compliance is not only influenced by tax audits and law enforcement like penalties and fines but is also influenced by other factors (Alabede et al., 2011; Fischer et al., 1992; Hajah Mustafa, 2007). This is shown by Jackson and Milliron (1986) who identified 14 factors influencing tax compliance behavior based on a review of compliance literature. From studies by Jackson and Milliron (1986), Fischer et al. (1992) categorized 14 factors into four main factors such as noncompliance opportunity, demographic variables, attitude and perception and structure/system of tax. Alm et al. (1995) also noted that to describe tax compliance behavior, a number of factors beyond economic factors have been identified to motivate individuals to comply. These include factors from the social sciences. For this reason, the model is deficient due to the lack of discussion of other factors influencing tax evasion as mentioned by a number of previous studies.

Even though there are deficiencies within the model formulated by Allingham and Sandmo (1972) many studies have shown that with some modification, the model is able to explain compliance behavior (Cowell, 1985; Yitzhaki, 1974; Daud, 2011). For instance, Sour (2004) explained that for over 25 years this traditional economic model was still used as the basis for explaining compliance behavior without other researchers formulating a new approach. The extension and modification of this model over the years have contributed to compliance literature (Sandmo, 2004).

Another study by Yitzhaki (1974) used the model with modifications, to study the implication of the penalty structure on tax evasion. This study provides more detail on the penalty factor enforced and paid by a tax evader on the amount of unreported income which is not explained in most tax systems (Chorvat, 2007). This is because most reviews in the tax system discuss tax penalty which is based on the tax unpaid without discussing unreported income (Chorvat, 2007). It is clearly explained through the tax evasion model by Allingham and Sandmo (1972), that fines and penalty rates are paid on evaded income rather than unreported income (Borck, 2004; Kamdar, 1997). For this reason, Yitzhaki (1974) adapted the two demonstrated functions of evading taxes and suggested that the taxpayer should pay a penalty or fines on unreported income. The study showed that the taxpayer will choose to be compliant or non-compliant depending on the penalty structure that is imposed on undeclared income which is not discussed by the previous model. The adapted model is discussed as follows:

$$E(U) = (1 - p)\, U\,[\, y\,(1 - t) + t\,(y - x)] + pU\,[\, y\,(1 - t) - tf(y - x)] \quad (7)$$

Where;

p	probability to be detected
y	income before tax deduction
y	(1-t)net income after tax deduction
x	amount of income reported
y-x	unreported income
f	amount of penalty

From equation (7), the modified model explains taxpayer utility with the probability of being undetected by tax authorities for unreported income U [y (1- t) + t (y – x)] while the following equation explains the probability of being caught by tax authorities for unreported income and with the additional penalty incurred from the unreported income U[y (1 – t) – tf (y – x)]. Thus, if they are caught, the total penalty to be paid by taxpayers is calculated from the total sum of unreported income. This can be written as follows:

$$E(U) = (1 - p)\, t - pft \quad (8)$$

Thereby, from equation (8), the First Order Condition (FOC) can be written as follows:

$$U'(yA)U'(yB) = (1-p)pf \quad (9)$$

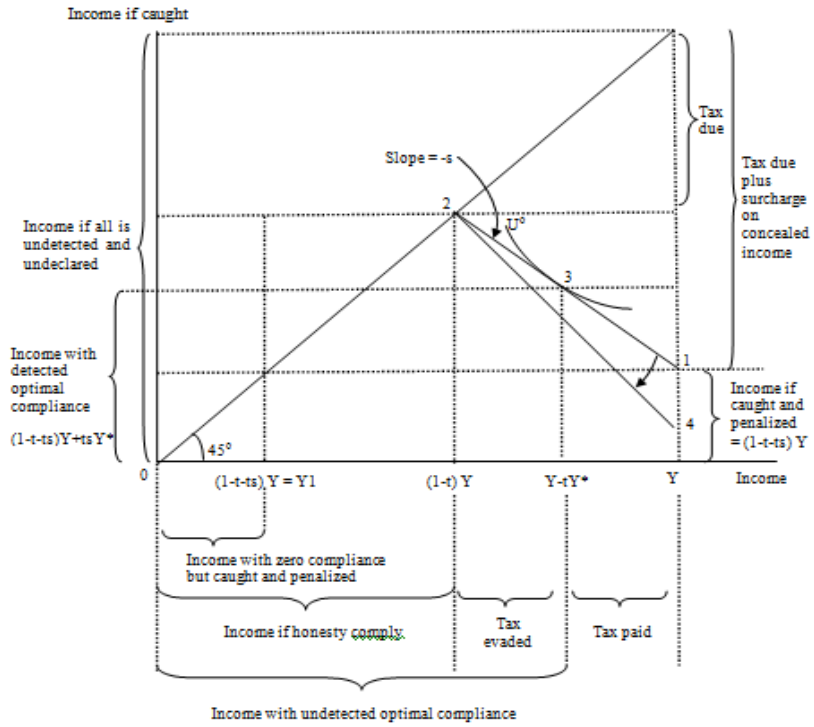
Where;

$y_A = y\,(1 - t) + t\,(y - x)$
$y_B = y\,(1 - t) - tf(y - x)$

In equation (9), if taxpayers become risk neutral, they are able to choose whether to be compliant or to report zero income, which depends on the probability of detection and the likelihood of penalties being enforced. Even though the study by Allingham and Sandmo (1972) focuses on the same factors, this study expands and emphasizes the penalty structure for tax evasion where the penalty will be imposed on unreported income or unpaid tax. The study incorporating the adapted model sheds new light on compliance behavior as compared to the previous model by Allingham and Sandmo (1972) in discussing compliance behavior. This is augmented by Sour (2004) who mentioned the model by Allingham and Sandmo (1972) and Yitzhaki (1974) as two different explanations. This is because the model by Allingham and Sandmo (1972) focused on the amount of income declared by a taxpayer to tax authorities in maximizing utility while the model by Yitzhaki (1974) explained the under-reporting of income as well as unreported income by taxpayers to tax authorities.

The study by Yitzhaki (1974) was supported by Cowell (1985) who stated that the level of compliance is related to the amount of income to be declared to the tax authorities. Cowell (1985) gave more focus to the role of economic theory in analyzing evasion and policy implication. Subsequently, the study formulated several economic models in explaining tax evasion. The model was concluded by Cullis and Lewis (1997) as shown in Figure 1. In the model, the legal income to be taxed is given by (OY) and the income liable to a proportional tax rate is (t). The probability of detection for tax evasion is (p) and detection for undeclared income is subject to a surcharge at a rate (s). If the taxpayer is completely honest they will declare the true income (Y) and the net income will be (1-t)Y. If the taxpayer is dishonest and remains undetected by authorities, the income is (Y) and if the dishonest taxpayer is detected by authorities for tax evasion, the income is (1-t-ts) Y(=distance Y1 in figure 1).

Figure 1: Cowell's Economic Actor's Compliance Decision



Source: Cowell (1985)

In addition, Borck (2004) applied both models by Allingham and Sandmo (1972) and Yitzhaki (1974) in identifying the effect of the penalty structure on evasion, expected revenue and taxpayer welfare in the government sector. The study aims to shed light on two assumptions: the first assumption is if the government tries to maximize expected tax revenues, it will prefer the explanation from the Allingham and Sandmo (1972) model and secondly, if the government wants to maximize expected voter welfare, it may utilize the explanation by the Yitzhaki (1974) model. This shows that both explanations can be used in analyzing compliance behavior; however, it depends on the situation and the situation that needs to be clarified.

Moreover, Chorvat (2007) also adapted the tax evasion model to identify the relationship between the timing of tax payment (time factor) and the amount taxpayers need to pay (discount factor) thus giving more insight into the level of compliance. In the study, Chorvat (2007) described how taxpayers compared the benefit of cheating with the penalty and punishment incurred for tax evasion. The study assumed penalties imposed will be paid at a different period of time and calculated the time difference, including the discount factor (δ). Taxpayers will act on this situation to maximize the expected utility. As such, to exemplify tax compliance among taxpayers, two-period models were outlined in the study since the benefits of cheating and penalties imposed on the taxpayer occur at two different times. Therefore, income can be indicated in a certain period of time (jth) and the nature of the situation (ith) whether they are audited or not as (yij). In explaining the situation, the formulation model with some modifications from the tax evasion model can be written as follows:

$$E(U) = (1 - p)\,[\,U(yij) + \delta U(yij)\,] + p\,[\,U(yij) + \delta U(yij)\,] \qquad (10)$$

Where;

EU	expected utility for the individual
δ	Discount factor
y	income
jth	period of time (length)

ith state of nature – audited and not audit
p probability of detection

When reviewing the discussion on the utility maximization model and compliance behavior, most of the previous studies are based on a modified and adapted Tax Evasion Model to explain compliance behavior without creating a new approach (Sour, 2004). This means the explanation mainly focuses on individuals as rational decision-makers trying to maximize utility following law enforcement (penalty and punishment) which has become the main factor influencing tax compliance and evasion (Allingham & Sandmo, 1972; Borck, 2004; Chorvat, 2007; Cowell, 1985; Pyle, 1991; Yitzhaki, 1974). However, the discussion by many researchers on compliance and evasion behavior is redundant. This is because some of the prior studies mentioned provide a better understanding of compliance behavior through two approaches; however, these two approaches namely the economic and psychological and sociological theories must be blended (Hasseldine & Bebbington, 1991; Schmolders, 1970; Sour, 2004). This means the discussion on the factors determining compliance behavior is not just solely dependent on the economic aspect but also needs to be expanded through other factors (James & Alley, 2002; James, Murphy, & Reinhart, 2005) such as psychological and sociological aspects (Fischer et al., 1992). Hence, Alm and Torgler (2011) expounded that the basic economic model of compliance is found lacking in fully describing compliance behavior.

To overcome this shortcoming, Alm and Torgler (2011) added the ethical factor in explaining compliance behavior. The ethical factor can be demonstrated when an individual complies with tax payments as long as they believe that compliance is doing the right thing. Based on the Tax Evasion Model, Alm and Torgler (2011) formulated a new economic model by adding an ethical dimension. This is shown in equation 11.

$$U = U(I , M) \quad (11)$$

Where (M) is measured as individual ethics which can be defined as the difference between actual taxes reported and the tax reported if the taxpayer is honest and fully compliant. As such, the individual pays their taxes as a normal person and this becomes ethical behavior. Therefore, (M) becomes a specific function as below:

$$M = M (tD - tI) = -\alpha (tD - tI)^2 \quad (12)$$

In equation (12), M achieves a maximum when D=I or when the taxpayer pays all taxes legally and M becomes a minimum when D=0. This ethical behavior also increases when rates fall with reported income. This study illustrates that compliance behavior is not just dependent on law enforcement factors (penalty and punishment) but is also dependent and influenced by other factors such as ethical values which previous studies failed to incorporate.

4. Utility Maximization Model and Compliance Behavior of Zakat

Besides being an adaptation of the Tax Evasion Model in explaining tax compliance behavior, the model also serves as a basis to discuss compliance and evasion of zakat (Diabi, 1993; Daud, 2011). The adaptation brings a new dimension to the model due to both studies suggesting that zakat compliance behavior is dependent on a number of factors ranging from economic, sociological and psychological as well as the Islamic aspect. This is revealed through the first study by Diabi (1993) who discussed the concept of zakat evasion. The study adopted the Tax Evasion Model in discussing zakat evasion because there has never been concentrated economic literature on the subject and it is relatively less studied in Islamic economics if compared to studies in tax compliance and evasion.

Diabi (1993) assumed that Muslim individuals declared their true income (Y_n) depending on their faith, attitude towards the risk of being detected and the enforcement of penalties for zakat evasion. As such, they may declare their actual income (d=1) or portion of actual income ($0 < d < 1$) or not report income at all (d=0). In terms of zakat evasion, two different scenarios may arise in which the transgression is detected (S_1) and undetected (S_2). The probability that the evasion is detected (S_1) to occur is (p) and the probability that it goes undetected (S_2) is (1-p). If (S_1) occurs, Muslim individuals will attain (X_2) and when (S_2) occurs, they will

attain (X_1). From this, there are three possible cases where the penalty rate (k) is equal to ½, where no penalty is involved (k=0) and lastly, where the penalty rate is limited by the range (0 < k < ½). 0In relation to the discussion, Diabi (1993) formulated a model to explain zakat evasion as follows:

$$E(U) = pU(X_2) + (1-p)\,U(X_1) \quad (13)$$

Subject to;

$$X_1 = Y_n(1-dZ) \quad (14)$$
$$X_2 = Y_n(1-Z-k-kZ+kdZ) \quad (15)$$

Where;

Y_n	Actual income
d	declare income
Z	Zakat rate
k	Penalty rate

The first order condition (FOC) for maximize is therefore:

$$\frac{\partial E(U)}{\partial(d)} = kZp\,U'(X_2) - Z(1-p)\,U'(X_1) = 0 \quad (16)$$

$$\frac{\partial E(U)}{\partial(d)} = kpU'(X_2) - (1-p)\,U'(X_1) = 0 \quad (17)$$

$$\frac{(1-p)}{kp} = \frac{U'(X_2)}{U'(X_1)} \quad (18)$$

From equations (13) to (15), if Muslim individuals comply with zakat payment, they will declare their true income (Y_n) where their consumption of X_1 (Y_n (1- dZ)). If they are dishonest, and avoid zakat payment, it is then divided into two different situations of either being undetected or detected for evasion ($X_2 = Y_n$ (1- Z – k – kZ + kdZ)). From equation (16), Diabi (1993) provides a number of results as follows:

Full evasion which remains undetected

If d=0 (undeclared at all), S_2 (undetected) occurs and equation (16) becomes,

$$\frac{\partial E(U)}{\partial(d)} = kZU'[Y_n(1-Z-k-kZ)] - (1-p)\,U'[Y_n] \quad (19)$$

and $\frac{\partial E(U)}{\partial(d)} < 0$ assuming that, $\frac{U'(Y_n(1-Z-k-kZ))}{U'(Y_n)} < \frac{(1-p)}{kp}$ (20)

Equation (19) shows the solution for zakat evasion, where the zakat evader preserves their full income (Y_n) and spends it all in X_1

Full evasion with detection

If d=0 (undeclared at all), S_1 (detected) occurs, the evader provides just a portion of their true income (Y_n (1-Z-k-kz) and therefore presents an obstacle to Muslim individuals to consume X_2. The result is that their welfare is significantly reduced while the welfare of the zakat recipient is reinstated.

No evasion

If d=1 (declaration of true income) with no evasion due to staunch religious beliefs or strong "Iman" or the fear of detection resulting in penalty and punishment by the authorities, the result of the equation (16) becomes;

$$\frac{\partial E(U)}{\partial(d)} = kpU'[Y_n(1-Z-k-kZ)] - (1-p)U'[Y_n(1-Z)] \geq 0 \quad (21)$$

and $\frac{(1-p)}{kp} \leq 1$ assuming that, $k \geq \frac{(1-p)}{p}$ and $p \geq \frac{1}{(k+1)}$

Partial evasion which remains undetected

In this case 0 < d < 1 (declared a portion of income) and equation (16) becomes,

$$\frac{\partial E(U)}{\partial(d)} = kpU'[Y_n(1-Z-k-kZ+dkZ)] - (1-p)U'[Y_n(1-dZ)] < 0 \quad (22)$$

The zakat evader decides to pay zakat for just a portion of their income due to low religiosity levels. If they are not caught, they will consume Yn (1-dZ) on X_1 but in a proportion less to that of full evasion which remains undetected where their benefit is comparatively more (Y_n) and the loss in benefit is represented by dZY_n

Partial evasion with detection

Muslim individuals may become partial evaders but if they are caught by zakat authorities, they will have to pay the zakat plus a penalty (if any). Consequently, equation (16) is formulated,

$$\frac{\partial E(U)}{\partial(d)} = kpU'[Y_n(1-Z-k-kZ+dkZ)] - (1-p)U'[Y_n(1-dZ)] < 0 \quad (23)$$

Where $\frac{(1-p)}{kp} > \frac{U'(X_1)}{U'(X_1)}$

Muslim individuals will consume Y_n (1-Z-k-kZ+dkZ) on X_2 but in a proportion higher than what is consumed by full evaders who are detected (Y_n (1-z-k)). The evader's welfare thus is reduced and the zakat recipient's right is reinstated.

As previously discussed, the study by Diabi (1993) mainly focused on the economic aspect (penalty and punishment) without further discussing other factors influencing zakat evasion and compliance. As the discussions around the adapted model still do not fully explain zakat compliance behavior, a recent study by Ahmad et al. (2011) formulated a new economic model based on the Tax Evasion Model which explains the factors determining zakat compliance behavior through official channels in Acheh. The study covered three important aspects, namely, psychological and sociological, economic as well as the Islamic aspect. As a result,

several factors were identified and discussed such as the implementation of laws (IL), commitment to the religion/faith (RI), understanding/knowledge about zakat (KL), access to the payment system (PM), trust to the formal institution (TR), perception about the tax system (TAX), environment (EV) and a few demographic factors such as age, level of education and monthly expenses. Thus, the adapted model in explaining zakat compliance is as follows:

$$E(U) = [1 - p(\alpha - z(\alpha))\, U(Z^{tb})] + [p(\alpha - z(\alpha))\, U(Z^{b})] \quad (24)$$

Where;

U	Standard utility function
α	Total income to pay the zakat
z	Zakat rate
z (α)	Total zakat paid to the formal institution
p	Probability pay through formal institution
Z^{tb}	Avoid paying through formal institution
Z^{b}	Comply pay through formal institution

$U(Z^{tb})$ is satisfaction achieved by the zakat payer from avoiding payment of zakat through formal institutions. Meanwhile, $U(Z^{b})$ refers to the total satisfaction achieved by the zakat payer when they comply with zakat payment through formal institutions. $p(\alpha - z(\alpha)$ is the probability of a zakat payer paying their zakat through the formal institutions. As such, when $p(\alpha - z(\alpha) = 0$, this means that the zakat payer avoids paying zakat through formal institutions and becomes non-compliant in this respect. Therefore, the limitation in maximizing the satisfaction of zakat payers through formal institutions is subject to the following equations:

$$Z^{b} = \alpha - z(\alpha) \quad (25)$$

$$Z^{tb} = (1 - z)\,\alpha - (IL+RI+KL+PM+TR+TAX+EV)\,(\alpha - z(\alpha)) \quad (26)$$

As such equation (24) can be written as follows:

$$E(U) = [1 - p(\alpha - z(\alpha))\, U((1 - z)\,\alpha - (IL+RI+KL+PM+TR+TAX+EV)\,(\alpha - z(\alpha))] + [p(\alpha - z(\alpha))\, U(\alpha - z(\alpha))] \quad (27)$$

Based on equation (27), the general model which discusses factors determining compliance behavior in zakat on income through official channels in Acheh is as below:

$$\frac{p\,U'(Z^{b})}{1 - pU'(Z^{tb})} = (IL+RI+KL+PM+TR+TAX+EV) \quad (28)$$

From equation (28), ($\frac{pU'(Z^{b})}{1 - pU'(Z^{tb})}$)is the Muslim individual's probability to comply with payment of zakat on income through formal institutions to maximize expected utility which depends on the implementation of laws (IL), commitment to the religion/faith (RI), understanding/knowledge about zakat (KL), access to the payment system (PM), trust to the formal institution (TR), perceptions about the tax system (TAX), environment (EV). From the factors that have been identified, Ahmad et al. (2011) revealed that seven factors significantly influence the compliance of Muslim individuals in paying their zakat through formal institutions which include; gender, age, education, monthly spending, understanding, tax and environment while faith, law, trust of the zakat institution and access to payment mechanism are not significant.

However, the study by Ahmad et al. (2011) was inconclusive since it mainly focused on the compliance behavior of zakat on income through official channels. Hence study by Khamis (2014) takes the initiative to apply the economic theory and model in discussing compliance behavior of business zakat among SMEs. The study produced a new dimension of the rational choice theory in describing compliance behavior. From the basic concept of the theory, as a rational individual, every decision is made to maximize utility which is influenced by various factors.

As revealed by Khamis (2014), Ahmad et al. (2011) and Diabi (1993) the Tax Evasion Model is able to explain factors determining compliance and evasion behavior in zakat. The adapted model illustrated that there are a number of factors influencing compliance behavior in zakat and it is not just solely dependent on law enforcement (penalty and punishment). Table 1 summarizes past studies that adapted the Tax Evasion Model as a basis to discuss compliance and evasion behavior.

Table 1: **Summary of the past studies that adapted the Tax Evasion Model**

Author (s)	Focus / Issue (s)	Main Finding (s)
Allingham and Sandmo (1972)	▪ Discussed the tax evasion scenario	▪ Tax audits, penalties and punishments were the factors influencing tax evasion
	▪ Focused on the amount of income reported to tax authorities in maximizing utility	▪ Penalties and fines paid on evaded income
Yitzhaki (1974)	▪ Discussed the implication of the penalty structure on tax evasion	▪ Provided details on penalty structure
		▪ Penalties and fines should be paid by the taxpayer based on unreported income
	▪ Focused on the under-reporting or unreported income by a taxpayer to tax authorities	▪ Criticisms of the previous model as tax penalty are based on unreported income and not on tax unpaid.
Cowel (1985)	▪ Discussed the role of economic theory in analyzing evasion and policy implication	▪ Supported the Yitzhaki (1974) explanation and model
		▪ The level of compliance is related to the amount of income to be declared to the tax authorities
Diabi (1993)	▪ Discussed and explained the concept of zakat evasion	▪ Muslim individuals declared true income depending on faith, attitude towards the risk of being detected and enforcement of laws
		▪ Produced a number of results. Firstly, full evasion which remains undetected, full evasion with detection, secondly, no evasion because of high religiosity levels or strong "iman" and fear of detection resulting in penalty and punishment by tax authorities, thirdly, partial evasion which remains undetected due to low levels of religiosity and lastly partial evasion with detection.
Borck (2004)	▪ Explained the effect of the penalty structure on evasion, expected returns and taxpayer welfare in the government sector	▪ Provided two assumptions
		▪ Governments that want to maximize expected tax revenue will prefer The Allingham and Sandmo (1972) model.
		▪ Governments that want to maximize expected voter welfare will prefer using Yitzhaki (1974) model.
Chorvat (2007)	▪ To identify the relationship between the time factor and discount factor and the level of compliance	▪ Assumes taxpayer will act on the time factor and discount factor to maximize utility
		▪ Formulated two-period models based on the benefits of cheating and penalties gained by the two different times
Ahmad et al. (2011)	▪ To identify factors determining compliance behavior	▪ Formulated the new economic model to explain zakat compliance behavior with the newly added Islamic

	in zakat on income through official channels in Aceh	aspect ▪ Found that gender, age, education, monthly spending, understanding, tax and the environment significantly influence zakat compliance
Alm and Torgler (2011)	▪ To discuss the impact of ethical factors on tax compliance behavior	▪ Argued that tax compliance is dependent on more than law enforcement ▪ Individuals pay taxes as normal and rational persons and this translates into ethical behavior ▪ Ethical behavior increases and the rate for reporting income will fall

Sources: Many literature studies

The summary in Table 1 shows that the Tax Evasion Model is able to explain compliance behavior in a diverse range of studies. The explanation could be the answer to the two criticisms from previous studies. Firstly, Richardson (2006) mentioned psychological theories as the best approach to explaining human behavior but, many studies have revealed that the microeconomic theory is also able to discuss compliance behavior and is significant in explaining zakat compliance as compared to psychological theories. This is because in rationale choice theory as explained by Ahmad et al. (2011) individuals tries to maximize their satisfaction in two life dimensions which are not described by psychological theories. In explaining the compliance behavior of zakat, it must be related to the satisfaction gained through their actions in achieving both life dimensions. This suggests that economic theory is more significant in explaining zakat compliance behavior as compared to psychological theories commonly applied by previous studies.

Secondly, most of the researchers adapted the Tax Evasion model incorporating the economic aspect such as penalty and punishment without taking into consideration other aspects that may influence compliance behavior. However, Ahmad et al. (2011), Khamis et al. (2011) and Khamis (2014) revealed that the model can be utilized as a basis for explaining zakat compliance which includes a number of aspects like the economic aspect, psychological and sociological aspects as well as the Islamic aspect as previously suggested by some studies.

5. Discussion and Conclusion

In general, this paper has implications for the rational choice theory and specifically for the Zakat compliance behavior model. This is because, fundamentally, this paper is an attempt to fill the gap in the studies in this area as prior research has adapted the behavior model. Basically, the discussions of this paper revealed that the economic theory and model are able to discuss the subject of zakat compliance. In the Malaysian context, prior studies on zakat compliance behavior mainly focused on the psychological and sociological approach, revealing the suitability of the model in explaining zakat compliance behavior (Saad, 2009b; Bidin, 2008; Bidin & Idris, 2008; Bidin et al., 2009). This shows that few studies have applied the economic theory and model in explaining zakat compliance behavior even though there was a study that revealed the economic study (applied economic theory and model) was able to explain compliance behavior in zakat (Ahmad et al., 2011; Khamis, 2014). The study by Ahmad et al. (2011) modified the Tax Evasion Model to match explanations of zakat compliance behavior based on Acheh. Hence, this paper takes the initiative to provide evidence of the economic theory and model also suitable for discussing compliance behavior with some modification.

Discussion on this study produced a new dimension of the rational choice theory in describing compliance behavior. Before this, the rational choice theory commonly explained the behavior of households in deciding between alternatives implicating that they can choose among the alternatives to maximize utility (satisfaction). From the basic concept of the theory, as a rational individual, every decision is made to maximize utility which is influenced by various factors. Thus, in explaining zakat compliance behavior, the concept of rational choice theory is used to explain compliance behavior but the maximizing of utility among

the Muslim community does not just concern physical utility as explained in the theory but also includes afterlife utility (satisfaction). This is because when the action is related to Islamic obligation, the choice in doing the action can be seen to maximize utility in the two-life dimensions; the present life and the life after. This shows the implications of the rational choice theory itself.

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Agripreneurial Intention among Young Business Graduates

Noorita Mohammad[1*], Nani Ilyana Shafie[2], Intan Syafinaz Mat Shafie [3], Basri Badyallina[4], Mardhiah Mohammad[5]
[1,2,3] Faculty of Business and Management, University Teknologi Mara Selangor, Puncak Alam, Malaysia
[4]Faculty of Computer and Mathematic Sciences, University Teknologi Mara Segamat, Johor, Malaysia
[5]Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Kuantan, Pahang, Malaysia
noori545@uitm.edu.my, Nani.ilyana@uitm.edu.my[2], intansyafinaz@uitm.edu.my[3], Basribdy@uitm.edu.my[4]
mmoh@iium.edu.my[5]

Abstract: The low level of public involvement in the agricultural sector in many developed and developing countries have led to a magnitude of the food security crisis. Malaysia has a large proportion of young people and has a high rate of youth unemployment. One answer is to encourage recent graduates to start businesses in the agriculture sector. This article presents data that examined the intention of the young graduate to venture into the agricultural sector, using attitude, social norms, and perceived behavioral control to solve the current food security crisis. Data was collected from young graduates who have taken business and entrepreneurship courses at the university. A self-administrated online questionnaire was designed and distributed to these young people. This study contributes to the insight into the young generation of graduates' intention to venture into the agricultural sector as well as provides suggestions or recommendations for future studies.

Keywords: *Agricultural Sectors, Young Graduates, Theory of Planned Behaviors, Intention.*

1. Introduction and Background

Malnutrition, lack of food supply, and poverty have always been long-standing issues. The government and their people, especially in developed and developing countries, have been paying extra attention to the escalating global food crisis as a result of the steady increase in children lacking food and nutrition worldwide as a result of the increase in population, which has led to the catastrophic level of severe malnutrition among children under the age of 5 throughout the world. Across Asia and the Pacific region alone, an estimated 74.5 million children under 5 are stunted (too short for their age) whereas 31.5 million suffer from wasting (too thin for height). The vast majority of these children are from Southern Asia. Nearly 9 percent of the world's population faces hunger and about 840 million people, would have insufficient access to food by 2030, according to the United Nations (UNICEFs, 2018).

The reasons for the food crisis vary from country to country including hyperinflation, rising commodity prices, and environmental disasters such as floods or droughts. The idea of improving food security and the resilience of the local food system to protect against economic slowdowns and downturns as well as those caused by climate change must then be promoted further. The concept of food security encompasses more than just having enough food to eat. Additionally, the standard of food and the dependability of global supply systems are relevant. Lack of food security can lead to conflict, civil unrest, poverty, and hunger. Ensuring food security is crucial due to the rise in climate change, the increase in the world's population, and even supply chain interruptions like those caused by the pandemic (Bene, 2020; Siegner, Sowerwine & Aey, 2018; World Health Organisation, 2021).

Society and government are now immediately concerned with creating awareness, especially among young people to take the opportunities to become agriculture entrepreneurs to increase the supplies of locally grown food. The current trends have encouraged local entrepreneurs into taking opportunities in marketing local food to add to the stock of food in the country. Concurrent shifts in using robots, GPS technology, temperature and moisture sensors, aerial images, and smartphone apps are being used to increase food production, been also used in many regions of the world including Malaysia to ensure more profitable, efficient, safer, and more environmentally friendly method (Mogili & Deepak, 2020; Sivarethinamohan, Yuvaraj, Shanmuga Priya & Sujatha, 2021; Yin, Cao; Marelli, Zeng, Mason & Cao,2021, Muangprathub, Boonnam, Kajornkasirat, Lekbangpong, Wanichsombat & Nillaor,2019; Rathinam, Surendran, Shilpa, Grace & Sherin; 2019).

According to Peng (2019), the concept of food security is defined as "whenever the availability of nutritionally adequate and safe foods, or the ability to acquire acceptable foods in socially acceptable ways, is limited or uncertain". Food security, as practically measured in the United States, is experienced when there is (1) uncertainty about future food availability and access, (2) insufficiency in the amount and kind of food required for a healthy lifestyle, or (3) the need to use socially unacceptable ways to acquire food (National Research Council, 2006). Apart from the most common constraint being lack of economic resources, food security can also be experienced when food is available and accessible but cannot be utilized because of physical or other constraints, such as limited physical functioning of the elderly or disabled (National Research Council, 2006).

In Malaysia, the COVID-19 pandemic has worsened food security concerns among low-income families and forced many children to adopt less healthy diets, leaving them at greater risk of malnutrition. According to our Families on the Edge study, 6 in 10 households living in low-cost flats in Kuala Lumpur are unable to buy enough food for their families (Chek, Gan, Chin & Sulaiman, 2022). Around a quarter of Malaysia's food supply comes from imports. A common item such as chili which is found in most Malaysian cuisines is imported by almost two-thirds from Thailand (Murdad, Muhiddin, Osman, Tajidin, Haida, Awang & Jalloh, 2022).

Unfortunately, Malaysia brought in an astounding RM63 billion worth of food in 2021. The twelfth Malaysia Plan 2021–2025 focuses on measures to boost economic growth, ensure the nation's prosperity can be spread more fairly and equitably, and maintain environmental sustainability to achieve the objective of "Malaysia Prosperous, Inclusive and Sustainable." The two-year COVID pandemic has had a tremendous impact on every industry, including tourism and aviation, and Malaysia and the rest of the world are currently enduring the biggest economic and health crises ever.

The unemployment and poverty crisis happening around the world does not exclude Malaysia. According to statistics, the COVID-19 pandemic's disastrous consequences caused Malaysia's unemployment rate to rise from 3.9 percent in March of the previous year to 4.7 percent in March 2021. The number of employed persons increased by 0.6 percent to 15.33 million, but the unemployment rate rose by 23.4 percent to 753.2 thousand. In the interval, the labor force increased by 1.5 percent to 16.08 million people. In February 2021, the unemployment rate was 4.8 percent (Department of Statistics, Malaysia, 2021).

In areas where there have been problems regulating the prices of commodities in 2022, the rate of inflation is significant. Customers worry about the scarcity of particular products, such as chicken, wheat, chilies, and cooking oils. Customers do gripe about paying exorbitant meal prices at restaurants and shopping centers. Because of inflation, people's purchasing power has decreased and they are not making enough purchases to meet their family's needs, which has further contributed to concerns about food security and malnutrition. Lack of supply and underutilized resources (including financial resources and other resources like transport and manpower) are two possible explanations for why Malaysians endure food security. This caused other issues like a lack of inexpensive access to good quality food.

The country's total food imports continued to increase at an average rate of 4.1 percent per annum from RM45.3 billion in 2015 to RM55.4 billion last year (Ahmad, 2021). The importation of foodstuffs was necessary to cover the shortage of local production and meet domestic demand, especially for foodstuffs that were not economical to produce in the country such as temperate fruits and vegetables, onions, potatoes, wheat, sugar, and sugar preparations. The top five types of food imports for the past year were coffee, cocoa, tea, and spices; grain; vegetables (RM5.1 billion); feedstuffs (RM6.2 billion) as well as other food products and preparations (RM6.6 billion) (Ahmad, 2021).

Food has become more unaffordable, making it difficult for unemployed people to get a balanced diet. People who frequently consume nutrient-poor diets may be at an increased risk of developing obesity, heart disease, hypertension, diabetes, and other chronic diseases. This will have a significant financial and social impact on society in terms of health care. The government's efforts to reduce food imports with the involvement of private companies and professionals, where the government provided tax exemption incentives. Companies that had just ventured into the field of food production were given tax exemption for 10 years. All the finding

has clearly shown that Malaysia is experiencing a food crisis, however, the awareness of young people in agriculture is still unknown.

Targeting, young people, who have more energy and hence be utilized in agriculture is the central focus. Young people are more technology savvy and can learn to apply updated technology and conduct research in agriculture to increase yields and income. The increase in population in Malaysia has led Malaysia to import foodstuffs every year, including basic ingredients such as rice and meat. The role of young people is increasingly important with the development of food insufficiency. Therefore, young people can help further strengthen the Malaysian economy as a strategy to address this basic food shortage by making a career to become a modern farmer.

The government has offered various incentives and incentives to participate and innovate in agriculture to increase crop and livestock yields and has already produced several successful young agricultural entrepreneurs. A career as a modern farmer or entrepreneur in agriculture can provide the same high income as the manufacturing industry and others but young people still have not taken the challenge and not much is known whether there are changes in their belief among young people that to become an entrepreneur in the agricultural industry can provide high-income earning is unclear. The minimal young participation and their understanding of contributing to economic growth and becoming involved in the agricultural sector need some insight into understanding the dimension that underlies their behavioral intention. Therefore, it is very important to ensure that the attitudes of young people toward becoming agriculture entrepreneurs are known to know their intention to shift into the agriculture sector.

Cultivating agricultural entrepreneur's intention, especially young people can be linked to agricultural innovation and at the same time, contribute to the economic development of a country by creating job employment opportunities (Ridha & Wahyu, 2017, Widiyanti, Setyowati & Ardianto 2018; Tiraieyari & Krauss, 2018). Entrepreneur intention is defined as a conscious state of mind that precedes action and directs attention toward entrepreneurial behaviors such as venturing into agriculture (Musa, Idris, & Haris, 2021; Sarkar, Wagi, Rahman, Memon & Qian 2022). Research confirms that intentions play an important role in the decision to venture into a farmer (Bednarikova, Bavorova, & Ponkina, 2020, Magagula & Tsvakirai, 2020). The finding of this study provides insight into stimulating the young generation to venture into agricultural participation. Therefore, it is important to investigate young entrepreneurial intentions in agriculture for current and future industry development (Geza, Wendy, et al, 2021). There is a need for decision-makers, policymakers, and researchers in the area of agriculture to further promote participation and collaboration within the organization in shaping the issues on food security and future food systems to increase youths' intentions to engage in agribusinesses.

Research Objectives

The following was the general objective of this study:

- To determine whether the young graduate's attitudes have a significant relationship to agricultural entrepreneurial intention to venture into agricultural sectors
- To determine whether the young graduate's subjective norms have a significant relationship with agriculture entrepreneurial intention to venture into agricultural sectors
- To determine whether the young graduate's perceived behavioral control has a significant relationship with entrepreneurial intention to venture into agricultural sectors

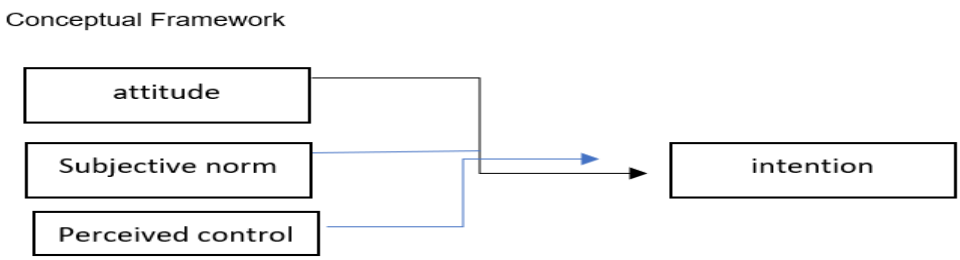
Research Questions

Based on the research background and problem statement, this study seeks to address the following research questions.

- Do the attitudes have a significant relationship toward young people's intention to venture into agricultural sectors?
- Does the subjective norms have a significant relationship with young people's intention to venture into agricultural sectors
- Does the perceived behavioral control have a significant relationship with young people's intention to venture into agricultural sectors

Conceptual Framework and Hypotheses Development

Figure 1: Theoretical Framework



2. Literature Review

Theory of Planned Behavior

The theory of planned behavior symbolizes a theory that links an individual's beliefs and behavior. This concept was previously proposed by Fishbein and Ajzen (1977) in the Theory of Reasoned Action. In an attempt to improve the predictive power of the theory of reasoned action, a few dimensions were added including perceived behavioral control. Following its inception, the extended framework of Reasoned Action Theory was later known as the Theory of Planned Behaviors. Until today, the Theory of Planned behavior is regarded as one of the most predictive persuasion theories. It has been applied to studies to examine the relationship among beliefs, attitudes, behavioral intentions and actual behavior in various fields such as advertising, public relations, advertising campaigns and healthcare (Ajzen et al., 1991, 2002). The theory states that attitude toward behavior, subjective norms, and perceived behavioral control, together may predict an individual's behavioral intentions and actual behaviors. For attitudes towards behavior, an individual's positive or negative evaluation of self-performance of the particular behavior was fundamental.

The concept is the degree to which the performance of the behavior is positively or negatively valued. It is determined by the total set of accessible behavioral beliefs linking the behavior to various outcomes and other attributes. While subjective norms are used to test an individual perception of a particular behavior, it is influenced by the judgment of significant others (Ajzen, 2002). This dimension purportedly examines how the individual decision is affected by the other's influence rather than do the decision by them. Perceived behavioral control is an individual's perceived ease or difficulty in performing a particular behavior. It is assumed that perceived behavioral control is determined by the total set of accessible control beliefs (Ajzen, 1991). The TPB assumes that intention is the most important predictor of behavior. The intention is determined by attitude (the individual's positive or negative evaluation of the behavior), subjective norm (perceived social pressure to perform or not perform a behavior), and perceived behavioral control (PBC; perceived ease or difficulty of performing a behavior; also thought to be a direct predictor of behavior). Attitude, subjective norm and PBC are informed by underlying behavioral, normative and control beliefs respectively. The discussion results in the following hypotheses:

H1: The attitude of young graduates has a significant relationship with the intention to venture into agricultural sectors.
H2: the young graduate's subjective norm has a significant relationship to the intention to venture into agricultural sectors
H3: the young graduate's perceived behavioral control has a significant relationship with the intention to venture into the agricultural sectors

Thus, the effectiveness and the success factors due to having the right intention for the entrepreneurs is the main concern for not only the academic but also the nation in realizing the goals to become a high-income

country and a better standard of living. This study is done to utilize the TPB theory to predict intention for entrepreneurship through the dimension o attitude, subjective norm, and perceived behavioral control (Figure 1).

3. Research Methodology

This study utilized the quantitative method of the survey that focuses on university students from the faculty of Business and Management. Convenience sampling was conducted among participants of different categories of business disciplines within the Faculty of Business and Management in UiTM, Puncak Alam, Selangor. The survey yielded 209 responses and after data screening, 209 usable and completed responses were used in the analysis. The sample size was 200 and was calculated based on recommendations by Bullen & Brack (2014). Data collection was conducted online for a two-month period, which is from 1 November 2022 to 31 December 2022. The participation was voluntary and the respondents have some basic knowledge on urban farming and some even had experience in farming due to some homegrown fruit or vegetable plant in their house compound for the past three months.

The participant was required to complete the survey, which were designed in the form of structured self-administrated close-ended questions that comprises four sections. Section A was related to the demographics of the respondents whereas Section B gathered the experience of the respondent on their agricultural activities. Next, Section C asked the respondent their perception of, attitude, social norm, and perceived behavioral control and finally, questionnaires that were related to student intention toward involvement in agricultural activities. In this study, Section D was measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). A list of measurement items were presented in Table 2. The measurement of items was obtained and adapted from Linen & Chen, (2009) and Shah & Soomro, (2017).

The cross-sectional data were collected and analyzed using SPSS (Statistical Package for Social Sciences) together with descriptive analysis. Correlation and multiple regression were used to look for associations between variables and to test any cause and effect between two variables respectively. As such, the mean rating and standard deviation of a particular attribute shall provide insight into individuals' behavior and intention to engage in entrepreneurship.

4. Results

The summary of the demographic profiles of the respondents was shown in Table 2. The study found that the majority of the respondents were female with 69.4%. Meanwhile, for their age group most of the respondents who fell below 22 old reported 78.5%, and more than 22 years old reported 21.5%. Remarkably, most of the respondents (94.3%) are from the degree program while from diploma courses 5.7 %. Most of the respondent's parents do not come from an agricultural background and only 17.2 % come from parents working in the agricultural sector. Lastly, only 29.7 % know that they were various agencies can be contacted to aid and able to give subsidy them in starting a business in the agricultural sector, while 70.3% do not know (Please refer to Table 1.)

Table 1: Demographic statistics (N=209)

	Demographic	Percentage
Gender	Male	30.6
	Female	69.4
Age	More than 22	21.5
	Less than 22	78.5
Education background	Degree course	94.30
	Diploma course	5.7
My family background is in the agriculture sector	Yes	17.2
	No	82.8
Knowledge for agriculture	no	70.3
	yes	29.5

Table 2: The Scope of Variables in this Study

No	Variables	
1	intention	6 items
2	attitude	5 items
3	social norms	3 items
4	Perceived behavioral control	4 items
	Total	**18 items**

Reliability Assessment

Subsequently, the normality of the data was conducted using SPSS and was further tested for reliability using Cronbach's alpha. The reliability of the measurement items for all the variables is as indicated in Table 2, and the values of Cronbach Alpha obtained from the test were between 0.581 and 0.944. Therefore, the instrument used in the study was consistent and highly reliable.

Table 3: Reliability test of the measurement items

	No of items	Cronbach's Alpha
intention	6	0.944
attitude	5	0.804
Perceived behavior control	4	0.739
Subjective norm	3	0.581
Overall (total)	18	

Regression analysis

The result shows that there were significant relationships between the independent variable (attitude, and perceived behavioral control) and the dependent variable: intention to venture into agricultural activities except for the factor of subjective norms. The significant value of the independent variable showed is equal to .000 which is less than 0.05 ($p>0.05$).

Multiple regression in Table 4 below shows that ANOVA F-test, the P-value of every independent variable is 137.602 and its significant value is equal to 0.000, which means that its significant value is less than the alpha value of 0.05. It is clearly can be seen that all the independent variables used in this research were significant and its hypothesis can be tested.

Table 4: Multiple Regression ANOVA

Model	Sum of Squares	df	Mean square	F	Sig.
Regression	111.913	3	37.304	137.602	.000
Residual	55.576	205	.271		
Total	167.489	208			

a. Predictors: (Constant), attitude, subjective norms and perceived behavioral control
b. Dependent variable: intention to venture into agricultural activities.

Multiple regressions in Table 5 show the R squared result value was equal to 0.668 this had shown that 66.8% of the variance in the selected dependent variable which is a factor that influences young graduate intention to venture into agricultural activities purchased intention can be explained by the changes in the selected independent variables which is attitude and perceived behavioral control except for subjective norms. The rest of the percentages are explained by the other factors which are not included in the model.

Table 5: Multiple Regression–Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the estimate
1	.817[a]	.668	.663	.52068

a. Predictors: (Constant), attitude, subjective norms and perceived behavioral control

Hypothesis Testing

Based on the multiple regression coefficients Table 6 shows the summary of the hypothesis results. H1 and H3 have a significant relationship based on the p-value less than 0.05 except for H2.

Table 6: Coefficients of the Regression Model

		Unstandardized coefficients	Standardized coefficients			Result
Variable	B	Standard Error	Beta	t	Sig.	
(Constant)	-.801	.205		-3.913	.000	
attitude	.688	.061	.541	11.241	.000	**Supported**
Subjective norm	.022	.052	.018	0.427	.670	**Rejected**
Perceived behavior control	.449	.057	.382	7.865	.000	**Supported**

a. Dependent variable: intention to venture into agricultural activities

Discussion

The premise of this study is that insufficient young participation in Malaysia's agriculture sector threatens food security and undermines efforts by the government to promote economic growth and reduce unemployment. The study made the argument that program to engage young people in the agriculture sector should begin by looking at their intentions to pursue career opportunities in the field using the concept of planned behavior.

The association of attitude, subjective norms, and perceived behavioral control in influencing the intention to venture into agricultural activities among young graduates in Selangor was established. Thus, the objective of the study to understand the relationship between the independent variable and dependent variables has been achieved. This research found that attitude and perceived behavioral control have a positive relationship with agripreneurial intention. In terms of attitude, the finding shows that there exists a positive relationship between attitude and agripreneurial intention. The young graduates perceived that being a modern agricultural entrepreneur implied more advantages and interests among various career choices. If they are given the opportunity and resources, they would like to start a business in the agricultural sector which think gave them great satisfaction. This result is in line with Shidiq (2020), Simbeko et. al (2023) and Sahni, Janjhua & Sharma (2020) finding that attitude and agricultural intention have a favorable association.

Following that, perceived behavior was discovered to have a positive relationship with agribusiness intention among graduates. As a result, these graduates believe they have complete control over the situation because they believe that being an entrepreneur in agriculture is very easy and that the chances of failure are lower than in other types of business. It is found in the previous study that; perceived behavioral control is prominent in influencing the decisions to become agripreneurship. This outcome supports Manigo (2021) and Shidiq (2020) findings that perceived behavioral control and agricultural intention have a positive connection. The results of this study, surprisingly, showed that subjective norms did not have a major impact on the decision of young graduates in Selangor to engage in agricultural pursuits. These recent graduates believe that careers in agriculture and business are unappealing to their close friends and family. To assist these recent graduates in achieving their goal of becoming future prosperous agricultural entrepreneurs, it may be necessary to continue supporting them as they engage in agricultural operations. These recent grads are aware that engaging in agricultural endeavors will increase the amount of food on the market. In order to emphasize the activity that might allow people to enter into agriculture could lead them to realize their intention, various things can be done to promote agricultural activities.

5. Managerial Implications and Recommendations

By educating others about the potential for growing locally sourced, climate-appropriate fruit and vegetables in their backyards, we can help these young graduates in their goals. More information should be shared about agricultural careers, which recent graduates should carefully explore since the earning potential is good. This will help to address the issue of food availability while also protecting the environment. It is suggested that those recent graduates be encouraged regularly to use their imaginations to manage the unused land for agricultural purposes more effectively. Future research may focus on additional elements that could affect a graduate's decision to engage in agricultural pursuits.

Conclusion

In conclusion, young graduates have a crucial role to play in the development and growth of the agricultural sector in Malaysia. Despite the challenges faced by the industry, including the aging workforce and there are numerous opportunities for young graduates to make a meaningful impact in this sector. By pursuing careers in agriculture, young graduates can contribute to the development of sustainable farming practices, promote food security, and improve the livelihoods of rural communities. With the right knowledge, skills, and attitude, young graduates can make a significant contribution to the agricultural sector in Malaysia and help ensure its future prosperity.

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Recent Development on Information System Capabilities and Sustainable Competitive Advantages: A Research Model, Review and Directions for Future Research

Abdul Ismail Hj Mohd Jawi[1], Malvern Abdullah[2], Chung Siew Mee @ Ellen Chung[2]
[1]Faculty of Information Management, Universiti Teknologi MARA, Cawangan Sarawak, Malaysia
[2]Faculty of Business and Management, Universiti Teknologi MARA, Cawangan Sarawak, Malaysia
*eastmile@uitm.edu.my, malvernabdullah@uitm.edu.my, ellencsm@uitm.edu.my

Abstract: In today's competitive environment, maintaining a competitive advantage to achieve high performance is a significant challenge for businesses. To succeed, organizations must not only develop competencies in their focus areas but also be able to adapt, change, and realign those competencies in a dynamic and competitive corporate environment. As a result, information system (IS) capabilities are growing in significance as a strategic element that supports the development of competitive advantages and organizational survival. By examining the gap from the prior research, this study intends to answer questions about the link between information system (IS) related capabilities and the sustainable competitive advantages of an organization. The dimensions of information system capabilities (Personnel capability, Administrative capability, Infrastructure capability, and Information management capability) are factors that could explain a firm's sustainable competitive advantage and the theory of dynamic capability is used as the guiding theory, as guidance, and to support the conceptual framework. This will clarify how firms may use their resources and capabilities to boost the effectiveness and utilization of information systems (IS) in daily operations, processes, and people's performance.

Keywords: *Information system capabilities; bureaucracy; sustainable competitive advantage; dynamic capabilities*

1. Introduction and Background

The creation of competitive advantage is increasingly essential for success and a crucial aspect of strategic governance for organizations. However, it is suggested that only a small number of businesses are able to maintain a competitive advantage (Hazzaa, 2018), and earlier research has shown that sustaining a competitive edge requires dynamic firm capabilities to ensure that organizations not only create competencies in their pursuit areas, but are also capable of adapting, changing, and realigning those competencies in a dynamic and competitive corporate world, leading to achieving high-quality performance (Hazaa 2018; Teece, 2007). In the competitive marketplaces of today, intellectual and knowledge-based resources, as well as information technology-enabled skills drive firm performance rather than physical resources. Many organizations struggle with the capability to build market-based capabilities as an essential component of creating sustainable competitive advantage. When a firm's resources and capabilities are efficiently handled through the combination of skills and knowledge, the firm benefits.

At this time, the sustainability and profitability of many firms depend on their ability to use information systems (IS) creatively. To handle information successfully, IS offers information services that deal with business systems, processes, and people. In addition to facilitating organizational transformation, IS offers new opportunities for businesses to redesign their business processes and working practices (Aydiner, 2019; Dedrick, Gurbaxani, & Kraemer, 2003). The main challenges that the majority of modern organizations confront are high-quality performance, dependability, and profitability. With regard to these challenges, information systems are evolving into crucial strategic elements that support the development of competitive advantages and organizational survival (Abugabah & Sanzogni, 2009).

Collectively, several studies have been conducted to resolve a wide range of issues related to IS on firm results (Al-Rawahi & Al-Kharusi, 2020; Aydiner 2016; Aydiner et al., 2019; Barker et al., 2021; Bharadwaj, 2000; Chen, 2012; Gu & Jung, 2013; Kim, Oh, Shin, & Chae, 2009; Lertwongsatien & Ravichandran, 2005; Mithas et al., 2011; Nguyen & Nguyen, 2021; Tippin & Sohi, 2003). According to Aydiner (2016), most of the IS research focused on the technological viewpoint rather than prioritizing the business value. The findings of those earlier studies are fragmented, thus inconclusive, as to what factors could specifically explain the impact of IS-related capabilities on a firm's competitive advantage. Furthermore, several researchers pointed

out that the strength of some IS capabilities is dependent upon interactions or combinations with other capabilities and therefore no single capability becomes the most important to firm performance (Prajogo, 2018; Mackenzie et al. 2011; Devece et al. 2016). The earlier study had considered a wide range of IS capabilities from broad categories that explain their effect on firm results. Most of the earlier studies were conducted in developed economy setting and biased toward knowledge-intensive industries (Devece et al. 2016; Carmichael et al. 2011). Thus, the findings could be misleading and extra care is needed when the findings are used in a different economic setting such as in Malaysia.

Government-Linked Companies (GLC) have historically been important to the development of the Malaysian economy. According to Kowalski et al. (2013), Malaysia has the fifth-highest percentage of state-owned enterprises (SOEs) among the largest companies of any country in the world. Despite being a part of government policy in the development of the country, GLCs had a market capitalization of about RM 250 billion (USD 1.7 billion), or about 36% and 54% of the market capitalization of Bursa Malaysia and the benchmark Kuala Lumpur Composite Index (KLCI), respectively (PCG, 2015). GLCs have a significant presence across all industries, with a concentration in utilities (93%) and transportation and warehousing (80%), where their share is more than 50% in agriculture, banking, information communications, and retail trade (Menon, 2014). GLCs are widely present in various industries, and it is believed that their performance has a significant role in the nation's economic progress. However, few studies in the IS literature discuss these capabilities in the context of Malaysian government-Linked companies.

More recently, several other researchers also looked at other factors and suggested that these factors have an impact on IS and organizational results to some extent (Harun, Saud, Isa & Hussain, 2016; Kim et al, 2014). One key factor is bureaucracy. There have been numerous studies concerning bureaucracy and firm performance, however, limited studies can be found to have examined the bureaucratic characteristics within the context of Malaysian GLCs. A previous study also suggested that more critical research is needed to investigate the bureaucratic process between business operations in Malaysia. It is argued that lengthy and time-consuming administrative procedures pose distinguished challenges to the management of businesses in Malaysia (Harun et al, 2016). In addition, earlier studies also found that state-owned GLCs generally face more bureaucracy, more redundancies and a greater agency problem, thereby affecting firm efficiency (Najid & Rahman, 2011).

The Putrajaya Committee GLC High-Performance Report (2014) states that GLCs are anticipated to obtain a competitive advantage, which is extremely crucial in guaranteeing the sustainability, business survival, and long-term success of GLCs. However, the Global Competitiveness Report 2017–2018 highlighted inefficient bureaucracy as one of the biggest challenges faced by Malaysian businesses. Governments have made significant attempts towards addressing this negative perception, but rankings for bureaucratic efficiency remained low (Haryono & Khalil, 2011). Therefore, further investigation is needed to determine how bureaucracy influences the relationship between ISC capabilities and competitive advantage. By examining the gaps from the previous research, this survey paper's primary focus is to investigate the persistently significant impact of IS capabilities on organizations' sustainable competitive advantage. The main contribution of this paper is to address issues related to the relationship between information system capabilities and sustainable competitive advantage.

2. Literature Review

One of the theoretical models to enthuse recent research in information systems (IS) is the resource-based view (RBV), where earlier works in the fields were undertaken by Powell and Dent- Micallef (1997), Mata et al. (1995), and Clemons and Row (1991). The resource-based view (RBV) of the firm was spawned by the work of Penrose (1959), in which she highlighted the basis of the RBV theory by regarded that firms were "resource bundles" and that these resources give each firm its unique character and clarified essentially the difference in performance between firms. Later the theory was expanded further by Teece (1982), and Wernerfelt (1984), where the significance of the resource perspective as an explanation for variations of performance between firms was broadly recognized and the RBV theory also determined a new direction in the field of strategic management. Later, Barney (1991) developed a more concrete and comprehensive

framework for identifying the necessary features of business resources to achieve sustainable competitive advantage.

Many authors in IS studies (Bharadwaj, 2000; Kim et al., 2009; Mithas et al. 2011, Chen, 2012; Gu & Jung, 2013; Devece, 2016; Aydiner et al. 2019) adopted Barney's (1991) theory that only resources that are valuable, rare, unique, and non-substitutable can generate and sustain competitive advantage. The fundamental premise of the RBV is that a business is thought of as a collection of productive assets of which worth for firm growth resides not in the assets themselves but rather in the services or applications they provide. The RBV examines the relationship between the internal features of the firm and performance, arguing that firms have the resources to develop a competitive advantage to attain superior performance. (Wernerfelt, 1984; Barney, 1991).

Although the resource-based view (RBV) can explain an organization's current competitive advantage, researchers like Teece et al. (1997) and Eisenhardt and Martin (2000) have criticized it for its static nature and inability to explain the organization's sustainable competitive advantage. To get beyond its multiple shortcomings, the RBV theory has to be improved and extended in the present dynamic business environment additionally, they suggested the idea of "dynamic capability." According to Teece (2007), dynamic capabilities are the skills necessary to adapt to a volatile environment through the integration, development, and reconfiguration of internal and external competencies in periods of rapid technological change. These skills enable business enterprises to develop, use, and safeguard firm assets that support superior long-term business performance. Teece et al. (1997) further emphasized that even after amassing all of the priceless technological assets, a "resource-based strategy" alone is unable to maintain its notable competitive advantages. According to this concept, information systems (IS) capabilities are linked to resources and competencies, and when both of these elements come together, they form the basis of a competitive paradigm that provides knowledge to organizations that enhance performance (Peppard & Ward, 2004).

According to Lim et al. (2011), the dynamic capacity theory served as the foundation for earlier studies on IT business values that were both theoretical and empirical. For instance, Olszak (2014) proposed a model of business intelligence and analytics as a dynamic capability and demonstrated that six areas of business intelligence and analytic capabilities (governance, culture, technology, people, processes, and change and creativity) ought to be simultaneously developed to integrate, build, and reconfigure informational resources and business processes that can address rapidly changing business environments. Battleson et al. (2016) looked at how IS capabilities can expedite an organization's pursuit of dynamic capabilities. The two key elements—the capacity to update an organization's capacity to adapt to the changing business environment and the crucial role of strategic management in the adaptation, integration, and reconfiguration of internal and external resources, functional competencies, and organizational skills to meet the demands of an evolving environment—were highlighted by the concept of "dynamic capabilities." By generating consistency in dynamic situations like the shakeout of firms and the growth of innovation across the industry life cycle, dynamic capabilities may be a key driver of the industry life cycle (Mitchell & Skrzypacz, 2013).

Considering the dynamic nature of today's business landscape, the present study is grounded in the theory of dynamic capabilities, serving as the theoretical basis for this research. Specifically, the study emphasizes the information system (IS) capabilities of firms, encompassing both resources and competencies, as potential factors influencing a firm's sustainable competitive advantage.

Previous studies on Information system (IS)

Many recent studies, guided by the RBV and dynamic capability framework had identified and investigated various IS capabilities that lead to competitive advantage and/ or firm performance (Al-Rawahi & Al-Kharusi, 2020; Aydiner et al, 2019; Barker et al., 2021; Chen, 2012; Gu & Jung, 2013; Mithas et al, 2011; Nguyen & Nguyen, 2021; Pérez-López & Alegre, 2012; Wang et al, 2015). A large number of factors (resources and competencies) affecting firm performance had been suggested by the literature, thus producing conflicting findings and had resulted in a lot of confusion. Several studies had classified these factors and subsequently developed IS capabilities and firm performance models (Aydiner 2016; Gu & Jung, 2013; Mithas et al, 2011). Despite being no consensus as to what factors can specifically explain firm performance, none of these studies

had actually sought to investigate the effect of IS capabilities on a firm's sustainable competitive advantages particularly in a developing country setting. An example of this is seen in the work of Mithas et al. (2011), who constructed a model to examine firm performance. They proposed that IT-enabled information management capabilities have a positive impact on various measures of firm performance, including customer satisfaction, financial outcomes, human resources, and organizational effectiveness. The study's significant findings highlight important managerial implications, emphasizing the need for senior leaders to prioritize the establishment of suitable conditions for the development of IT infrastructure and information management capabilities. These foundational capabilities are crucial for enhancing overall firm performance and building other complementary capabilities. This means the IT infrastructure is the supply side of IS capabilities and has become the foundation of all business applications. It establishes the technical platform and the service resources needed to respond rapidly to a business' needs and changes. Although their study found several interesting findings, the factors considered in this study were rather limited to a single capability and thus cannot really explain the other relevant IS capabilities that can influence firm performance.

Gu and Jung (2013) proposed a new model, an IS-integrated model formed from three conceptual frameworks: the Resource-Based View (RBV), process capabilities, and the Information Systems (IS) Success Model (ISSM). The study examined the influence of information technology resources, capabilities, and traits on organizational performance. It also provided an integrated strategy for assessing organizational effectiveness. IS capabilities were defined in this study as the firm's ability to carry out routines inside the IS department and support the delivery of IS services to the organization. The determination of IS capabilities (derived from IS resources and complimentary firm resources) merely on the IS processes is rather constricted and cannot explain as there might be other capabilities affecting firm performance. Also, some studies have accepted that IS capabilities are related to resources and competencies, which was not considered in this study.

Bhatt, Wang, and Rodger (2017), on the other hand, performed a study that viewed IS competencies as IS capabilities. Their study sought to investigate the role of organizational learning intensity in regulating the link between IS competencies and competitive advantages. IS infrastructure flexibility, IS business competence and IS business relationship were among the highlighted capabilities. The study's findings revealed that the flexibility of IT infrastructure, IT business skills, and learning intensity all had a substantial impact on competitive advantages. Organizational learning intensity, in particular, positively impacted the relationship between IT business skills and competitive advantages. However, it had no moderating influence on the relationship between IT infrastructure flexibility and competitive advantages.

Aydiner et al. (2019) then created a model to determine the elements influencing firm performance. Their research concentrated on three intangible assets associated with IS capabilities: IS infrastructure capability, IS-human resource capability, and IS-administrative capability. Multiple mediating factors, such as decision-making performance and business-process performance, were discovered and their influence on firm performance was examined. The study's major findings highlight the proposed serially mediating model's crucial mediating function in the links between human resource and administrative-related IS capabilities and firm performance.

Another study, by Kruja and Kamberi (2020), uses information systems as a competitive advantage tool, focusing on the use of IS in Albanian businesses and its impact on competitiveness. Study results show that there is a significant relationship between firm size and IT/IS usage. At the same time, it has been discovered that while IT/IS usage has an impact on firm competitiveness, cost and product differentiation do not require an IS as a facilitator. Although the findings are notable, the IS in this study focused solely on the communication aspect (kind of information system employed, business communication methods, means of communication within the supply chain, IS-communication impact and online service) and did not cover other IS-related capabilities that may have an impact on competitive advantage.

A more recent model was proposed by Tashtoush (2021), utilizing the Resource-Based View (RBV) framework to explore the mediating role of competitive advantage in the relationship between information systems capabilities and organizational performance. The model specifically examined human resources,

software, and hardware as the key IS capabilities. The study findings indicated that information systems capabilities, competitive advantage, and firm performance exhibited statistically significant relationships. However, it is important to note that this study focused on Jordanian industrial corporations, which raises questions about whether the observed relationships hold true in other sectors. Additionally, it remains unclear whether the relationships between IS capabilities, competitive advantage, and firm performance would be similar in other countries, such as Malaysia. Further research is needed to explore these dynamics in different sectors and international contexts.

Information system capabilities (ISC)

Several previous research has produced a fragmented image of the reasons for IS capability. Some of the structures or elements are constantly intersected and share at least some of their boundaries. IS capabilities, according to Ross et al. (1996), may be defined as the ability to undertake strategically aligned planning, rapid delivery, and cost-effective operation and support. Bharadwaj (2000) defined IS skills as a company's ability to acquire, implement, and exploit IS resources to design and support business strategy and value chain activities. Later, Gu and Jung (2013) defined IS capabilities as the firm's ability to conduct procedures within the IS department, allowing the organization to utilize IS services.

Aydiner et al. (2019) defined IS capabilities as effectively applied categorization and access to knowledge in recent research. They emphasized the need of creating IS skills through a two-way strategy alignment between business and technology. Tangible and intangible resources are combined to form capabilities that allow a company to efficiently deploy resources. The firm's ability to successfully develop and use IT systems is a significant indicator of IS skills, necessitating strategically oriented planning for the speedy delivery as well as cost-effective operation and support (Gu & Jung, 2013). Argyropoulou (2013) claimed that IS is a complex social system that involves people, processes, and business systems to efficiently manage information. Previous studies have mostly focused on the tangible component of IS capabilities, such as IT investment or IT capacity. A previous study has also shown that IS capabilities are linked to resources and competencies. IS capabilities are based on IS resources and IS competencies, which combine to produce a competitive paradigm that equips organizations with knowledge to attain superior performance (Aydiner, 2016; Wang et al., 2015). IS resources are the firm's IT infrastructure that it owns and controls, whereas competencies are the firm's ability to organize, utilize and activate these resources.

This research describes IS capabilities by splitting them into four separate components that encompass both resources and competencies, based on the resource-based view and dynamic capability theory. To reduce the complexity of the constructs, four capabilities discovered and defined by researchers in IS - performance studies are recognized and characterized as **personnel capability** (Aydiner, 2016; Aydiner et al, 2019; Bharadwaj, 2000; Cepeda-Carrion, Cegarra-Navarro & Jimenez-Jimenez, 2012; Pérez-López & Alegre, 2012), **administrative capability** (Aydiner, 2016; Aydiner et al, 2019; Pérez-López & Alegre, 2012; 0Ravinchandran & Lertwongsatien, 2005; Yeh, Lee & Pai, 2012), **infrastructure capability** (Aydiner, 2016; Aydiner et al, 2019; Mithas et al, 2011; Pérez-López & Alegre, 2012) and **information management capability** (Brinkhues, Carlos & Macada, 2015; Devece et al, 2017: Khaturia, Saldanha, Khuntia & Rojas, 2016; Mithas et al, 2011; Zhang, Wang & Zhuang, 2017). These domains have been developed and organized to encompass IT infrastructure, human capabilities, and administrative and information management concerns. As a result, in the research, these domains are conceptualized as sub-constructs that form IS capabilities, and they are interlinked rather than hierarchically linked to one another.

Information System capabilities dimensions: personnel capability, administrative capability, infrastructure capability and information management capability

Many studies had viewed personnel capability as a potential source of competitive advantage and performance (Al-Karaghouli et al., 2020; Aydiner et al. 2019; Bharadwaj, 2000; Chen, 2012: El-Masri et al., 2021; Gu & Jung, 2013; Khodakarami & Chan, 2020; Mata et al. 1995; Ross et al. 2007; Ravichandran & Lertwongsatien, 2005). For instance, Bharadwaj (2000) who empirically investigated IT capability and firm performance from a resource-based perspective argued that human resources are difficult to acquire and complex to imitate, thus serving as a source of competitive advantage. Also, Chen (2012) in his study specified that human IT resources can generate sub-additive cost and super-additive value synergistic effects on organizational capabilities, therefore are possible sources of sustainable competitive advantages.

Following this, Aydiner (2016) also argued that IS staffs are an important element in improving decision-making capacity and helping to build a sustainable competitive advantage and increase firm efficiency by making better use of company resources and skills. The capacity of personnel contributes significantly to the development of IS capabilities. Tippin and Sohi (2003) state that technical skill sets are necessary for technical operations to complete specified activities at specific performance levels. As a result, personnel capability aims to promote technical capacity and guarantee that it operates effectively and efficiently (Cepeda-Carrion et al., 2012), which may add to a firm's competitive advantage. According to recent research studies, IS personnel capability may be a source of competitive advantage for organizations. Personnel with the necessary skills and experience can optimize information systems, create creative IT solutions, and react to changes in the business environment, resulting in improved performance, creativity, agility, and, ultimately, a competitive advantage (Al-Hawamdeh and Al-Qirim, 2020; Lee et al., 2020; Li et al., 2021).

Administrative capability is considered to be the main driver of IS capability identification and development that is most directly associated with the needs and values of a firm (Wang et al., 2015). Administrative capability is the ability to prepare, coordinate and align business goals towards an effective information system in business processes. Administrative capability should be capable of organizing the finest developing technologies, assessing the demand for technologies, and coordinating with other entities as needed (Chen & Wu, 2011). In relation to the studies, the effectiveness of IT strategy execution has a substantial impact on company performance. For instance, Yeh et al. (2012), in their study posited that organizational competitiveness could be greatly enhanced if the IT strategy could be effectively implemented, thus improving overall organizational performance. According to Mithas (2011), senior leaders need to focus on IT strategy, IT governance, IT resource management and IT investment as key levers for organizational transformation and business excellence. This is later supported by Aydiner (2016) that to carry out administrative duties, leadership is an important element in setting priorities and goals for each of the IS resources and competencies to decide which IS work should be done. Recent studies also suggested that effective information system administrative capability can serve as a source of competitive advantage for organizations. Ghobakhloo et al. (2020) found that effective administrative policies and procedures can enhance innovation performance in SMEs. Goh et al. (2021) demonstrated that effective information system governance, which includes administrative policies and procedures, positively impacted organizational performance. Lee et al. (2020) found that effective administrative policies and procedures positively impacted information quality. As a result, intangible assets of IS-related capabilities, such as administrative capability, are significant components that help to develop a sustainable competitive advantage and enhance company performance by better utilizing an organization's resources and competencies.

The term "infrastructure" relates largely to Information Technology (IT) and is sometimes used interchangeably with the term "IS" in the technology area. IT infrastructure, as one of the firm's most important resources, is a set of common technologies that serve as the basis for all business applications. It is regarded as a key component of a company's structure because it provides the technological framework and service tools required to adapt rapidly to business requirements and changes. IT infrastructure is defined by Pérez-López and Alegre (2012) as the resources, assets, and technologies that contribute to the collection, creation, storage, distribution, and use of information. These technical capabilities enable a company to expedite important business efforts, hence impacting the firm's performance (Aydiner et al., 2019). Flexible IT architecture positively improves IS capabilities by enabling a network system for communicating with other systems and offering a platform for obtaining important data. To correspond with the business's strategy and goals, all sections of a firm must adapt and integrate the IT infrastructure. As a result, infrastructure is an essential component of IS capabilities, allowing a business to reach every location and span the breadth of the firm's borders (Mithas et al., 2011). Aydiner (2016) observes that competitive businesses can replicate one other's IT infrastructure, but when the IT infrastructure is turned into IS infrastructure capability, which is the specific capacity to support IS capabilities, it becomes a rent-yielding resource for a firm. Recent studies have found that having such infrastructure capability can lead to several competitive advantages. For example, Kim et al. (2021) found that having a robust and flexible information system infrastructure can enhance an organization's agility, allowing it to quickly respond to market changes and seize new opportunities. Similarly, Ho et al. (2021) found that having an advanced and well-integrated information system infrastructure can improve an organization's overall performance. Chen et al. (2020) also found that having an advanced and interoperable information system infrastructure can enhance supply

chain integration, leading to a competitive advantage. Therefore, organizations that invest in developing and maintaining their information system infrastructure capability can gain a competitive advantage in today's rapidly changing and highly competitive business environment.

Information management capability refers to a firm's ability to effectively manage both internal and external information. Information management is the final objective of information technology and is recognized as a key benefit of IS capability. Information management involves a combination of automation, organization and processes. It is considered to be one of the firm's most important resources and is critical to the achievement of organizational outcomes (Steventon et al. 2012). Scholars such as Inkinen et al. (2015) emphasized this point by describing how organizations utilize information technology to search for, acquire, and evaluate data to improve decision-making and performance. Knowing how to harness the power of information ubiquity and apply the smaller subsets relevant to the organization, goods, and consumers at a certain point in time will be crucial to identifying new possibilities and avoiding hazards (Hazzaa, 2018). As a result, information capability is most prevalent among firms that are devoted to quality management (Suárez et al., 2014).

According to Zárraga-Rodrguez et al. (2014), an organization has information capacity when the use and management of information are so efficient that it provides a competitive advantage to the organization. This capability may be broken down into a variety of real and observable practices that entail effective information management and use. These are the capabilities of information management, information technology, and information culture. Andrade Rojas et al. (2014a) posit that IMC complements firms' internal resources such that firms can attain a better position in competitive networks. IMC is also a manifestation of firms' ability to manage information and IMC functions as either an antecedent of other organizational capabilities or as a complement of firm resources. Recent research has shown that effective information management capability can be a source of competitive advantage for organizations. Kim and Kim (2020) found that effective information management capability, including data quality, data governance, and data analysis, positively impacted firm performance. Qian et al. (2021) demonstrated that information management capability, including information quality, information use, and information sharing, positively impacted organizational innovation. Huang and Li (2021) showed that information management capability, including data sharing, data integration, and data security, positively impacted supply chain management. These studies suggest that effective information management capability can help organizations achieve greater firm performance, innovation, and supply chain management, ultimately leading to a competitive advantage. Therefore, investing in information management capability can be a strategic move for organizations to gain a competitive edge.

Sustainable competitive advantages

Sustainable competitive advantages are the key dependent variable of interest in this study. To remain in today's dynamic global business climate, organizations must not be satisfied with a competitive edge but must continue to improve and evolve. By this, Young (2015) emphasizes the relevance of a firm's capability to continuously create above-average market returns and to regularly outperform its competitors in terms of business performance. He sees them as two significant indicators of a firm's long-term competitive advantage. For example, Zairi (2005) argues that to survive and maintain a competitive edge in today's economic climate, an organization must constantly improve.

Similarly, Porter (1990) claimed that the only way to achieve long-term competitive advantage is to improve competitive advantage. According to Aras and Crowther (2010) and Liu (2013), only successful organizations have a continuous competitive edge. A sustainable competitive advantage is described as a capacity to create internal foundations and procedures that encourage organizational personnel to generate unique capabilities, allowing the firm to adapt to changing strategies and consumer needs (Ulrich and Lake, 1990). Similarly, Barney (1991) claimed that to maintain a competitive advantage, an organization must pursue tactics that maximize its internal strengths. The company should capitalize on environmental possibilities, mitigate external dangers, and avoid losses caused by internal flaws. Furthermore, he contended that organizations with a value-creation strategy had a sustainable competitive edge over their competitors. Such businesses attempt to multiply the benefits of such an approach.

According to Aras and Crowther (2010), a sustainable competitive advantage consists of four components: profitability, sustainability, corporate reputation, and good governance. Profitability is defined as an appropriate return for the degree of risk incurred. Sustainability is concerned with the impact of current actions on future alternatives. Corporate governance is the process of striking a balance between a company's economic and social aims, such as its behavior in its social context. Finally, company reputation is an intangible aspect that is frequently the most essential factor in acquiring a competitive advantage as well as financial and social success. Each of the four elements is critical to business success, but they only provide outstanding results when integrated, hence they should be regarded as the foundation of any organization's SCA.

IS has improved business performance by enhancing effectiveness and efficiency (Dehning & Stratopoulos, 2003; Hevner, March, & Park, 2004). IS may be utilized to generate long-term competitive advantages by harnessing unique company features. Previous research indicated that firms may increase firm performance by lowering costs and delivery times while improving customer service and dependability through ICT deployment (Daneshvar Kakhki & Gargeya, 2019). As a result, the potential of IS to improve management decision-making capabilities and productivity by implementing enterprise resource systems, supply chain collaboration support systems (Hadaya & Cassivi, 2012), and social reference systems to support sustainable social commerce sales have also been investigated (Lee, Lee, & Oh, 2015). In summary, a long-term competitive advantage is required for continued higher performance. Firms must differentiate themselves and seek a premium price structure (Bharadwaj et al., 1993). The research also argues that information systems include important procedures that assist organizations in gaining and maintaining a competitive edge.

Despite several research studies on the firm competitive advantage, relatively few have explored the function of bureaucracy as a factor that may affect a firm competitive advantage, particularly in the Malaysian setting. The core ideas of bureaucracy have been attempted to be constructed in a broad range of publications (Damarin, 2015; Torstendahl, 2015). Previous research has indicated that additional critical research is required to analyze the bureaucratic procedure between corporate operations in Malaysia. Long and time-consuming administrative processes, it is suggested, pose significant problems to Malaysian business management (Harun et al, 2016). According to the Global Competitiveness Report 2017-2018, ineffective bureaucracy is one of the most troublesome factors faced by Malaysian businesses. Despite considerable government attempts to mend this unfavorable image, bureaucratic efficiency rankings remain low, which leads to confusion, risk, and insecurity (Haryono & Khalil, 2011). Furthermore, few studies have been conducted on the link between long-standing bureaucracy and technology (Kim, Paik, & Lee, 2014). Several research studies examined the influence of information systems on organizational efficiency in the short term (Dewett & Jones, 2001; Heintze & Bretschneider, 2000; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Iivari, 2005; Kositanurit, Ngwenyama, & Osei-Bryson, 2006). Meanwhile, several other studies had also investigated IT's long-term impact on bureaucratic structure (Bovens & Zouridis, 2002; Daft, 2004; Dewett & Jones, 2001; Moon & Bretschneider, 2002; Taylan, 2010; Welch & Pandey, 2006). None of the aforementioned studies discusses the bureaucracy's response to IS and surprisingly, very little study can be found that showed empirical results of such a link between bureaucracy and sustainable competitive advantages of a firm.

Proposed Research Model

To further expand the knowledge in IS discipline, an attempt is made to develop a model to examine the key factors (including the IS capabilities of the firm) that could affect the firm's competitive advantage. The proposed model consists of six major domain constructs; (1) personnel capability, (2) administrative capability, (3) infrastructure capability, (4) information management capability, (5) moderator and (6) firm's sustainable competitive advantage.

Figure 1: Proposed Research Model

3. Research Methodology

This study proposed to explore the effect of information system (IS) capabilities on sustainable competitive advantages in its research setting in which the unit of analysis is at the organizational level. The study is conducted on the Malaysia Government Linked Companies (GLCs) both at the states and federal levels. Data will be gathered through personal interviews as well as a questionnaire survey. Before developing the questionnaire, personal interviews are conducted to extract pertinent additional aspects of the local environment that affect the firm competitive advantage. To create the questionnaires, elements derived from interviews will be combined with factors derived from the literature. The proposed study will use structured questionnaires as the primary mode of data collection and will use an online distribution technique. The online distribution approach was chosen since it allows for greater geographical coverage of responders. When compared to the personal interview approach, it will also minimize interviewer biases. The study makes use of a list of GLCs in Malaysia acquired from various online websites. Accordingly, there are 462 GLCs listed in Malaysia, including federal-states owned GLCs (Arumugam et al., 2011; Kadir, Abidin, Ramli, & Surbaini, 2014; Said & Jaafar, 2014), however, 455 GLCs are considered residents for the research owing to mergers and acquisitions (Nik Herda, 2019). Purposive sampling will be used in the study. Purposive sampling is used since the characteristics of respondents in this study will be determined depending on the position they occupy. The research participants have to be medium or large companies having at least 20% government ownership (Nik Herda, 2019; Razak, Ahmad, & Joher, 2011; PCG, 2006). As a result, small-scale and micro-level firms have been phased out. The surveys' targeted respondents were senior and executive managers or mid-level managers with relevant knowledge of IS capabilities as well as knowledge of the organization as a whole.

4. Managerial Implications and Recommendations

The dynamic capabilities theory (Teece et al, 1997) will serve as a guide for this research, with the ultimate objective of developing an alternative model and contributing to the area of information systems management. First, several studies have investigated the effects of information systems on firm performance (Aydiner, 2019; Brinkhues, Carlos, & Macada, 2015; Carmichael et al., 2011; Devece et al., 2013 & 2015; Hazzaa, 2018; Kathuria, 2017; Mithas et al., 2011; Tippins & Sohi, 2003), very few studies have considered the interactions or combinations of resources and competencies as capabilities or most studies had only considered these factors in isolation, thus the findings are often conflicting and provide inconclusive evidence.

Despite multiple research on IS and firm results, there has been little consensus on how IS capabilities contribute to a firm's competitive advantage. Taking this into consideration, the current study seeks to investigate the impact of IS capabilities (personnel capability, administrative capability, infrastructure

capability, and information management capability) on a firm competitive advantage to create a broader view of the ability of the combinations of resources in firms to promote superior performance as well as to shed some light on why previous study findings have been inconsistent.

Several researchers also looked at other factors and suggested that these factors have an impact on IS and organizational results to some extent (Harun, Saud, Isa & Hussain, 2016; Kim et al, 2014). One key factor is bureaucracy. There have been numerous studies concerning bureaucracy and firm performance, however, limited studies can be found to have examined the bureaucratic characteristics within the context of Malaysian GLCs. Previous research has also highlighted that more critical research is needed to explore the bureaucratic process in Malaysian business operations. Long and time-consuming administrative processes, it is suggested, pose significant problems to Malaysian corporate management (Harun et al, 2016). As a result, the relationship between the moderating variable is a critical gap that will be filled by this study. The knowledge of the impact of bureaucracy as moderating factor in assessing the effect of ISC and a firm's competitive advantage will be the extension of the theory from this study.

The proposed study will be able to give policymakers relevant guidance for administering GLCs by the National Policy on Industry 4.0 migration. Furthermore, it will give guidance on how firms may adopt information management programs to increase the efficiency and usage of IS in business routines, processes, and personnel. Furthermore, the survey items developed by the study are intended to contribute to the body of knowledge that is unique to Malaysian GLCs. The proposed study will also contribute to the information system literature by adding bureaucracy and utilizing the dynamic capability theory, which will be tested empirically on Malaysian GLCs.

5. Conclusion

The purpose of this article was to create a framework for future research on firm information system capabilities and sustainable competitive advantages among Malaysian GLCs. Firms must provide specialized services and establish a creative strategy that takes advantage of emerging technology, particularly the information system (IS), to remain competitive. Many firms require innovative use of information systems (IS) to ensure their survival and success. These technologies enable businesses to identify the beneficial effects of information systems as a method of achieving high-quality performance. The essential challenges that most modern organizations confront are high-quality performance, dependability, and profitability. As a result, information system capabilities are becoming an important strategic component that aids in the creation of competitive advantages and promotes organizational survival.

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Development, validity, and reliability of a questionnaire on psychological factors of organic food consumption among Malaysian adults

Nur Aqilah Amalina Jaafar[1], *Norhasmah Sulaiman[2], Mohd Redzwan Sabran[3], Shamsul Azahari Zainal Badari[4]
[1 2 3]Department of Nutrition, Faculty of Medicine and Health Science, Universiti Putra Malaysia, Malaysia
[4]Department of Resource Management and Consumer Studies, Faculty of Human Ecology, Universiti Putra Malaysia, Malaysia
aqilah.jaafar@gmail.com, *norhasmah@upm.edu.my, mohdredzwan@upm.edu.my, shazri@upm.edu.my

Abstract: People believe organic food is safer and healthier since it limits the use of synthetic chemicals as agricultural inputs, which has increased global demand for it. However, it has been reported that Malaysians' actual consumption of organic food is low, despite their great intention to do so. Much previous research has proposed trust in organic food labeling and certification as a potential cause of the intention-behavior gap. However, empirical data to support this view is still lacking. This study aims to develop and validate a questionnaire to assess Malaysians' intention and actual consumption of organic food, along with its factors, using the Theory of Planned Behavior (TPB) with trust as an additional construct. Before the study, the questionnaire was pre-tested for face validity by five expert panels. This cross-sectional study gathered 119 usable self-administered questionnaires completed by Malaysian adults aged 18 to 64. The construct validity was evaluated using exploratory factor analysis (EFA) with principal component analysis (PCA), and varimax rotation. There was a three-factor solution for the attitude construct namely health, food safety, and environmental concern, while only one-factor solution for subjective norm, perceived behavioral control, trust, intention, and actual consumption of organic food. Each construct had a minimum Cronbach's alpha of .70. The questionnaire is a valid and reliable instrument that can be used in larger study settings to further understand the psychological factors of organic food consumption among Malaysian adults to promote more sustainable food consumption in this nation.

Keywords: *Consumer, Food Safety, Organic Food, Sustainability, Theory of Planned Behavior, Trust in Organic Food Labeling, Certification and Control*

1. Introduction and Background

Rising global food demand has led to the industrialization of agricultural-based food. As a result, conventional farming uses a lot of chemical synthetic agricultural inputs, such as pesticides, fertilizers, growth regulators, and feed additives to accelerate agriculture productivity (Botinggo et al., 2021; Udin et al., 2019). This causes rising concerns about food safety and health among consumers. It also draws consumers' attention to environmental issues including climate change, air pollution, and the loss of natural resources due to modern agricultural activities. As a result, consumers worldwide are turning to organic food, which they consider to be a safer, healthier, and more sustainable dietary option (Thøgersen et al., 2017). The shift is likely a result of their intrinsic desire to protect both their health as well as the environment (Tandon et al., 2020). Furthermore, the demand is anticipated to increase worldwide as a response to the outbreak of COVID-19, where people are becoming more health conscious (Qi & Ploeger, 2021). This possibly explains the increase of nearly 18 billion dollars in global organic food sales from the year 2000 to 2020 (Statista, 2021). Similar trends have been observed in Malaysia, where the demand for organic food has increased because of growing concerns about food safety, quality, and improved living standards (Aziz et al., 2020; Tiraieyari et al., 2014).

Although there are no available official statistics, the number of stores that sell organic food in Malaysia has noticeably increased by observation. Even so, the majority of products in Malaysia are still imported from other countries like the U.S., Australia, New Zealand, Japan, China, and Europe (Aziz et al., 2020; Somasundram et al., 2016). This demonstrates why Malaysia is viewed as having one of the Asia-Pacific countries with the greatest potential for the expansion of organic food (Jeyakumar Nathan et al., 2021). Consequently, it would lead to not just the long-standing problem of expensive organic food sold in Malaysia, but also a lack of trust in the labeling, certification, and control of organic food. Numerous organic food certifiers from various nations cause consumers to become confused and worried about fake organic food products (Carfora et al., 2019; Tandon et al., 2020). Additionally, there still are limited empirical studies on

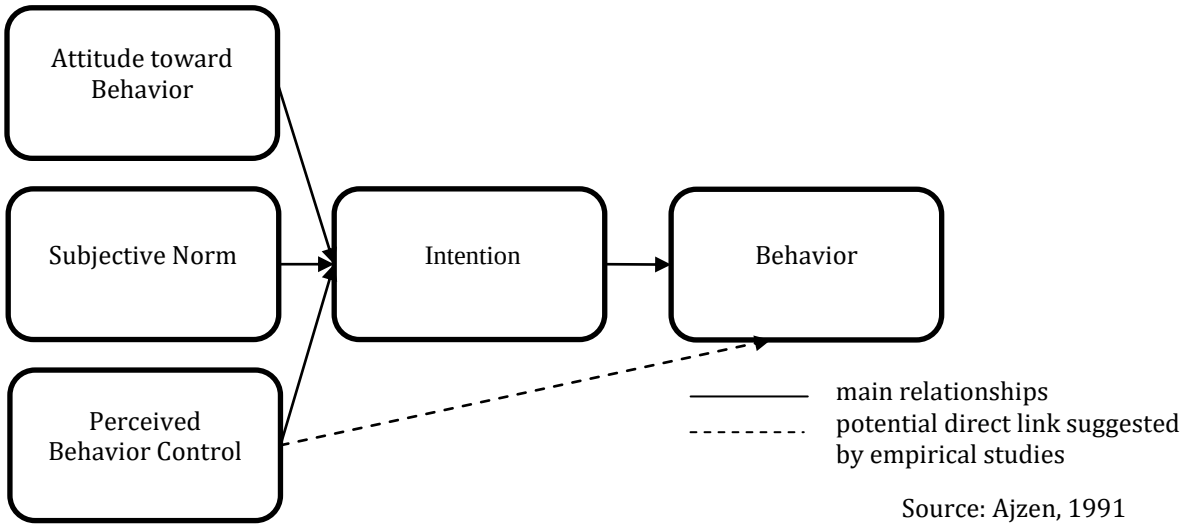
the effect of consumer trust on shaping organic food consumption among Malaysian despite having been highlighted in previous local studies (Jaafar et al., 2020).

Moreover, although several studies indicated that the demand for organic food is outstripping supply, evidence of the actual consumption of organic food in the context of Malaysians is unclear. This warrants the need to investigate and expound upon this gap following the fact that the intention may not necessarily translate into actual behavior for many reasons in the context of organic food consumption (Fleşeriu et al., 2020; Nguyen et al., 2019). Therefore, this study aims to develop and validate the instrument that measures the psychological factors (attitude, subjective norm, and perceived behavioral control), trust in organic food labeling, certification, and control as well as both intention and actual consumption of organic food. The developed and validated instrument, guided by the Theory of Planned Behavior (TPB) could be used in improving the understanding of factors influencing the intention and actual consumption of organic food for enhancing sustainable consumption among Malaysian adults.

2. Literature Review

Extensive literature has witnessed multiple attempts to develop an understanding of various motives behind organic food consumption. Several researchers have utilized theories based on the study of human psychology, such as the self-determination theory (SDT) (Tandon et al., 2020), the social comparison theory (SCT) (Hansen et al., 2018), and the Theory of Planned Behavior (TPB) (Carfora et al., 2019; Dangi et al., 2020; Maichum et al., 2017) to elucidate the dynamics and complexities involved in motivating consumers to consume or purchase organic food. Among these theories, TPB which was proposed by Ajzen (1991) has been widely used in research on studying consumer's consumption of organic food since it takes into account both the motivations behind people's intentions and their actual behavior (Kushwah et al., 2019) (see Figure 1). The TPB states that three factors, namely; attitude toward the behavior, subjective norm, and perceived behavioral control, all together lead to the formation of a behavioral intention (Ajzen, 1991). Meanwhile, behavior is assumed as an immediate antecedent of the actual behavior (Ajzen, 1991). However, intentions to purchase may not translate into actual consumption for many reasons (Fleşeriu et al., 2020).

Figure 1



Source: Ajzen, 1991

Further explanation of the previous studies pertaining to psychological factors of organic food consumption that are based on the TPB as well as the consumption of organic food among Malaysian adults is as follows.

Attitude toward organic food consumption: Attitude toward the behavior refers to the degree to which a person has a positive or negative view or evaluation of the activity in question is known as their attitude toward the behavior (Ajzen, 1991). The formation of an attitude toward a behavior is dependent on the expectancy-value formulation, which gauges a person's subjective likelihood that engaging in a behavior of

interest would lead to a specific outcome or provide a specific experience (Ajzen, 2020). In the context of organic food, the positive attitude is commonly reflected by the consumers' concern for health, food safety, perception of quality, and environmental impact upon consumption of organic food (Chekima et al., 2019; Pham et al., 2019; Voon et al., 2011). In addition, a review of numerous studies on the consumption of organic foods revealed that the TPB framework's association between attitude and behavioral intention is possibly the most predicted and is stronger than the other predictors (i.e., perceived behavioral control and subjective norm (Scalco et al., 2017). As a result of its strong relationship to intention, the attitude seems to play a significant impact in determining consumer behavior toward organic food.

Subjective norm: Subjective norm is a social influence that refers to the perceived social pressure to perform or not to perform the behavior (Ajzen, 1991). It is contributed by both injunctive normative beliefs, which represent the expectation or subjective probability that a particular referent individual or group approves or disapproves of performing the behavior under consideration as well as descriptive normative beliefs, which hold opinions about whether significant others themselves engage in the behavior (Ajzen, 2020). The most significant social influences on the purchase and consumption of organic foods include those from family, friends, coworkers, select reference groups, and other environmental factors, including social media (Nguyen & Truong, 2021; Pomsanam et al., 2014; Scalco et al., 2017). Thus, the subjective norm measures how individuals interpret the opinions of significant people in their social environments about a certain behavior, which encourages or discourages them from engaging in that behavior.

Perceived behavioral control: Perceived behavioral control (PBC) describes the perceived ease or difficulty of performing the behavior and which is assumed to reflect experience as well as anticipated impediments and obstacles (Ajzen, 1991). PBC contributes to the prediction of both intention and behavior with certain conditions, in the case of complete control over behavior (Ajzen, 1991). It is the result of the interaction between control belief, which is a person's subjective likelihood that particular control factors (such as necessary skills and abilities; availability or lack of time, money, and other resources) will be present in the situation of interest, and the perceived power over all accessible control factors (Ajzen, 2020). The strength of the relationship between PBC and intention differs across studies. In several studies, PBC was found to have a significant influence on the intention to consume organic food (e.g. Carfora et al., 2019; Demirtas, 2019; Fleşeriu et al., 2020; Maichum et al., 2016; Tuan & Vinh, 2016) while in others, the effect was not significant (e.g. Al-Swidi et al., 2014; Voon et al., 2011). Besides, PBC was found to have a minor role in intention prediction compared to attitude and subjective norm (Scalco et al., 2017). The varying results can be attributed to a range of differences in the items used to measure this construct as well as the availability of organic food in certain study settings.

Consumers' Intention and Actual Consumption of Organic Food: Intention refers to how willing an individual is to perform a specific behavior and how many times a person tries to perform a specific behavior (Ajzen, 1991). A stronger intention to engage in a particular behavior typically results in that behavior (Ajzen, 1991). Behavioral intentions are frequently accessed via consumers' future commitment to buy organic food and their willingness to pay a higher price (e.g. (Lim et al., 2014; Siwar et al., 2019; Voon et al., 2011; Zhang et al., 2018). However, there may be a discrepancy between what customers intend and what they actually do. This is referred to as the intention-behavior gap and is typical of sustainable or green behavior, including the consumption of organic foods (Carrington et al., 2010; Nguyen et al., 2019; Sultan et al., 2020). Despite the intention-behavior gap, there are limited studies on the actual purchase behavior of organic food consumers, and prior studies have placed a strong emphasis on determining this behavior (Canova et al., 2020; Gundala & Singh, 2021). Moreover, in the context of Malaysian consumers, studies showed that consumption is low despite having high awareness about organic food and intention. Consumers may only purchase organic items once or a couple of times a year and may believe that eating organic food has only very minor health benefits (Dardak et al., 2009). The majority of consumers would buy organic food occasionally and only a small portion would buy regularly (Hasanov & Khalid, 2015; Hossain & Lim, 2016). This is in contrast with consumer surveys from developed nations like the USA and Italy, where 20 to 50% of respondents were found to buy organic food weekly (Gundala & Singh, 2021; Scalvedi & Saba, 2018). Therefore, more empirical research is required to comprehend the intention-behavior gap in studies of the consumption of organic foods within a theoretical framework.

Organic food studies among Malaysian adult consumers: Nevertheless, while the theory originally includes intention as the precursor for actual behavior, most of the previous studies concentrated on understanding consumers' attitudes and intentions to consume or purchase organic food (e.g., (Pham et al., 2019; Saleki et al., 2019; Yadav & Pathak, 2016). These studies lend some insights into the phenomena driving the increasing intention of organic food consumption among consumers, yet there is a knowledge gap pertaining to the motives that propagate its actual consumption, especially among Malaysian consumers (Jaafar et al., 2020). Moreover, there is increasing evidence of studies that include additional constructs or variables in the TPB to further understand motives influencing the intention and actual consumption of organic food. This addition considerably improved the predictive power of the model (Qi & Ploeger, 2021; Yadav & Pathak, 2017). Other studies also proved the moderating effect of trust on the relationship between intention and sustainable behavior (Sultan et al., 2020; Tandon et al., 2020). Following this, the present research included trust in organic food certification, labeling and control as an additional construct along with the TPB constructs. This addition was considered as it plays a very important role in organic food consumption decisions. Specifically, consumers rely on product labeling with organic certification logos to signal consumers at the point of sale that a product is really "organic" (Gumber & Rana, 2021). Consumers may have second thoughts about converting their intentions into actual choices when there is a lack of trust or mistrust in the system that certifies, controls, and labels the products (Nuttavuthisit & Thøgersen, 2017). The addition of this construct is believed to help in explaining the intention–behavior gap in choosing organic food over conventional ones among Malaysian adult consumers.

3. Research Methodology

This research was a cross-sectional study that aimed to develop and examine the validity and reliability of the questionnaire on psychological factors of intention and actual consumption of organic food among Malaysian adults. Data was gathered through a pilot study carried out among 119 respondents in August 2020. The respondents were recruited using a Facebook advertisement created for the study. The respondents of the study were limited to Malaysian citizens who have heard about organic food or are interested in searching for organic food. Additionally, only responses from those aged 18 to 60 years old, as well as those who can decide his/her purchase or consumption of food based on personal needs, preferences, and beliefs were collected and used from this pilot study. The ethical approval and permission involving humans as subjects of the study were granted by the Ethics Committee for Research Involving Human Subjects (JKEUPM) of Universiti Putra Malaysia.

The questionnaire was established in both Malay and English languages and consisted of socio-demographic questions and forty-five (45) statements assessing five constructs of the TPB model with regards to organic food consumption: "attitude" construct (13 items); "subjective norm" construct (4 items); "perceived behavioral control" construct (7 items); "consumption intention" construct (5 items) and "actual consumption" construct (12 items). The items used to measure these constructs were adapted from previous studies. For instance, the "attitude" construct combining health, food safety, and environmental concerns was adapted from Voon et al. (2011). Meanwhile, the "subjective norm" construct was measured using items developed by Pomsanam et al. (2014). Next, items measuring the "perceived behavioral control" construct were adapted from previous studies by Demirtas (2019) and Tuan & Vinh (2016). On the other hand, the "consumption intention" construct which acted as both a dependent variable of attitude, subjective norm and perceived behavioral control and a predictor of organic food actual consumption based on the TPB was measured using items adapted from a previous study by Song & Liew (2019). A 5-point Likert Scale was used to measure the degree of agreement for these statements with (1 = strongly disagree), (2 = disagree), (3 = not sure), (4 = agree), and (5 = strongly agree).

While most previous studies focus on predicting organic food consumption intention (Jaafar et al., 2020), this study includes the organic food actual consumption measurement through self-reporting of experience on consuming organic food as the past behavior could serve as a proxy measure of future behavior (Fishbein & Ajzen, 2011). This was measured by adapting items developed in previous studies from Kesse-Guyot et al. (2013) and Nuttavuthisit & Thøgersen (2017). Some modifications of the items were made to suit the current study setting which followed the organic food categories sold at Jaya Grocer (the fastest-growing local chain) (USDA, 2016). Respondents were asked to self-report their organic food consumption frequency ("never; no

intake", "rarely; once or twice a year", "sometimes; once or twice a month", "often; once a week", "always; more than once a week") of 12 organic food groups within a year preceded by the question, "How often do you buy the following organic food for your own consumption?".

On top of that, the questionnaire includes an additional construct of trust in the labeling, certification, and control which was measured by items adapted from previous studies by Nuttavuthisit & Thøgersen (2017) and Voon et al. (2011). The scale consisted of 8 items measured using the aforementioned five-point Likert scale. Some of the items measuring the above constructs were modified to suit the current study setting. The questionnaire was pre-tested with 5 adult consumers who are aware of organic food but do not necessarily consume organic food as well as 5 expert panels within the fields of organic food agriculture, community nutrition, and consumer studies to establish its content and face validities. The sample size for pretesting the questionnaire follows the recommended sample size of between 5 and 15 individuals for large-scale surveys by Willis (2005). Once the pre-testing stage was completed, the items were amended accordingly based on the comments from the respondents and the expert panels. Subsequently, this study uses the 119 responses from the pilot study to further validate the questionnaire in the local population which consisted of items measuring the psychological constructs of TPB.

To validate instruments with modified items from prior research before being used in an actual study using the Exploratory Factor Analysis (EFA) technique, Cattell (2012) recommends a minimum of 100 acceptable questionnaires. Following this, a total of 119 responses were obtained through online sampling using the designated Facebook advertisement developed to recruit respondents that would direct the respondents who click on the advertisement to the questionnaire in the form of Google Forms. The online sampling was a targeted sampling which was appropriate given that the consumption of organic foods is not common in Malaysia and is only practiced by a small percentage of the population, (Suhaimee et al., 2016).

The Facebook advertisement was set to specifically target Facebook users who are at least 18 years and have an interest in organic food. In addition, the respondents were further vetted by inclusion and exclusion criteria questions set in the Google form (i.e., Malaysian citizens; living in any state of Malaysia). Respondents who met all of the inclusion requirements were permitted to complete all sections of the questionnaire, while those who did not meet the criteria were routed to the survey's end and finally removed from the data. Prior to participation, the respondent was required to tick the consent box before engaging in the survey after reading the study description. Only after providing their email address can the respondent begin filling out the questionnaire. This prevents duplicated responses from the same respondent.

4. Results and Discussion

Background of the respondents: In this pilot survey, 119 responses in the form of Google Forms from Malaysian adult Facebook users who were intercepted via Facebook advertisement were obtained. Most of the sampled respondents were adults from the central zone of Malaysia (73.9%), followed by those who live in the South (15.1%), North (5.0%), and East (4.2%). Only one respondent from Sabah and Sarawak respectively was obtained. The sociodemographic characteristics and health status of the respondents are shown in Table 1. The majority of respondents were female (79.8%), between the ages of 18 and 29 (40.3%), had a tertiary degree (89.1%), and made at least RM 1,500 per month (61.3%). Respondents who were married (47.9%) and unmarried (52.1%) were more or less equally represented in the sample. Additionally, Bumiputera respondents made up the majority of the sample (52.9%), followed by Chinese (39.5%), Indians (5.9%), and Other ethnic groups (1.7%). The majority of respondents also claimed to be healthy, with a BMI between 18.5 and 24.9 kg/m2 (52.9%) and no chronic diseases present (89.9%).

Table 1: Background of the respondents

Factors	n (%)
Gender	
Males	24 (20.2)
Female	95 (79.8)
Age, years old	
18-29	48 (40.3)

30-39	30 (25.2)
40 and above	41 (34.5)
Ethnicity/ Ethnicity	
Bumiputera	63 (52.9)
Chinese	47 (39.5)
India	7 (5.9)
Others	2 (1.7)
Education	
Secondary	13 (10.9)
Tertiary	106 (89.1)
Income	
< RM 1,500	46 (38.7)
RM 1,500 and above	73 (61.3)
Marital status	
Single	62 (52.1)
Married	57 (47.9)
Presence of chronic disease	
Yes	12 (10.1)
No	107 (89.9)
BMI, kg/m^2	
< 18.5	11 (9.2)
18.5 - 24.9	63 (52.9)
25 - 29.9	25 (21.0)
≥ 30	20 (16.8)

Validity and reliability of the instrument: Table 2 reveals the results of the assessment of the construct validity and reliability of each construct. The Bartletts' Test of Sphericity and Kaiser-Meyer-Olkin (KMO) results for all constructs were significant (p-value < 0.05) and higher than 0.60 correspondingly with the result of the "attitude" construct (0.00 and 0.82); "subjective norm" construct (0.00 and 0.67); "perceived behavioral control" construct (0.00 and 0.85); "consumption intention" construct (0.00 and 0.85; "actual consumption" construct (0.00 and 0.93); and "trust in the labeling, certification, and control" construct (.00 and .90). This means that each construct fulfilled the criteria for factor analysis.

A three-factor solution was obtained with a total of 13 items from the "attitude" construct, and the total variance explained by the three factors was 58.18%. Meanwhile, a one-factor solution was obtained for the rest of the other constructs with the total variance explained ranging from 57.23% to 71.79% (i.e., "subjective norm" construct = 59.53%; "perceived behavioral control" construct = 57.23%; "consumption intention" construct = 62.49%; "actual consumption" construct = 64.83% and trust = 71.79%). Similar to the "attitude" construct, all items measuring the other constructs were retained as there were no items with a factor loading less than .50 (ranging from .60 to .91) and loaded to more than one factor. On top of that, as shown in Table 2 below, all six (6) constructs had Cronbach's alpha values greater than 0.7, indicating a high level of internal consistency in the data (Pallant, 2007). In addition, correlations among the factors ranged from 0.233 to 0.674, indicating that there is multicollinearity between the factors (see Table 3).

Table 2: Reliability of the instrument measuring psychological factors, consumption intention, and actual consumption of organic food

Component/Items	Sphericity	KMO	Total variance explained (%)	Factor Loading	Cronbach Alpha
Attitude (ATT)	0.00	0.82	58.18		0.82
Health concern					0.82
1. I am concerned about the usage of food additives in the food I take.				0.62	
2. It's scary when I think about how much pesticides are used in the food I take.				0.65	

3. I am concerned about the nutrient content in the food that I consume daily.				0.75	
4. I am concerned about my cholesterol intake.				0.76	
5. I do care about my intake of fat.				0.71	
6. I am concerned about how the food I take was processed.				0.70	
Food safety concern					0.70
1. To me, organic food is free from genetically modified organisms (GMOs).				0.75	
2. I think organic food does not contain artificial flavoring or coloring.				0.76	
3. To me, organic food is free from chemical pesticides.				0.75	
Environmental concern					0.70
1. For me, the government's efforts to control environmental pollution are still insufficient.				0.67	
2. I am greatly concerned about the effect of environmental pollution.				0.60	
3. I am aware that the prohibition of chemical pesticides in organic food production is good for the environment.				0.76	
4. I realize the ban on chemical fertilizers in organic food production is a way to produce more environmental-friendly food.				0.72	
Subjective Norm (SN)	0.00	.67	59.53		0.77
1. My family eats organic food.				0.77	
2. People who are important to me such as doctors and people who I know well think I should eat organic food.				0.81	
3. People who are important to me think that eating organic food contributes to good health.				0.75	
4. I intend to eat organic food because society accepts that it is a good choice.				0.76	
Perceived Behavioral Control (PBC)	0.00	.85	57.23		0.87
1. I am sure I can consume more organic food when I want to.				0.65	
2. I believe I can afford to buy organic food.				0.75	
3. I have time to look for organic food when I want to have it.				0.79	
4. Despite being expensive, I prefer to consume organic food.				0.78	
5. For me, consuming organic food would be possible.				0.70	

6. If I wanted to, I could easily consume organic food.				0.81	
7. I believe that I have the resources and the ability to consume organic food				0.81	
Trust in organic food certification, labeling, and control (TR)	0.00	.90	71.79		0.94
1. I trust the Malaysian government's organic food certification system.				0.77	
2. I trust that Malaysia's organic food certification is free from any influence of irresponsible parties.				0.81	
3. I trust the control of organic food sales in Malaysia.				0.85	
4. I trust the authenticity of organic food sold in Malaysia.				0.90	
5. I trust the organic food certification logo on organic food packaging sold in Malaysia.				0.91	
6. I trust the information displayed on organic food packaging sold in Malaysia.				0.87	
7. I trust that the organic food sold by retailers in Malaysia is genuine.				0.85	
8. I trust that organic food retailers in Malaysia are honest about their organic food labeling information				0.81	
Consumption intention (CI)	0.00	.85	62.49		0.84
1. I am willing to consume organic food over non-organic food.				0.73	
2. I am willing to consume organic food because the benefits outweigh the costs.				0.73	
3. I have a positive attitude toward consuming organic food.				0.78	
4. I will likely consume organic food.				0.87	
5. I intend to consume organic food in the near future.				0.84	
Actual consumption (AC)	.000	.93	64.83		0.95
Respondents will be asked to report the frequency of organic food consumption.					
"How often have you bought the following organic food items for your own consumption?					
1. Organic fruits or vegetables				0.72	
2. Organic dairy & beverages (e.g., juice, milk, soy, oat, tea, coffee, puree, or cordial)				0.79	
3. Organic chicken or meat				0.74	

products		
4.	Organic rice, grains, or dried goods (e.g., dried almond, cashew nuts, quinoa, or chia seeds)	0.84
5.	Organic noodles or pasta	0.79
6.	Organic sauces, condiments, or oil (e.g., soy sauce, apple cider coconut oil, or olive oil)	0.84
7.	Organic herbs or spices (e.g., chili flakes, black pepper, or cinnamon powder)	0.81
8.	Organic cereal	0.83
9.	Organic biscuits or snacks	0.85
10.	Organic spreads or honey	0.83
11.	Organic sugar or salt	0.81
12.	Other organic product(s)	0.79

Table 3: Correlations between constructs

	ATT	SN	PBC	TR	IN	AC
Attitude (ATT)	1					
Subjective norm (SN)	0.381**	1				
Perceived behavioral control (PBC)	0.368**	0.494**	1			
Trust in the labeling, certification, and control (TR)	0.233*	0.423**	0.321**	1		
Organic food consumption intention (IN)	0.452**	0.674**	0.607**	0.420**	1	
Organic food actual consumption (AC)	0.308**	0.607**	0.573**	0.398**	0.497**	1

(**p<0.001)

The appropriateness of the data to run factor analysis and the adequacy of the sample size of this study was assured as every construct achieved its cut-off recommended value of Bartletts' Test of Sphericity < 0.05 and the measure of sampling adequacy by Kaiser-Meyer-Olkin (KMO) > 0.6 respectively. The findings of the EFA explored that the latent construct "attitude" was formed by three attitudinal factors namely health concern, food safety concern, and environmental concern. Besides, the three factor-solution of the "attitude" construct explained at least 50% of the total explained variance among the items used to measure the construct. The Cronbach's alpha values of the main attitudinal construct and each of its sub-factors have exceeded the minimum value of .70 ranging between .70 to .82. indicating that the items in all sub-factor measuring the construct have excellent internal reliability (Pallant, 2007). This finding suggests that people's attitudes regarding organic food consumption are reflected by health, food safety, and environmental concerns.

Next, all the items measuring the "subjective norm" construct remained. The reliability of the construct is slightly higher than the original construct by Pomsanam et al. (2014) with a Cronbach alpha of .77. Besides, the highest factor loading was recorded for the statement "People who are important to me such as doctors and people who I know well, think I should eat organic food". This demonstrates that respondents place a great value on the advice and opinions of others, particularly those they regard highly when it comes to organic food consumption. As for the "perceived behavioral control" (PBC) construct, the items used to measure it produced higher reliability compared to studies done by Demirtas (2019) and Tuan & Vinh (2016) with a Cronbach's alpha value of .87. Moreover, the statement "I could easily consume organic food" and "I believe that I have the resources and the ability to consume organic food" recorded the highest factor loading (.81). Following this, it can be said that respondents' perceptions of their ability to control their behavior were related to their perceptions of how easy and affordable it was to obtain organic food. Consumers' inclinations to intended behavior may be strengthened by ease of PBC considerations (Sultan et al., 2020).

For the additional construct of "trust in the labeling, certification, and control", this study measured it as a stand-alone construct. This approach was different from the study by Voon et al. (2011) where the researchers incorporated trust in organic food claims with other health and environmental concerns as well as perceptions of organic food attributes to reflect Malaysian consumers' attitudes toward organic food. This

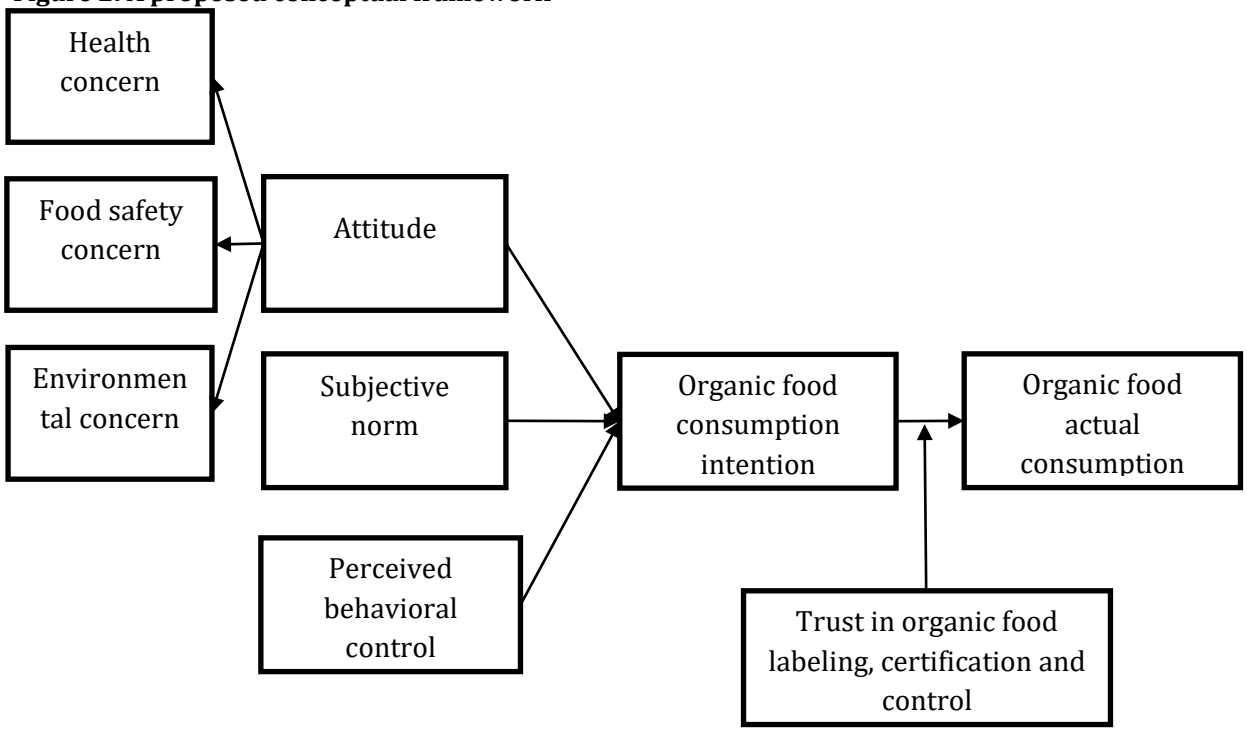
study follows the argument made by Nuttavuthisit & Thøgersen (2017), who stated trust is a unique psychological variable that is different from the propositions of the TPB (i.e. perceived behavioral control). The factor analysis shows that the eight items adapted from studies by Nuttavuthisit & Thøgersen (2017) and Voon et al. (2011) reflected that the items used to measure the trust construct loaded into a one-factor solution with excellent construct reliability with Cronbach's alpha value of .94.

Moving to the dependent variable of TPB, the "consumption intention" construct had a comparable internal consistency (Cronbach's alpha = .84) with Song & Liew's study in 2019 even though this study used online sampling rather than physically meeting the respondents at supermarkets and special retail outlets selling organic food products. This shows that online sampling could be a useful alternative platform for obtaining reliable responses for studies related to consumers' food choices. Besides, as there is a limited local study on the actual consumption of organic food (Jaafar et al., 2020), items used to measure the construct was adapted from international studies by Kesse-Guyot et al. (2013) in France and Nuttavuthisit & Thøgersen (2017) in Thailand. The "actual consumption" construct measured by the 12 items also had excellent construct reliability (Cronbach's Alpha = .90). This suggests that the sampled Malaysian adults were interested in different types of organic food including fresh and processed organic food, rather than being only familiar with organic fruits and vegetables back then (Dardak et al., 2009). Overall, the construct validity and reliability of each construct measured in the questionnaire were achieved.

5. Conclusion

This instrument passed the validity and reliability tests for each construct and is appropriate for use in future research related to psychological factors towards intention and actual consumption of organic food that is grounded by the TPB model. Nevertheless, an extended study involving the use of confirmatory factor analysis is recommended to further validate each of the constructs involved in this study. This study also proposes the extended TPB model of organic food consumption among Malaysian adults as shown in Figure 2. Future studies with a larger sample size will further strengthen the conceptual model hypothesized in this study.

Figure 2: A proposed conceptual framework



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The Determinants among Muslim Contributors to Adopt Shariah Funds Decision: Evidence of Employees Provident Fund

Nurul Afiqah Roslee*, Norzanah Mat Nor & Mohammad Firdaus Mohammad Hatta
Arshad Ayub Graduate Business School, Universiti Teknologi Mara, Shah Alam, Malaysia
*roslee.nurul@gmail.com norzanah.@uitm.edu.my, firdaus5828@uitm.edu.my

Abstract: Malaysia is one of the world's Islamic financial centres and it is working hard to enhance Shariah governance in the Islamic financial sectors. Shariah Savings introduced on 8th August 2016 is an initiative by the Employee Provident Fund (EPF) allowing investors to determine whether or not their funds should be handled and invested according to Shariah principles. Despite the effort by the Employee Provident Fund (EPF) to promote investment in the Sharia Compliant saving, the Muslim of EPF members' is still low. Hence, increasing EPF Muslim members' investment is a major challenge. Thus, this study aimed to fulfil this gap by examining the Planned Behaviour Theory with additional variables (religiosity, investment knowledge, and risk propensity) mediated by awareness towards investment decisions among EPF Muslim contributors in Malaysia. Questionnaire surveys were utilized in a quantitative research strategy to collect data. Using purposive sampling procedures, data was collected from 295 Muslim members who stick with EPF conventional savings and analyze by using the Partial Least Square Structural Equation Modelling (PLS-SEM).

Keywords: *Investment decision; Theory Planned Behavior; Employees Provident Fund (EPF), Malaysia; Shariah fund; Awareness.*

1. Introduction and Background

Retirement is described as the practice of finishing one's working career or the period after the permanent cessation of a job or career (Mishra, 2019). In most cases, an employee retires when he or she is between the ages of 50 and 60 (Denton & Spencer, 2009). Participation in a pension plan might be forced, optional, or promoted through automatic enrolment. They also serve as investment vehicles with the potential to generate future profits (Blake, 2006). Pension funds and retirement from an Islamic perspective, are very much in harmony with Islamic principles. Islam strongly encourages Muslims to save and lay aside a portion of their earnings for future use, especially when they reach an unproductive age. Shariah is the Arabic term for Islamic Law, often known as Allah's Law. Shariah requires Muslims to do both religious and secular responsibilities, such as daily life, political concerns, financial matters, commercial operations, and socializing. An Islamic investment fund is referred to as a Shariah fund. Malaysia is one of the world's Islamic financial centers and it is working hard to enhance Shariah governance in the Islamic financial sectors. On 8th August 2016, the Employee Provident Fund (EPF) launched a program called Shariah Savings, which gives participants the option of having their money managed and invested in accordance with Shariah law. The percentage of Muslims among EPF members remains low despite the EPF's efforts to increase participation in Shariah-Compliant Investment savings.

Out of an estimated 15 million Muslim EPF contributors in Malaysia by 2020, the majority, or 13.88 million, will continue to use the traditional model. This is according to the Chairman of the EPF Shariah Committee. In other words, just 11% of Muslim contributors have moved their money into a Shariah-compliant account. In the meanwhile, 89% of Muslims who make contributions continue to use the traditional EPF. Since the EPF report stated that dividends of shariah-compliant investments have no assurance of a minimum dividend of 2.5 percent, compared to the guaranteed dividend of 2.5 percent (minimum) per year provided by conventional accounts, this shows that there are some difficulties among Muslim EPF contributors in deciding whether to stay with conventional accounts or migrate to Shariah accounts. According to a number of authors, there is a dearth of academic literature on what reasons lead Muslim investors to choose products and services that are in line with Islamic law as an investment (El-Bassiouny, 2014). In this research, we seek to close this knowledge gap by categorizing the retirement product options available to Muslim EPF contributors in Malaysia according to many characteristics taken from the existing literature. We think our study contributes to the existing body of information regarding investor behavior by looking into it in the context of unorthodox Islamic financial products.

This study uses a quantitative approach to examine Muslim contributors' awareness of EPF Sharia-compliant funds, and it broadens the discussion regarding how Muslims see these services. This research fills in some of the blanks in our understanding of this under-explored field by concentrating solely on EPF Sharia-compliant financial products and services rather than more generalized offerings. Finally, the wealth and debt dynamics in this region are unlike any other, making our study relevant to a wide range of contributors and policymakers. In particular, the study's objective is to determine whether Malaysian EPF Muslim contributors may be segmented according to their propensity to invest in EPF shariah funds that are compliant with Islamic law. Similarly, the Theory of Planned Behavior (TPB) builds on the work. In addition to the attitude and subjective norms, this theory also incorporates perceived behavior control as a predictor of future actions. Few researches on Islamic economics and banking made use of this idea. Therefore, this research fills a gap in our understanding by using the theory of planned behavior (TPB) to foresee whether or not EPF Muslim contributors in Malaysia will switch to EPF Sharia-compliant funds. This supposition prompted the current study, which examined the mediating effect of Awareness Towards Investment Decisions in the connection between Attitude (ATT), Subjective Norms (SN), Perceived Behavior Control (PBC), Religiosity (RG), Risk Propensity (RP), and Investment Knowledge (IK) towards Investment Decision (ID) in EPF shariah-compliant funds. This article starts with a literature review of the Theory of Planned Behavior in Malaysia, followed by the research methodology, results and conclusions. Managerial implications and recommendations are presented in the last sections of the study.

2. Literature Review

Theory of Planned Behavior: TPB is the most sufficient to predict behaviors and best suited to human behavior prediction and analysis (Ajzen, 2020) thus is proven to be an effective model in the prediction of behavioral intention and human behavior (Ajzen, 2018). TPB is one of the most well-established social psychology models for predicting human behavior (Ajzen, 1991). Therefore, TPB most appropriate theory used for this study. The Theory of Perceived Behavior (TPB) has been the dominant expectancy-value theory in the field of behavior since its publication (Ajzen, 2020) and offers a theoretical framework for explaining individual decision-making processes (Ajzen, 2015). Furthermore, this study also added another variable (religiosity, risk propensity, investment knowledge and awareness). The rational justification is that the TPB weakness requires adding another antecedent to improve the model as suggested by Corner & Armitage (1998).

Investment Decision: According to Hasnawati & Ernie (2022), investment decision-making is a challenging task for any investor. Hussain (2021) said that decision-making is easily influenced by complexity. According to Hussain (2021), the behavior of a person can be influenced by emotions when making an investment choice. Some investors lack the requisite expertise to foresee all conceivable alternatives, and they also lack the ability to rate all options by assessing each cost incurred and reward provided. Furthermore, while making investment decisions, each person often has a unique perspective and perception (Nguyen et al., 2020). Many things can impact an individual's decision-making. An investor's emotional stability is critical to the decision-making process's efficiency since it complicates the process (Hussain, Rasheed & Ali, 2021).

Attitude: Individuals will assess their behavior neither positively nor negatively, according to Ajzen (2020), which is known as attitude. According to the Theory of Planned Behavior (TPB), attitude becomes one of the essential variables since it has a substantial effect on intention and behavior (Ajzen, 2018). An individual's attitude can be influenced by two determinants: the perceived outcome of that behavior and the final result of that behavior. Ajzen (2015) underlined that attitude has a significant influence in shaping how individuals act in their everyday interactions and the decisions they make to meet their needs. The degree to which a client has a good or negative impression or judgment of the behavior in question can also be referred to as attitude (Ajzen, 2006).
H1a: Attitude has a significant effect on awareness.

Subjective Norms: Subjective norms refer to what an individual believes others should or should not do to his or her actions, as well as his or her motivation for doing so in light of such expectations (Ajzen, 2020). The subjective norm, according to Fiksenbaum, Marjanovic & Greenglass (2017), is described as accepting societal pressure to exhibit a given behavior. Sussman & Gifford (2019) considered the subjective norm can be

defined as the individual's view of whether the other person is crucial in translating the notion of an individual in conduct that must be done. These individuals may include partners or friends, relatives, co-workers, community leaders, and other prominent individuals (Jamal et al., 2015). Adam & Shauki (2014) agree that subjective norms can persuade a potential investor to invest.
H1b: Subjective norms have a significant effect on awareness**.**

Perceived Behavior Control: The impression of one's ability to regulate one's own actions governs one's actions as well as one's behavior. The "perceived behavioral control" component of the Theory of Planned Behavior (TPB) is the third component of the TPB. Perceived behavioral control, as described by Ajzen (2020), is the perceived ease or difficulty of doing a task, which is thought to represent prior experience as well as predicted obstructions and barriers, among other things Perceived behavioral control, in fact, is associated with the limitations that a person may encounter when attempting to complete an action (Warburton & Terry, 2018). These limitations may be connected to time constraints, available resources, the environment, or other factors. Another way of putting it is that an individual's perception of behavioral control impacts their behavior based on their perceived amount of competence or aptitude to manage their behavior (Kan & Fabrigar, 2017). The perceived behavioral control, according to Alfianto et al. (2020) and Njuguna (2018) has a significant direct influence on the intention and choice to invest.
H1c: Perceived behavior control has a significant effect on awareness**.**

Religiosity: One of the most pervasive influences on people's psyches is religion (McCann, Donohue & Timmins, 2020). Religiosity is aligned with ethics (Chan and Ananthram, 2019). Religiosity is a term used to describe a person's level of religious thought and behavior (Xia et al., 2021). People's level of religiosity is determined by their belief in and respect for the relevant religious creator, God or goddess and their subsequent practice of the relevant teachings (Marek & Walulik, 2021). According to the religion in question, it is a complex phrase that has many different meanings (Abdulrazak & Gbadamosi, 2017). Therefore, religiosity can be described as a power of psychological and social both social (Islam & Chandrasekaran, 2020). The findings of Lestari, Ginanjar, and Warokka's (2021) study confirmed that religiosity had a major impact on Sharia investing decisions.
H1d: Religiosity has a significant effect on awareness.

Risk Propensity: Risk propensity refers to a person's inclination towards taking or avoiding risk in a certain situation (Sitkin and Weingart, 1995). Questions/items in the "Risk & Return" domain are aimed to discriminate between two distinct personalities, risk seekers and risk avoiders, based on the responses of participants (Zeisberger, 2021). According to Sulphey (2021), risk propensity can be described as a person's personality and capacity in making a decision under situations of risk and uncertainty. Risk propensity is a measure of a person's willingness to accept a certain level of risk in exchange for a given reward (Zhang, Highhouse & Nye, 2019). In the context of a given situation, the risk may be described as the possibility of a loss as a result of multiple options/decisions (Nobre et al., 2018).
H1e: Risk propensity has a significant effect on awareness.

Investment Knowledge: Before entering the investment world, one must first get an understanding of the investment. Such information is crucial as a guideline for performing high-risk, uncertain investments (Marlin, 2020). Many individuals desire to make wise judgments about how to manage their costs and assets to eventually achieve a certain amount of wealth. Investment information, such as the types, returns, and risks of stock investments, makes it easier for someone to make a stock investment decision (Aprayuda, Misra & Kartika, 2021). To choose which stocks to buy in the capital market, investors must have appropriate information and expertise (Mubaraq, Anshori & Trihatmoko, 2021).
H1f: Investment knowledge has a significant effect on awareness.

Awareness: The term "awareness" refers to the ability to comprehend and get knowledge about certain topics (Sempe & Naong, 2021). The term "awareness" is used to describe the extent to which consumers know about a product or service, as well as their understanding of its existence, concept, purpose, and benefits (Chen, Huang & Lin, 2019). Being self-aware is being familiar with one's own inner processes, including emotions, behaviors, and character traits (Eurich, 2018). In a broader sense, it is the fact that you are aware of something. Afendi (2020) defines awareness as "Awareness occurs when an individual is

sufficiently informed about a product or service for him/her to be conscious of its existence especially Muslim consumers who are concerned about halal.
H2a: Awareness mediates the relationship between attitude and investment decision.
H2b: Awareness mediates the relationship between subjective norms and investment decisions.
H2c: Awareness mediates the relationship between perceived behavior control and investment decision.
H2d: Awareness mediates the relationship between religiosity and investment decision.
H2e: Awareness mediates the relationship between risk propensity and investment decisions.
H2f: Awareness mediates the relationship between investment knowledge and investment decision.

3. Research Methodology

The study used a cross-sectional survey design and a set of questionnaire surveys utilized in a quantitative research strategy in collecting data. There are two sections to this questionnaire. In the first phase, respondents will answer several questions concerning their demographic information. The bulk of the closed-ended questions for the questionnaire may be found in Section 2. Questions with only one answer were scored on a closed-ended Likert scale from 1 (strongly disagree) to 7 (strongly agree). To boost the number of responses, the author personally handed out questionnaires to Muslim EPF contributors. The study sample of 295 Muslim EPF contributors in Peninsular Malaysia who stick with EPF conventional funds by using purposive sampling procedures. Over two hundred and ninety-five Muslim EPF contributors had their responses recorded, with 100% of them included in the final analysis. As for the TPB questions included in the questionnaire's second section, those will be examined with structural equation modeling (SEM). When doing SEM analysis, the author follows the procedures outlined in (Hair et al., 2019).

Those steps include validating and confirming the accuracy of the measurement model and the structure model. The t-statistic and standard loading factors are then used to test hypotheses. All tools were culled from diverse sources and reworked to fit the investment decision setting. Both the dependent and independent variables were measured using a seven-point Likert scale, with responses ranging from "strongly disagree" (1) to "strongly agree" (7). Ali (2011) and Warsame & Ireri (2016) were used to develop the four investment decision questions, while Warsame & Ireri (2016) and Gopi & Ramayah (2007) were used to develop the attitude questions. Subjective norm items were adopted from Schmidt (2010) and Warsame & Ireri (2016). Perceived behavior control items originated from Warsame & Ireri (2016) and Schmidt (2010). This study has three components of religiosity taken from Osman, Mohammed & Amin (2021). Zhang, Highhouse & Nye (2019) designed the risk propensity questionnaire while Salleh & Padzim (2018) and Fodor & Medve (2013) developed the investment knowledge questions. According to Salleh & Padzim (2018) and Hall (1977), awareness was used as a mediating variable.

4. Results

This section presents sets of results relating to the profile of respondents' experiences towards network operators, the characteristics of the total sample, and the comparison of participants regarding their experience based on the demographic and geographic characteristics (gender, age, level of education, occupation, marital, income and EPF account status).

Profile of Respondents: Table 1 displays a summary of the characteristics of the total sample of contributors who participated in the study.

Table 1: Demographic and Geographic Information Pertaining to Respondents (n=295)

Demographic Items	Number of Respondents	Percent
Gender		
Male	110	37.29%
Female	185	62.71%
Total	**295**	**100.0%**
Age of the respondent		
18-28	191	64.75%
29-39	69	23.39%
40-50	25	8.47%
51 and above	10	3.39%
Total	**295**	**100.0%**
Academic Qualification		
PhD	0	0%
Master	1	0.34%
Degree	238	80.68%
Diploma	55	18.64%
SPM	1	0.34%
Total	**295**	**100.0%**
Current Occupation		
Self- Employee	2	0.68%
Private Sector Employee	293	99.32%
Government Sector Employee	0	0%
Total	**295**	**100.0%**
Marital Status		
Single	181	61.36%
Married	98	33.22%
Divorced	16	5.42%
Total	**295**	**100.0%**
Total Income		
Below 2000	127	43.05%
2001-3000	77	26.10%
3001-4000	39	13.22%
Above 4001	52	17.63%
Total	**295**	**100.0%**
EPF Account Status		
Shariah Savings	0	0%
Conventional Savings	295	100%
Total	**295**	**100.0%**

Measurement Model Analysis: To make sure the indicators can properly display the variables, the PLS-SEM measurement model is utilized. The convergent validity, internal consistency, and discriminant validity components of the normalcy test and the use of SPSS to examine multicollinearity contributed to these results. First, the items' degree of representation of the latent construct and their relationship to other measures of the same latent construct was evaluated using Average Variance Extracted (AVE), a convergent validity statistic (Hair et al., 2021). The author plans to apply Construct Reliability Analysis to check the accuracy of the measurement scheme (CR). If each variable in the measurement model has a CR value greater than 0.7 and an AVE greater than 0.5, the model may be trusted. Using the conventional loading factor and t-statistics for each indicator, we can examine the measurement model's validity. To validate the measurement model, the t-statistic must be more than 1.67 and the standard loading factor must be greater than 0.6. (Hair et al., 2019). Table 2 shows that the AVE values all have strong loadings ($p > 0.5$) on their respective constructs, demonstrating good convergent validity of the model, as recommended by Chin (1998).

Table 2: Convergent Validity and the Internal Consistency and Reliability (N = 295)

Latent Variables	Cronbach Alpha	Composite Reliability	Average Variance Extracted (AVE)
Attitude	0.89	0.92	0.76
Awareness	0.94	0.95	0.84
Investment Decision	0.94	0.96	0.85
Investment Knowledge	0.90	0.93	0.76
Perceived Behavior Control	0.92	0.94	0.81
Religiosity	0.92	0.94	0.81
Risk Propensity	0.89	0.91	0.73
Subjective Norms	0.75	0.85	0.60

On the contrary, the reliability of structures was assessed using compound reliability (range ⩾0.6) (Bagozzi et al., 1998) and Cronbach's α (range ⩾0.7) (Hair et al., 2019). Traditionally, Alpha Cronbach has been used to evaluate the construction of a measuring model's measurements of internal consistency, but more recently, examination of compound reliability has been the preferred method (Hair et al., 2019). Extracted variance (AVE) (range 0.5) and discriminating validity utilizing the Pearson Correlation Matrix, where correlations between combinations should be less than 0.8 (Brown, 2015). Additionally, compound reliability above 0.7 and Cronbach alpha levels above 0.5 are considered good (Chin, 1998). Table 2 shows that the model is appropriate for future research and analysis because all compound reliability values were more than 0.7 and Alpha Cronbach for all combinations was above 0.5.

Table 3: Cross-Loading of the Variables (N = 295)

	ATT	AW	ID	IK	PCB	RG	RP	SN
ATT1	**0.85**	0.71	0.50	0.47	0.36	0.33	0.04	0.60
ATT2	**0.92**	0.55	0.39	0.45	0.34	0.29	0.06	0.54
ATT3	**0.80**	0.47	0.36	0.40	0.32	0.25	0.07	0.49
ATT4	**0.92**	0.54	0.40	0.50	0.33	0.30	0.07	0.57
AW1	0.55	**0.88**	0.55	0.48	0.51	0.34	0.14	0.67
AW2	0.67	**0.94**	0.63	0.56	0.50	0.41	0.18	0.79
AW3	0.55	**0.91**	0.59	0.57	0.55	0.45	0.24	0.71
AW4	0.68	**0.95**	0.65	0.56	0.48	0.42	0.19	0.77
ID1	0.51	0.69	**0.95**	0.46	0.44	0.30	0.11	0.61
ID2	0.44	0.64	**0.93**	0.44	0.39	0.27	0.09	0.55
ID3	0.39	0.47	**0.87**	0.41	0.30	0.21	0.08	0.42
ID4	0.43	0.61	**0.95**	0.48	0.37	0.25	0.11	0.54
IK1	0.52	0.67	0.54	**0.89**	0.32	0.25	0.22	0.61
IK2	0.41	0.43	0.33	**0.87**	0.28	0.24	0.21	0.46
IK3	0.44	0.48	0.40	**0.88**	0.32	0.21	0.19	0.46
IK4	0.44	0.43	0.37	**0.87**	0.30	0.26	0.16	0.46
PBC1	0.42	0.60	0.44	0.41	**0.88**	0.29	0.08	0.48
PBC2	0.34	0.46	0.35	0.30	**0.90**	0.31	0.02	0.38
PBC3	0.32	0.45	0.35	0.24	**0.92**	0.36	0.07	0.37
PBC4	0.30	0.44	0.32	0.28	**0.92**	0.34	0.05	0.39
RG1	0.35	0.47	0.29	0.30	0.38	**0.95**	0.12	0.34

RG2	0.23	0.31	0.14	0.14	0.24	**0.88**	0.05	0.22
RG3	0.32	0.42	0.29	0.29	0.37	**0.90**	0.11	0.34
RG4	0.29	0.34	0.24	0.22	0.26	**0.88**	0.04	0.32
RP1	0.08	0.00	0.05	0.06	0.07	0.03	**0.75**	0.02
RP2	0.04	0.18	0.11	0.22	0.06	0.09	**0.92**	0.14
RP3	0.09	0.17	0.08	0.20	0.06	0.07	**0.81**	0.21
RP4	0.03	0.17	0.09	0.16	0.04	0.08	**0.92**	0.11
SN1	0.61	0.81	0.58	0.51	0.44	0.29	0.17	**0.85**
SN2	0.55	0.65	0.49	0.52	0.37	0.32	0.18	**0.92**
SN4	0.53	0.65	0.46	0.52	0.40	0.32	0.12	**0.90**

The indicator value for the validity and reliability of the measurement model is displayed in Table 3 below. According to the data in the table, all of the indicators have standard loading factors that are higher than 0.6. Since this is a valid measurement model, we may draw the following conclusion. Average Variants Extracted (AVE) and Construct Reliability (CR) values for each variable are both more than 0.7. Thus, the present research utilized cross-loadings as a proxy for discriminant validity. It has been argued by Chin (1998) that in any model, the indicator loadings should be larger than the cross-loadings. All indication loadings were also found to be greater than the cross-loadings, as a result. Therefore, we may accept the measurement model as reliable. The measurement model has been accepted for processing onto the structural model stage after passing all tests.

Table 4: Result of the Structural Model (N = 295)

	Relationship	**T-Statistics**	**P-Values**
H1a	Attitude →Awareness	4.86	0.00
H1b	Subjective Norms →Awareness	11.13	0.00
H1c	Perceived Behavior control →Awareness	5.3	0.00
H1d	Religiosity →Awareness	3.13	0.00
H1e	Risk Propensity →Awareness	1.85	0.06
H1f	Investment Knowledge→ Awareness	2.52	0.00
H2a	Attitude → Awareness → Investment Decision	3.47	0.00
H2b	Subjective Norms → Awareness → Investment Decision	4.81	0.00
H2c	Perceived Behavior control → Awareness → Investment Decision	4.02	0.00
H2d	Religiosity → Awareness → Investment Decision	2.61	0.00
H2e	Risk Propensity → Awareness → Investment Decision	1.75	0.08
H2f	Investment Knowledge → Awareness → Investment Decision	2.32	0.00

The outcomes in Table 4 indicated that Hypotheses 1 (H1a, H1b, H1c, H1d, H1e and H1f) centered on the direct relationship between variables while Hypothesis 2 (H2a, H2b, H2c, H2d, H2e and H2f) focused on the mediating effect of the awareness in the relationship between attitude, subjective norm, perceived behavior control, religiosity, risk propensity, investment knowledge and investment decision. All the hypotheses showed mixed results. However, only risk propensity is not directly related to awareness. As a result of mediation effects, the awareness significantly mediates the relationships between attitude, subjective norm, perceived behavioral control, religiosity and investment knowledge towards investment decisions.

Discussion

The results proved that the variables of attitude, subjective norms, perceived behavioral control, religiosity and investment knowledge directly affected the awareness of Muslim EPF contributors to adopt EPF Shariah-compliant funds. Whereas the risk propensity variable does not directly affect the awareness of Muslim EPF contributors to adopt in shariah- compliant funds in the EPF. Consumers' perceptions of Islamic banks and

their attitude to do business with them have been shown to improve with awareness, according to the research of Kaakeh et al. (2019). Another significant research was done by Sabirzyanov (2016), who used the idea of planned behavior to the question of how clients feel when doing business with Islamic banks. His findings backed up the idea that one's level of self-awareness significantly affects their attitude. The finding of this study reveals that H1a is supported. This indicated that Muslim EPF contributors who have sufficiently informed about a product for him/her to be conscious of its existence especially Muslim contributors who care about halal will be able to tell one type of financial product from another, make long-term plans, and handle any other situation that arises that requires them to make immediate judgments about their money. The results also argued that awareness mediates the relationship between attitude and investment decisions. Hence, H2a is accepted. Consistent with these findings, Remund (2010) argues that understanding one's own perspectives and attitudes about investment comes with self-awareness.

Besides that, subjective norms also show a significant relationship with awareness. Therefore, H1b is accepted. The findings are consistent with those of Hardi and Mildawati (2022), who investigated the impact of trust and awareness on subjective norms and subsequent Sharia finance adoption intentions in Indonesia. The results indicate that awareness plays a crucial role in determining whether or not micro, small, and medium-sized enterprises (MSMEs) plan to utilize Sharia finance. This result was in line with Mulyono (2021) that found a similar role of awareness has an impact on subjective norms towards investment decisions. This demonstrated that Muslim EPF contributors have a strong desire to participate in the EPF's Shariah-compliant funds due to widespread knowledge of these funds among their social circles. The findings also demonstrated that awareness mediates the connection between subjective norms and investment decisions. Hence, H2b was supported. This finding was consistent with the findings of Mulyono (2021), who also discovered that awareness played a mediating function between subjective norms and investment choice. It appears that awareness is a strong impact on perceived behavior control in this research study. Hence, hypothesis H1c was supported. As stated by Mulyono (2021), the role of awareness is affecting perceived behavior control. According to Mulyono (2021), investors who have faith in their ability to invest consistently and who retain constant investment views will make wise investment decisions. This indicated high levels of awareness of the concept and purpose.

Benefits were very skilled in reading, and analyzing among Muslim EPF contributors, they have strong beliefs and confidence that EPF would help them to manage their shariah savings wisely. The results also claimed that having this kind of awareness mediates the connection between feeling in control of one's actions and making wise financial choices. This finding demonstrated that H2c was accepted. Awareness, as stated by Mulyono (2021), acts as a mediator between the belief that one can exert control over one's behavior and the final investment choice one makes. Consistent with the findings, earlier research indicated that highly religious individuals had a heightened awareness of goods and services that conform to Islamic law (Junaidi et al., 2021; Kaakeh et al., 2019). Those with a stronger religious conviction were shown to be more inclined to favor Sharia investment schemes over more secular alternatives. The findings also imply that awareness mediates the connection between religious belief and Islamic investment decisions. Putri (2018) argued that awareness might become the mediating variable for religiosity towards halal goods, which is consistent with our findings. However, the results demonstrated that the existence of awareness had little influence on risk propensity. Hence, H1e was not supported. This finding suggests that Muslim EPF participants share a risk-averse investment style with Islamic law (Goel, Dwivedi, & Jain, 2019), according to which any shariah instrument must be free of riba (interest or usury); rishhwa (corruption); maysir (gambling); and gharar (high risk) (Awang and Abdullah, 2021).

In addition, the results demonstrated that the existence of awareness as a mediator had no influence on the connection between risk propensity and investment decisions. This finding reveals that H2e also was not accepted. Lastly, investment knowledge also shows a significant relationship with awareness, thus supporting H1f. This result was in line with Hamza and Arif (2019) who state that openness or in other words, those that score high on the openness to experience scale are curious about the world around them, eager to try new things, and constantly expanding their horizons of thought and information. Similar findings were supported by Nurhayati and Hendar (2019) found the similar role of awareness as having a mediating effect in the relationship between knowledge and intention to use the halal product. This indicates that Muslim EPF contributors who have adequate knowledge and a high level of awareness make a person make better and

more efficient decisions about their investments especially Muslim investors who prioritize halal standards will have the ability to distinguish between available financial solutions, map out a secure financial future, and expertly handle all life events that have an impact on their day-to-day budgeting and savings. The findings also indicate that awareness mediates the connection between investment knowledge and investment decision, thus supporting H2f. This finding corroborated the findings of Hamza and Arif (2019), who postulated that awareness served as a mediator between knowledge and investment choice because people with high degrees of openness tend to be curious about and driven to learn about new things and ideas.

5. Managerial Implications and Recommendations

However, there are restrictions on the scope of this investigation. The study is more of an experimental nature than a representative one. In the future, we can only hope that better survey designs are possible, covering even more ground with higher sample numbers. We cannot quantify the impact of larger political or financial planning choices in this study or any other study of investment behavior due to the difficulties in establishing a causal relationship between these decisions and actual investor actions or views. To conduct such a study, longitudinal research techniques must be employed. Nonetheless, policymakers in Malaysia and other countries like it may use the findings of this study to develop better retirement investing strategies because of the fresh information they have gained from this research.

Conclusion

Financial and economic stability in Malaysia is precarious amid the current COVID-19 epidemic. The faith of EPF Muslim contributors is shaken by this circumstance. Muslim EPF contributors have a harder time sifting through facts and keeping their emotions in check to determine the best EPF account value. An illogical and intuitive mindset characterizes Muslim EPF investors' choice to put money into EPF during the COVID-19 outbreak. This conclusion stems from previous research showing that factors such as attitude, subjective norms, perceived behavioral control, religiosity, and investment knowledge all play a role in shaping levels of awareness. However, there was no correlation between risk propensity and level of awareness. Second, Muslim EPF contributors are now more cognizant of how their attitudes, subjective norms, perceived behavior control, religiosity, and investment knowledge in the investing market have influenced their choices through awareness. Investors from the Muslim faith are more likely to take chances and accept some loss.

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Factors Influencing Green Product Purchase Behavior among University Putra Malaysia Students

*Zuroni Md Jusoh[1,2] & Thaneswary A/P Mahalingam[1]
[1]Department of Resource Management and Consumer Studies, Faculty of Human Ecology, University Putra Malaysia, Selangor, Malaysia
[2]Sustainable Consumption Research Group (SCoRe), Department of Resource Management and Consumer Studies, Faculty of Human Ecology, University Putra Malaysia, Selangor, Malaysia
*zuroni@upm.edu.my, thaneswarymahalingam@gmail.com

Abstract: The issue of the environment such as increasing sea levels, air pollution, water pollution, and climate change, are affecting people all over. Since early times, human beings have been experiencing environmental degradation due to the development activities due to the rise of civilizations. A green product is designed to have as little environmental impact as possible over its entire life cycle, including after it is no longer being used. This study examines the factors influencing green product purchase behaviour among University Putra Malaysia (UPM) students. A total of 260 respondents were selected from the University of Putra Malaysia by using simple random sampling. The data was collected by using the administered questionnaire. The results of multiple linear regressions showed that the adjusted R^2 is 0.438, indicating that the variance of the dependent variable was explained by the knowledge, attitude, social appeal and emotional value. The result also showed only three variables were influencing; emotional value (ß =.333, $p \leq 0.01$) was the most influential factor, followed by knowledge (ß =.303, $p \leq 0.01$) and attitude (ß =.160, $p \leq 0.01$) among UPM students towards the green product purchase behaviour. This study concluded that emotional value, knowledge, and attitude were among the factors influencing green product purchase behaviour. Future research is recommended to conduct this study on other University students in Malaysia with larger samples and also can focus on the other factors which influence the students on green product purchase behaviour.

Keywords: *Green product purchase behaviour, knowledge, attitude, social appeal, emotional value*

1. Introduction

Various environmental issues, such as increasing sea levels, air pollution, water pollution, and climate change, are affecting people all over the world. The issue of the environment is not a new one. Since early times, human beings have been experiencing environmental degradation due to the development activities due to the rise of civilizations. According to Ogiemwonyi et al. (2019), some of the key issues highlighted are Malaysian consumers not fully aware of their environment and instituting damage to the planet which has posed a serious challenge. According to Das (2019), a green product is designed to have little environmental effect throughout its life span and even when it is no longer in use. Concerning green management, the environmental strategy approach represents a crucial aspect in the 'industrial' sector, notably focused on production processes, and therefore corporations adopt it independently from engagement in green product creation (Albino et al., 2009). Consumers' green buying behaviour, according to Nguyen (2006), is related to the purchase of environmentally friendly items. Kumar and Ghodeswar (2014) also state that green product purchase behaviour is also motivation to support environmental protection, the realization of environmental obligations, and a tendency to look for green product-related information and learn about green products.

In the green product purchase behaviour field, most of the authors are focused on the factors of green product purchase behaviour. This is because emphasises the importance of consumers perceiving the product as being suitable to match their motives relevant to the product domain. Actually, different authors focus on different green product purchase behaviour factors which make consumers buy environment-friendly products. There found a lot of factors such as green brand positioning, attitude toward green brands and green brand knowledge (Suki, 2006). According to Nguyen et al. (2016), collectivism, environmental attitude, subjective norms, perceived inconvenience, and long-term orientation are also factors that influence consumers' green product purchase behaviour. Moreover, Harizan and Haron (2012) state that the importance of green product knowledge is also important to determine green product purchase behaviour. Another researcher Martin and Simintiras (1995) also supports that environmental knowledge and attitudes are also the factors that determine green product purchase behaviour. According to Nguyen and Nguyen (2020), green consumption has usually assumed a common attitude–behaviour model for different

generations. Furthermore, Bukhari (2017) stated that the impact of supporting environmental protection, drive for environmental responsibility, green product experience, social appeal and environment friendliness on green product purchase decisions by taking green brand image as a mediator. Moreover, Suki (2016) stated that functional value, social value, emotional value, conditional value, and epistemic value are Malaysian consumers' environmental concerns as expressed in their purchase of green products.

This research has focused on four factors that determine the green product purchase behaviour among UPM students based on the above factors. There are knowledge, attitude, social appeal and emotional value. The main purpose of this study conducting is to examine the relationship between predictor factors and green product purchase behaviour among UPM students and predictor factors influencing green product purchase behaviour among UPM students. So, the dependent variable for this study is green product purchase behaviour and the independent variables are knowledge, attitude, social appeal and emotional value.

2. Literature Review

Green Product Purchase Behaviour: According to McEachern and McClean (2002), green consumerism is characterized as a concept that encompasses sustainable development, pollution reduction, non-renewable resource responsiveness, and animal welfare. Aside from that, Joshia and Rahman (2015) said that green purchasing behavior is a complicated form of ethical decision-making and is a type of socially responsible behavior. The green product examples are recycled paper products, products not tested on animals, green laundry detergents, green cleaning products, ozone-friendly aerosols, unleaded petrol, energy-saving appliances, products in recycled recyclable packaging and composable nappies. The socio-demographic factors of educational level, income level, age, and marital status were found to have a significant impact on the respondents' desire to purchase green products in a study on green purchasing in Malaysia (Rezai et al., 2011). Furthermore, according to Bryunina and Safaei (2011), respondents with a higher educational level had a larger intention to purchase organic food. Nezakati (2014) stated that people are highly aware of the green concept. However, compared with other factors, environmental knowledge had a relatively weak effect on green purchase intention (Zhuang, Luo and Riaz, 2021).

Most respondents among young consumers choose to buy environmentally friendly products (Iravani et al., 2012). Malaysian marketers must know that young consumer act as the main drivers to influence green consumption in addition to the highlighted factors in the works of literature (Ogiemwonyi et al., 2019). Unlike the previous studies, in the current study, the researchers have discussed the direct relationship between the green product buying attitude and green product purchase behaviour and found that there is a significant positive relationship between them (Jan, Ji and Yeo, 2019; Zhuang, Luo and Riaz, 2021). According to Chin (2019), there was a significant relationship between green brand knowledge and green product purchase behaviour and also there was a significant relationship between attitude and green products purchase behaviour. Furthermore, emotional value has the power to alter the relationship between other consumption values and green product choice behaviour (Khan and Mohsin, 2017). Mostafa (2007) stated that there was an influence of consumers' ecological knowledge and attitude on gender differences in green purchase behaviour.

H5: Predictor factors have a significant influence the green product purchase behaviour among UPM students.

Knowledge: According to Harizan and Haron (2012), knowledge of green products is necessary for developing a necessary mindset towards green consumption. Green product buying is difficult to do without a sufficient understanding of green products. Consumers make their attempts to learn about green products, gain green product-related knowledge and experience them by searching for information about green products on their own as well as enquiring from their friends and they refuse to buy products from those who are found accused of being polluters (Kumar and Ghodeswar, 2014). Soomro et al. (2020) stated that environmental knowledge was found positively related to green product purchase behaviour. According to Bukhari, Aqdas and Bhatti (2017), consumers are becoming aware of the importance of environmental protection and try to gain knowledge about the environmental friendliness of brands and products to make green product purchase. Moreover, customers having product knowledge are more interested in the design and style of green products and have a strong propensity to try something new to lessen their routine

purchases (Suki, 2016). However, Martin and Simintiras (1995) stated that the evidence from the results of correlation analysis that had no strong relationships exist knowledge towards the impact of green product purchase behaviour on the environment. According to Larsson and Khan (2011), the correlation between knowledge and green product purchase behaviour is statistically not significant. They also claimed that sometimes consumers have solid information about a product but do not purchase it owing to a variety of factors such as financial constraints, a lack of taste, or a lack of trust.
H1: There is a significant relationship between knowledge and green product purchase behaviour among UPM students.

Attitude: According to Ajzen (1991), a positive or negative attitude toward green product buying behaviour, may be defined as the degree to which a person evaluates or appraises green product purchasing behaviour to have a positive impact on the green product purchase behavior. Attitude and purchasing green products had the biggest impact followed by lifestyle (Myriam, Fahri, and Emine, 2016). Based on the study by Iravani et al. (2012), the attitude had positively influenced the green purchasing intention of young consumers and green product purchasing attitude consumers believed that it is very important to raise environmental awareness among Malaysian. Consumers with good views about green products are more likely to create a higher inclination to purchase green products, according to Mostafa (2009). Moreover, Honkanen and Young (2015) found that the consumers' attitude toward buying sustainable seafood was the most important factor in predicting their desire to buy sustainable seafood apart from influence from family, friends, and colleagues.
H2: There is a significant relationship between attitude and green product purchase behaviour among UPM students.

Social appeal: Kumar and Ghodeswar (2014) stated that social appeal describes social sentiments of environmentally friendly consumer behaviour for their willingness to be accepted and recognized in society. Besides that, social appeal means that consumer behavior is highly influenced by the opinion of others regarding their product choices and usage (Bearden and Rose, 1990). According to Kumar and Ghodeswar (2014), the social appeal was identified as an important factor affecting green product purchase decisions. The relationship was studied between social appeal and green product purchase behaviour and the significant relationship suggests that others' perceptions about one's behaviour have a considerable influence on consumers' purchase behaviour for green products. Consumers buy green products if they are publicly recognized symbols of supporting environmental protection convey the self-concept of consumers and communicate desirable social meaning. Bukhari, Aqdas and Bhatti (2017) stated that it was hypothesized that social appeal significantly impacts green product purchase behaviour. According to Suki (2015), social appeal significantly impacts the level of environment shown by consumers in the Malaysian context, in their purchase of green products. Peer behaviour and social norms do influence consumer purchase behaviour to 'go green' which leads to an upsurge in their social approval and makes a good impression among reference the circle of friends and family members are examples of such groups. However, a negative and insignificant relation has been reported in a study between social appeal and green product purchase behaviour because may owe to inadequate coverage of green products through conventional media (Khan and Mohsin, 2017).
H3: There is a significant relationship between social appeal and green product purchase behaviour among UPM students.

Emotional value: According to Hain (2017), the emotions that are evoked by ethical products, can be categorized as "feeling good", "feeling moral", and "feeling powerful". "Feeling good," "feeling moral," and "feeling strong" are said to be psychological drivers for buying green items. Lin and Huang (2012) stated that there is a positive influence on green product purchase behaviour is emotional value. People who regard going green as an act that helps safeguard the environment experience positive feelings of doing good for themselves and for society at large consumers would increase their intake of green products identifying themselves as environmental defenders, driven by the high emotional value attached to the products. Consumer emotions have a positive and direct impact on consumer green purchase intention and behaviour (Joshia and Rahman, 2015). However, Suki (2015) stated that emotional value and green product purchase behaviour have no significant effects. This is because many customers remain ignorant of global environmental issues, and are unaware of the presence of green products in the market.
H4: There is a significant relationship between emotional value and green product purchase behaviour among UPM students.

3. Research Methodology

This study is quantitative research whereby data is collected and analyzed statistically to answer research objectives and questions. The research questions are from previous research papers that help to conduct this research. Primary data is collected through a questionnaire. The questionnaire is distributed to the respondents by using the current technology which is WhatsApp App to many groups and also personally in the form of a Google form link. This research is conducted at University Putra Malaysia because the survey's target respondent was undergraduate and graduate UPM students. The researcher chooses this location as a sample for the study location. The students at University Putra Malaysia (UPM) were mostly aged in the young adult category. The young adult category was between 18-25 (Simpson, 2018). Based on the data from the UPM website, there found more than 20,000 are students undergraduate and postgraduate. So, the sample size groups for this study were UPM students from 16 faculties in the UPM. In this research, there were selected 260 UPM students as respondents. These respondents were selected randomly from 16 faculties in the UPM by using a simple random sampling method to collect the data from the students.

This research is quantitative. All of the data is gathered from primary and secondary sources, which include information from past study papers. During the survey, no one is forced to answer the questionnaire; rather, the questionnaire is distributed randomly and those who want to answer it were given the options. All of the questions in the questionnaire paper are from earlier research studies and create from the information that took from other authors' findings. This SPSS version 26 software helps to test the reliability test, correlation test and multiple linear regression to get accurate data.

4. Results and Discussion

Respondents' Background: The descriptive statistics were created for getting the frequency and valid percentage for 260 respondents. Table 1 shows the value of frequency and valid percentage for the demographic part which contains five main elements which are gender, age, ethnicity, faculty, current level of education and household income of the respondents. The main purpose of conducting this frequency is to look at the height and lowest data in the demographic part.

More than half of the respondents were female students (76.5%) meanwhile (23.5%) were male students. According to Sreen, Purbey and Sadarangani (2018), male respondents are more than female respondents. However, researchers stated that females are more influenced by subjective norms than men and females are more influenced by what others say which can increase green product purchase behaviour.

Furthermore, the data shows most of the respondents are aged 22 years old (46%); aged 23 years old (40.8%); aged 24 years old (6.9%); aged 21 years old (3.5%); aged 26 years old (1.2%); and aged 19, 20, 25 and 27 years old (0.4%) respectively. The next item was focused on ethnicity. The majority of respondents who participated in this survey are Malay students which (62.7%) whereas (19.2%) are Chinese students meanwhile (17.7%) of students are Indian students and other ethnicities (0.4%). Next, the table showed the student's faculty. The majority of respondents who participated in this survey are from Faculty of Human Ecology (41.2%); Faculty of Economics and Management (14.6%); Faculty of Educational Studies (12.7%); Faculty of Environmental Studies (8.8%); Faculty of Food Sciences and Technology and Faculty of Forestry (6.2%); Faculty of Science (5.8%); Faculty of Agriculture (3.1%); Faculty of Modern Language and Communication (0.8%) and Centre of Foundation Studies for Agricultural Science and also Faculty of Engineering (0.4%).

For the current level of education, the largest proportion is from the First Degree level (98.8%), followed by the Foundation level (0.4%), Master level (0.4%) and PhD level (0.4%) respectively. On the other hand, the next item is focused on the household income. Based on the survey, the student's families who are getting income less than MYR 2500 (47.3%), MYR 2500 until MYR 4849 (30.8%), MYR 4850 until MYR 10969 (18.8%), MYR 10970 until RM MYR 15039 (2.7%) and having income more than MYR 15039 (4%). So, the most of student's family income (47.3%) is less than MYR 2500.

Table 1: Respondents' Background

Variable		Frequency	Percentage (%)
Gender	Male	61	23.5
	Female	199	76.5
Age (years)	19	1	0.4
	22	1	0.4
	25	9	3.5
	22	120	46.2
	23	106	40.8
	24	18	6.9
	25	1	0.4
	26	3	1.2
	27	1	0.4
Ethnic	Malay	163	62.7
	Chinese	50	19.2
	Indian	46	17.7
	Others	1	0.4
Faculty	Centre of Foundation Studies for Agricultural Science	1	0.4
	Faculty of Agriculture	8	3.1
	Faculty of Biotechnology and Biomolecular Sciences	0	0
	Faculty of Computer Science and Information Technology	0	0
	Faculty of Design and Architecture	0	0
	Faculty of Economics and Management	38	14.6
	Faculty of Environmental Studies	23	8.8
	Faculty of Engineering	1	0.4
	Faculty of Educational Studies	33	12.7
	Faculty of Food Sciences and Technology	16	6.2
	Faculty of Forestry	16	6.2
	Faculty of Human Ecology	107	41.2
	Faculty of Medicine and Health Science	0	0
	Faculty of Modern language and Communication	2	0.8
	Faculty of Science	15	5.8
	Faculty of Veterinary Medicine	0	0
Current level of education	Foundation	1	0.4
	Diploma	1	0.4
	Degree	257	98.8
	Master	0	0
	PhD	1	0.4
Household income	Less than MYR 2500	123	47.3
	MYR 2500- MYR 4849	80	30.8
	MYR 4850- MYR 10969	49	18.8
	MYR 10970- MYR 15039	7	2.7
	More than MYR 15039	1	4

Table 2 shows the frequency distribution of commonly purchased green products among UPM students. The majority of the respondents stated the answer "Yes" to the question, commonly purchased green products. More than half of respondents (59.6%) are commonly purchased green products in their daily routine. However, about 40.4% of respondents stated not commonly purchased green products. So, the difference between the frequency distribution of commonly purchased green products is only 50 respondents.

Table 2: Frequency distribution of commonly purchased green products among the UPM students

Commonly purchased green product	Frequency	Percentage (%)
Yes	155	59.6
No	105	40.4
Total	260	100

Table 3 shows the frequency of purchasing green products in a month (times). Out of 260 respondents, only 3.5% and 2.3% of respondents purchase green products 4 to 6 times and more than 6 times in a month respectively. It clearly explained that most of the respondents purchase green products less than 2 times a month 55.8% of respondents. Meanwhile, there found 38.5% of respondents purchased green products 2 to 4 times a month. So, overall, the frequency is very high in less than 2 times which was 55.8% of respondents purchase green products in a month.

Table 3: Frequency of purchase of green products in a month (times)

Frequency of purchasing green products in a month (times)	Frequency	Percentage (%)
Less than 2	145	55.8
2 to 4	100	38.5
4 to 6	9	3.5
More than 6	6	2.3

Pearson Correlation Analysis: Table 4 shows the relationship between knowledge and green product purchase behaviour. There was found a positive significant relationship between knowledge and green product purchase behaviour ($r = .534$, $p = < .001$) and the p-value was smaller than the alpha level .001 that explains, the dependent and independent variables were significantly related to green product purchase behaviour. So, it concluded that there is a significant relationship was found between knowledge and green product purchase behaviour among UPM students and the alternative hypothesis (H1) was accepted. According to Wang, Ma and Bai (2019), the consumer's whole decision-making process can be influenced by knowledge while green product awareness is frequently thought to be a direct predictor of green purchasing intention.

Table 4: Relationship between Knowledge and green product purchase behaviour

Variable		Green product purchase behaviour	Knowledge
Green product purchase behaviour	Pearson Correlation	1	.534**
	Sig. (2-tailed)		.000
	N	260	260
Knowledge	Pearson Correlation	.534**	1
	Sig. (2-tailed)	.000	
	N	260	260

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

Pearson Correlation Analysis: Table 5 shows the relationship between attitude and green product purchase behaviour. There was found a positive significant relationship between attitude and green product purchase behaviour ($r = .404$, $p < .001$) and the alternative hypothesis (H2) was accepted. According to Jan, Ji and Yeo (2019), green product health and safety values also had a favourable impact on green product purchasing

behaviour. Furthermore, consumer purchasing attitudes have a considerable beneficial impact on green product purchases.

Table 5: Relationship between Attitude and Green Product Purchase Behaviour

Variable		Green product purchase behaviour	Attitude
Green product purchase behaviour	Pearson Correlation	1	.404**
	Sig. (2-tailed)		.000
	N	260	260
Attitude	Pearson Correlation	.404**	1
	Sig. (2-tailed)	.000	
	N	260	260

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

Pearson Correlation Analysis: Table 6 shows the relationship between social appeal and green product purchase behaviour. The result shows social appeal was significantly related to the UPM student's green product purchase behaviour ($r = .395$, $p < .001$) and the alternative hypothesis (H3) was accepted. According to Zahid et al., (2018), one of the key components was also determined to be social appeal. In reality, the social appeal of green products distinguishes between customers who are up to date (i.e., are aware of current developments) and those who are 'out of date'.

Table 6: Relationship between the social appeal and green product purchase behaviour

Variable		Green product purchase behaviour	Social appeal
Green product purchase behaviour	Pearson Correlation	1	.395**
	Sig. (2-tailed)		.000
	N	260	260
Social appeal	Pearson Correlation	.395**	1
	Sig. (2-tailed)	.000	
	N	260	260

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

Pearson Correlation Analysis: Table 7 shows emotional value was significantly related to the UPM student's green product purchase behaviour ($r = .573$, $p < .001$) and the alternative hypothesis (H4) was accepted. According to Joshi, Uniyal and Sangroya (2021), consumers' perspectives about acquiring green items, as well as their emotional value, have been recognized as important predictors of their green purchase behaviour. Consumers that buy green products receive intrinsic pleasures for helping others, according to emotional value.

Table 7: Relationship between the emotional value and green product purchase behaviour

Variable		Green product purchase behaviour	Emotional value
Green product purchase behaviour	Pearson Correlation	1	.573**
	Sig. (2-tailed)		.000
	N	260	260
Emotional value	Pearson Correlation	.573**	1
	Sig. (2-tailed)	.000	
	N	260	260

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

So, overall, from the findings in Pearson correlation, all the variables have a significant and positive relationship between the green product purchase behaviour. Furthermore, the coefficient (r) for the emotional value is higher than knowledge, attitude and social appeal which explain that emotional value has a strong relationship with the green product purchase behaviour among UPM students.

Multiple Linear Regression Analysis: Table 8 shows the Multiple Linear Regression analysis result. The knowledge significantly influenced UPM students on green product purchase behaviour with a p-value is .000 which means less than ($p < .001$) and the coefficient value showed that (ß = .303). However, the attitude and social appeal is not significantly influencing the UPM students and its p-value was more than .001 even though it correlated. Meanwhile, the emotional value also significantly influences the students because the beta value showed that (ß = .333, $p < .001$). So overall, from the test, the result was shown that emotional value significantly influences UPM students. According to Wang et al., (2021), consumers' perceived green responsibility favourably influences their green purchasing behaviour when they are experiencing good emotions, and it can significantly moderate the link between positive emotional appeals and green purchase behaviour. Furthermore, they also showed the adjusted R^2 (.438) which explains that 43.8% variance of dependent variables were explained by the knowledge, attitude, social appeal and emotional value.

Table 8: Multiple Linear Regression Analysis

Variables	Coefficient (ß)	p-value
Knowledge	.303	.000
Attitude	.160	.002
Social appeal	.074	.179
Emotional value	.333	.000
F = 51.500; R = .668 R^2 = .447; Sig. F = .000, Adjusted R^2 = .438; Sig. F = .000		

** Correlation significant at $p < .001$

5. Conclusion and Implications

As mentioned earlier these studies were focused on factors influencing green product purchase behavior among UPM students. Even though there are so many authors and researchers discussing green product buying from different aspects and angles, this study, explains more detail and explored the idea of green product purchase behaviour. Moreover, they are also examining the relationship between predictor factors and green product purchase behaviour among UPM students. From the findings, this study was found successfully examines the relationship between knowledge, attitude, social appeal, and emotional value with green product purchase behavior. All of the four independent variables (knowledge, attitude, social appeal and emotional value) had a significant relationship with green product purchase behaviour. However, only three predictor factors (emotional value, knowledge and attitude) influence the green product purchase behavior among UPM students. The most influencing factor is emotional value, followed by knowledge and attitude.

These studies only focus on the predictor factors which are knowledge, attitude, social appeal and emotional value that make purchase green products among students. All these variables are predictor factors which had a positive relationship with green product purchase behaviour. Other than predictor factors, there also have other factors which influence the consumer. So, for future research, the researchers can conduct research on other factors such as price sensitivity, satisfaction through green products and environmental protection which might influence the University students on green product purchases and can be conducted in large sample size. Researchers also can examine the relationship between ecological value, health value, economic value and safety value on green product purchase behaviour. Other than that, this research also can be conducted on other University students in Malaysia to know their green product purchases in these variables and the influence on their purchasing behaviour.

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A Conceptual Paper on the Relationship between GHRM and Pro-Environmental Behavior via Employee Empowerment

Nurul Fazlin Abdul Rahman* & Zuraina Dato' Mansor
School of Business and Economics, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia
*GS52018@student.upm.edu.my, aina_upm@upm.edu.my

Abstract: This conceptual study is based on literature reviews related to green human resource management (GHRM), employee empowerment, and pro-environmental behavior (PEB) at the workplace. Business activities in small and medium enterprises or corporations, including agriculture, will impact the ecosphere. The impact suggests the importance for organizations to focus their concerns on PEBs to reduce the negative environmental impact of their ignorance of green practices. Organizations may use GHRM to efficiently provide and execute environmentally friendly policies since it can track and impact employee environmental behavior. The present study aimed to investigate for future research whether employee empowerment mediates the relationship between the GHRM and PEB at the workplace from the perspective of the Ability-Motivation-Opportunity (AMO) Theory, specifically among agricultural companies in Malaysia. The study continued to explore the concepts, issues, and objectives through several works of literature in numerous areas. This conceptual paper signifies supplementing works of literature as a future reference for academics. The outcome of this study can offer information to agricultural companies on the ways to leverage GHRM and employee empowerment to promote PEB in the workplace.

Keywords: *PEB; GHRM; Empowerment; AMO Theory; Agricultural*

1. Introduction and Background

The agricultural sector contributes to substantial economic growth by producing food sources, providing job opportunities, and endowing industrial raw materials (Afzal et al., 2009; Ali et al., 2017). In Malaysia, the agricultural industry contributes approximately 8.7% to the annual gross domestic (GDP) and 11.4% to the total employment (Hassan et al., 2018), making it one of the predominant sectors for socio-economic activities. Although it plays an important role in increasing crops for food security, agriculture activities have caused new issues leading to climate change (Moghaddam et al., 2020). Approximately 30% of all greenhouse gas emissions are attributable to agricultural operations, mostly due to the usage of chemical fertilizers, pesticides, and animal manure. Thus, to maintain global clients and sustain a vibrant global economy, effective management and control procedures are essential in environmental issues. According to Paille et al. (2014) and Tang et al. (2018), aligned with the concern for green practices, organizations gain their reputation and competitive advantage through sustainable environmental practices. They are aware of the significance of involving employees in attempts to improve sustainable performance through programs geared towards ensuring efficient usage of energy and reducing waste and other resources.

The research on pro-environmental behavior (PEB) in the workplace has emerged widely as most organizations are aware that green elements are their competitive advantage, especially when facing global climate change crises. In Malaysia, a serious concern exists for green practices due to the nation's poor environmental performance based on Global Environmental Performance Index. Malaysia ranked 9th in 2006, 26th in 2008, 54th in 2010, 25th in 2012 and 51st in 2014 to 75th recently in 2018. Hence, as reported by the Department of Environment (2010), the Malaysian government needs to be seriously focused on preserving the environment using numerous efforts, including the Ministry of Energy, Green Technology, and Water's (KeTTHA) promotion and funding of high-impact green technology research. The efforts were undertaken to align with one of the three themes in the 12th Malaysia Plan (2021-2025): Advancing Sustainability towards guaranteeing continuous economic growth while protecting the environment and continuing Malaysia's commitments to global targets.

Human activity is one of the main causes of climate change, and currently, an international consensus agrees that PEB must be promoted. A number of agricultural characteristics, including yield, cultivation of crops, and crop value, are changing as a result of climate change, which affects agriculture sustainability. Climate change has a variety of effects on agricultural yield, affecting both household and national food

security in diverse ways. Additionally, food security and sustainable agriculture are focal topics for innovation-related initiatives and research under the UN Sustainable Development Goals and Horizon 2020 (European Commission 2011). The significance of sustainable agriculture in agriculturally dependent countries, such as Malaysia, has been widely debated among academics. Tiraieyari and Uli (2011) pointed out that approximately 90% of Malaysia's farmers that grow food are small-scale farmers of unprofitable crops with expensive production costs, insufficient inputs, low yields, and unsatisfactory product quality.

The Malaysian government has assisted fertilizer subsidy farmers in raising their output and enhancing their revenue since the nation's agriculture strategy prioritizes higher production to attain food self-sufficiency (FAO, 2004). Endeavors to produce enough food and fiber for self-sufficiency have also resulted in Malaysia implementing an intensive agricultural system and consequently facing environmental degradation. In general, environmental behavior scores, specifically for air pollution and waste management, among Malaysians are not as high as their environmental awareness score due to the factor of convenience. Besides, PEBs are habitually performed (Staats, 2004) and are unlikely mentioned in the job description. Yuriev et al. (2018) discovered negligence of these behaviors among managers as it is not described in official documents. This finding is supported by Daily et al. (2009), who highlighted that the managerial level ignored employees' responsibility to lessen the organizations' environmental impact owing to unexpected behavior. Effective human resource management is necessary to accomplish PEB at work since it is difficult to achieve this by employing solely formal methods. According to a number of empirical studies on the disparities between environmentally friendly behavior at home and the office, the same individual recycles more regularly at home than at work. Additionally, Lo et al. (2012) demonstrated substantial discrepancies in energy-saving practices outside and inside the workplace. According to Norton et al. (2015), certain behaviors were linked to the organization, while others were connected to the individuals' qualities when related to PEB-related difficulties. According to a recent study by Faraz et al. (2021), encouraging PEB gave organizations a strategic advantage by cutting expenses, increasing income, cultivating a favorable reputation, achieving sustainability efforts, and preserving a competitive edge.

Vinojini and Arulrajah (2017) studied external and internal factors that influence PEB in the workplace, including green human resource management (GHRM). Dumont et al. (2017) researched and stated that employee behavior is influenced by the direct and indirect effects of GHRM. Thus, an individual's green behavior influences the personal value of employees towards environmental performance. Hence, this study concluded that a positive relationship exists between GHRM practices and the workplace behavior of the employees. There is a number of theories that support the notion that employees must be empowered, motivated and environmentally conscious to pursue green practices. According to the management concept known as empowerment, employees who are given the freedom to make their own choices are more likely to be emotionally involved. Employees increase their level of activity and develop a resilient spirit by being involved in worthwhile endeavors that advance the success of the company through empowerment (Elnaga & Imran, 2014). The present conceptual study examines the nexus between the GHRM practices of the Malaysian agricultural industry and employee empowerment and the effect on PEBs.

Problem Statement: There has been an increasing interest among practitioners and researchers in exploring the GHRM concept over the last two decades (Gilal et al., 2019). Nevertheless, studies that have focused on how to encourage staff to adopt a positive attitude and behavior to manage organizations' environmental impact and improve sustainable business operations remain limited (Dumont et al., 2017). The PEBs are considered critical employee behaviors for enhancing environmental performance within the GHRM framework (Tang et al., 2018). The PEB refers to any action related to responsible environmental behaviors to assist firms in achieving environmental sustainability (Andersson et al., 2013). As suggested in the literature, employees' roles are crucial in assisting the organization in becoming green by using PEBs (Lülfs and Hahn, 2013). Nonetheless, the relationship between GHRM and employee workplace green behavior, such as PEBs, has not yet been sufficiently studied, despite the growing academic interest in this topic (Saeed et al., 2019). Additionally, relatively few researchers have focused on the underlying mechanism behind the relationship between GHRM and PEBs. Thus, this study aims to fill up any existing gaps in the literature by first studying the direct effects of GHRM on PEBs and subsequently examining the indirect mechanisms by which GHRM may affect PEBs. In this respect, the current research intends to investigate the mediating role of employee empowerment in the relationship between GHRM and PEBs.

Questions and Research Objectives: The purpose of the conceptual study is to reveal the relationships between GHRM, employee empowerment, and the PEB of the agricultural industry in Malaysia. Therefore, the following research questions will be addressed:

- Is there a relationship between GHRM and PEB in the agricultural industry?
- Is there a relationship between employee empowerment and PEB in the agricultural industry?
- Is there a relationship between GHRM and employee empowerment in the agricultural industry?
- Does employee empowerment mediate the relationship between GHRM and employee PEB?

Significance of the Research: The present conceptual study is crucial as it potentially offers vital implications to various business leaders from the agricultural sector who desires to monitor their organizational performance constantly. The present study aims to examine the impact of GHRM on green awareness and practices among employees. In addition, the study will also investigate the mediating effect of employee empowerment between GHRM and employee PEB. The findings of these relationships could offer knowledge that benefits the agricultural sector on ways to leverage empowerment to enhance PEB among employees. Besides, the study could be crucial to policymakers entrusted with designing support mechanisms and schemes to promote the green practices of organizations. The findings of the study could also add to the existing body of literature referred to by scholars.

The Ability-Motivation-Opportunity (AMO) Theory: The theory of Ability-Motivation-Opportunity (AMO), as suggested by Applebaum et al. (2000), focuses on helping to select a human resource (HRM) activity that improves organizational success. According to Gerhart (2005), a good choice of HRM practice is important for the conscious development of employee skills (selection, recruiting, and training), motivation (performance-related pay), and opportunities to act (emphasis on teamwork and suggestions). Katou and Buddhwar (2010) divided HRM activities into three classes, which are HRM mechanisms affecting the desire to perform, the motivation to perform, and the ability to perform. Finally, in this vein, Rauch and Hatak (2016) systematized and specifically described and differentiated HRM activities into three distinct classes, namely skills, motivation and empowerment. Abilities enhancing HRM activities (Subramony, 2009) are aimed at increasing the level of expertise, skills, and skills within the business, thereby allowing employees to perform their job properly. This community consists of two subgroups: i) HRM practices that concentrate on expertise and are mainly task selection, and (ii) HRM practices that concentrate on information and skills development. These HRM activities can be influenced by interventions, in particular, training and coaching.

In essence, motivation-enhancing activities are designed to steer employee actions toward the goals of the company through the use of an acceptable set of rewards. These rewards include but are not limited to, performance management, compensation, motivation, and reward activities. Notably, motivation-enhancing activities vary in organizational behavior literature (Deci and Ryan, 1985), which focuses primarily on extrinsic motivation by concentrating on rewards and benefits. Empowerment-enhancing activities focus on the growth of employee autonomy, engagement in the decision-making process, and employee accountability and input mechanisms.

The theory of AMO is bound to have several implications. First, HRM activities have an indirect effect on organizational success by improving human skills and motivation and influencing the requirements for innovation, accountability, and active involvement in the life of an organization. Second, various HRM activities influence the various elements of the AMO. Some activities promote capacity, focus on motivation and are considered to affect organizational conditions. Third, HRM practice studies are viewed as the antecedents of AMO, situated at the intersection of management, psychology, sociology, and organizational behavioral theories. Fourth, AMO applies to and encompasses numerous components, including expertise, skills, experience, commitment, work satisfaction, decision-making, determination, accountability, creativity, and innovation. Researching all AMO components in one research would be incredibly difficult due to the sheer number of various AMO manifestations. Researchers concentrate on a single AMO case at a time, such as happiness, engagement, awareness, decision-making, and imagination.

2. Literature Review

PEB at Workplace: The PEB is considered one of the approaches that can be employed by organizations to reduce their adverse ecological impact. The employment of PEB is encouraged because PEB, also known as personal actions by individuals and with support from their organizations, can help to improve the environment (Blankenberg and Alhusen, 2018). Employees are considered agents of implementing organizational change regarding green initiatives and policies in many aspects (Dumont et al., 2017) because improving environmental sustainability and its success are dependent on employees' PEB (Saeed et al., 2019). Employees' PEB can be categorized into five dimensions listed below (Fatoki, 2019):

- Conserving: Conserving focuses on behaviors that preserve resources and avoid waste (such as recycling).
- Avoiding harms: Avoiding harm includes behaviors that reduce or mitigate the damage to the environment (such as pollution prevention).
- Transforming: Transforming focuses on changing and adapting to sustainable behavior (for instance, buying green products and renewable energy).
- Influencing others: Influencing others focuses on social behaviors that support sustainability (such as motivation, training, and incentives).
- Taking initiative: Taking initiative involves behaviors that do not support the status quo (for example, lobbying and activism).

Prior studies have empirically suggested that the ability to perform work in environmentally conscious behavior is important. Thus, organizations must crucially develop such behavior among their employees (Afsar et al., 2018; Chaudhary, 2019; Cheema et al., 2019; Fawehinmi et al., 2020). Furthermore, other literature has pointed out several benefits for organizations that practice PEB For example, their employees will (i) promote and enhance the natural environment, which will help the long-term survival of the world and (ii) have a positive impact on financial implications in terms of reducing costs and improving financial, environmental, and social performance (Fatoki, 2019). Nonetheless, the evidence on how, why and when employees adopt these behaviors remains undiscovered or inconclusive (Dumont et al., 2017; Saeed et al., 2019; Fawehinmi et al., 2020). Therefore, based on this literature, the organizations shall put their effort and attention into the importance of PEB and their roles in green practices. Moreover, the findings in the literature drive the authors' motivation to explore PEB determinants which is also the aim of this research.

GHRM and PEB: The reviews of literature further suggested that organizations can utilize GHRM to effectively deliver and implement environment-friendly policies because it has the ability to measure and influence employee environment-related behavior, attitudes, knowledge, and motivation (Guziana and Dobers, 2013; Jabbour et al., 2013). In fact, past literature has stated their concerns on the effects of environmental management activities from HRM practices, which can enhance its alignment with environmental management (Jabbour et al., 2013). Globally, respect for the atmosphere drives businesses to adopt ecological HRM activities, namely climate management dimensions of HRM, to encourage sustainable occupational actions among workers. Renwick et al. (2013) defined GHRM as HRM activities that produce positive environmental results. Past studies underlined GHRM as a new approach based on various aspects, such as the development of environmentally friendly working conditions and the creation of a green workforce (Bombiak et al., 2018). Besides, GHRM officially established and implemented policies and practices that can directly influence employee behavior, guiding company personnel to engage in PEB at work. Thus, the following hypothesis has been posited.
H1: There is a positive influence of GHRM on PEB in the agricultural sector.

Employee Empowerment and PEB: The employees may feel more comfortable with a high level of empowerment provided by the leader as they gain a high sense of control. Additionally, they may perceive that the empowering behaviors are coherent with their existential values, which results in them interpreting their work as meaningful. Due to the sense of meaningfulness, empowering behaviors bring a feeling of satisfaction. Hence, employees become more committed to their organization, which motivates them to spend more time and energy in their organization. Employees can be provided with opportunities to engage in environmental management, which allows them to promote pollution reduction and recognize environmental opportunities (Renwick et al., 2013). Research has shown that employee green engagement is critical to

enhancing the efficiency of the environmental management system, such as eliminating waste and emissions at the workplace and making maximum use of resources. Renwick et al. (2013) outlined a variety of employee green communication processes from an integrated perspective. Employees can be inspired to engage in environmental management by providing green initiatives, such as writing newsletters, forming problem-solving groups, or setting up green teams (Vallaster, 2017). Encouraging green participation includes presenting staff with resources for quality development and environmental issues to be discussed. Thus, the authors suggest the following hypothesis:
H2: Employee empowerment in the agricultural sector relates positively to PEB.

GHRM and Employee Empowerment: Employees' PEB can be affected by GHRM practices through psychological mechanisms (Hameed et al., 2020; Spreitzer, 1995). Psychological green engagement and green climate in green initiatives are examples of psychological mechanisms for performance enhancement. Employees would contribute to green performance when they are empowered through GHRM practices. Thus, employees play an important role in strengthening the nexus between environmental performance and GHRM. When they feel empowered, they will present discretionary behavior, which is related to green behavior. Furthermore, employees will feel obliged to present environmental behavior if they receive some benefits from the company for green initiatives (Hameed et al., 2020). With these findings, it can be assumed that GHRM practices are related to employee empowerment. Thus, the following hypothesis has been posited.
H3: There is a positive relationship between GHRM with employee empowerment in the agricultural sector.

The Mediating Effect of Employee Empowerment: Empowerment is a motivational force that increases the self-efficiency of organizational members, including formal and informal practices of facilitating competence (Conger and Kanungo, 1988). Furthermore, most scholars emphasized empowerment as a motivational construct in promoting proactive behaviors. Employees will receive the feeling of empowerment and competency when employers offer empowerment to them, which makes them believe that they can influence their environment. Empowerment is known as an active perception of an individual work role and not a passive one, as it includes self-esteem, rewards, control and access to information. In addition, initiating and regulating actions with a positive impact on the job environment is part of the subjective process of empowerment. Moreover, a higher level of psychological empowerment is found to lead to leadership creativeness and effectiveness. The creativity of employees and their ability to influence intrinsic motivation within the organization is improved when they feel empowered. Past research has explored the mediating effect of psychological empowerment in other constructs, such as between job performance and psychological climate, affective commitment and job satisfaction, and the relationship between transactional leadership and followers' organizational identification. Therefore, the hypothesis has been posited as follows.
H4: Employee empowerment mediates the relationship between the GHRM and PEB of the agricultural sector in Malaysia.

3. Research Methodology

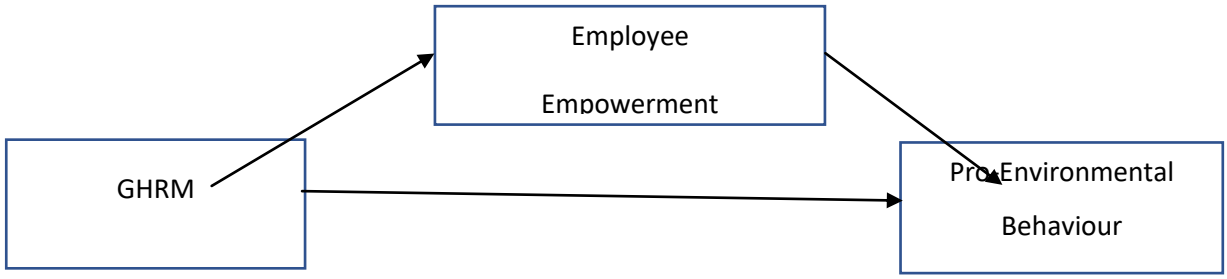
This article used an archival method based on literature reviews from journal articles, proceedings, theses and books to understand the existing studies of GHRM and PEB at the workplace to propose a conceptual framework. The keywords searched in the search engines such as Scopus, WoS and Google Scholar were "green human resource management", "pro-environmental behavior", "green behavior", "employee empowerment" and "ability-motivation-opportunity theory".

4. Conceptual Model Development

This conceptual study attempts to determine the relationship between GHRM and PEB and whether the relationship is mediated by employee empowerment. Studies have been undertaken on several models established by other authors. The conceptual model shown in Figure 1 is the combination study of Kularathne (2020) and Saeed et al. (2018). Kularathne (2020) investigated the effect of employee empowerment on environmental performance. On the other hand, Saeed et al. (2018) determined the relationship between GHRM and employees' PEB, which is also mediated by psychological capital from diverse industry sectors, such as the manufacturing, pharmaceutical and power industries. Therefore, as shown in Figure 1, the study proposed the following hypothesis:

H1: There is a positive influence of GHRM and PEB on the agricultural sector.
H2: Employee empowerment in the agricultural sector relates positively to PEB.
H3: There is a positive relationship between GHRM with employee empowerment in the agricultural sector.
H4: Employee empowerment mediates the relationship between the GHRM and PEB of the agricultural sector in Malaysia.

Figure 1: Proposed Research Model



5. Conclusion

The findings of the present study will provide a gateway to the study of the relationship between GHRM, employee empowerment, and PEB in the agriculture industry in Malaysia. Further research needs a wider range of literature to obtain insightful knowledge. This conceptual paper is expected to contribute to and supplement literature for the reference of future scholars. It serves a remarkable impact on the policymakers and owners of management in agriculture upon the full completion of the research.

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Factors Affecting Financial Well-being of Millennials: A Systematic Review

Ma. Jesusa Corazon M. Lambert[1,2*], Zuroni Md Jusoh[1], Husniyah Abd Rahim[1], Norzalina Zainudin[1]
[1]Faculty of Human Ecology, University of Putra Malaysia, Serdang, Selangor, Malaysia
[2]Integrated High School, Visayas State University, VSU, Baybay City, Leyte, Philippines
mjcmlambert@gmail.com*, zuroni@upm.edu.my, husniyah@upm.edu.my, norzalina@upm.edu.my

Abstract: Financial well-being (FWB) refers to a status of an individual equipped with adequate resources to live life comfortably. Millennials, a cohort born in 1980-2000, fared less well financially than other generations. This article attempted to look into the existing body of knowledge to provide a comprehensive understanding of the factors affecting FWB among millennials. Employing a combined PICO and SPIDER tools, fifteen articles have been identified and subsequently, five themes were developed affecting FWB among millennials such as financial behavior and financial literacy, personal traits, social and economic environment, and life stage attributes. Among these identified factors, financial literacy is considered to be the strongest as higher financial literacy translates into better handling of finances, resulting in surplus and therefore better FWB. Financial behavior and financial attitude are also important as they involve skills, motivation, and confidence to apply knowledge and understanding. Personality traits equally remained as strong predictors along with social and economic environment factors as well as social support from firms and institutions which significantly affect financial well-being. This research will enable millennials to improve their financial lives. In the pursuit of improving their financial well-being, individuals make financial decisions to grow their assets and protect their resources and alleviate financial crises. Overall, this paper has demonstrated the factors that substantially determine FWB among millennials. It is recommended that relevant research be done to verify the factors identified in this study.

Keywords: *GenY, Economic Life, Financial Stability, Financial Decision, Financial Crises*

1. Introduction and Background

Financial well-being (FWB) as defined by Xiao (2016) is a status whereby an individual has adequate resources to live a comfortable life. It is a person's state of being when one can be fully on track to meet financial goals and financial obligations when one can gain assurance of his financial future, and when one can obtain financial freedom to make choices that allow for the enjoyment of life (Consumer Financial Protection Bureau 2015). The key to attaining FWB has been identified to be effective management of a person's economic life to ease stress and increase security. Despite these mentioned the Gallup-Healthways Well-Being Index stated that globally, 30 % of adults are suffering in terms of FWB, 45 % are struggling in FWB and only 25 % of adults are thriving in FWB. Due to the growing global economy, technological advancement, and proliferation in financial products and services resulted in a rapid change in the financial system often leading individuals to deal with an unpropitious economic situation (Sehrawat et al. 2021). Considering that poor FWB results would affect physical, mental, and social well-being, which in turn may lead to poor job performance, short-term decision-making, a lesser ability to concentrate, absenteeism and lower productivity (Abdullah et al. 2019), Policymakers worldwide put enormous efforts on improving and enhancing the financial sector to increase its stability (World Bank 2013). Various strategies on financial inclusion, i.e., access to various financial products and services, financial literacy, and financial capability, have been implemented to elevate the FWB of individuals.

The Millennial generation, also known as "Gen Y", a cohort born in 1980-2000, is presumably the generation that fared less well financially than previous generations, i.e., the silent generation (1928 to 1945), and baby boomers (1943–1960) (Kalish 2016). Despite being considered as the generation that has tech-savvy characteristics, i.e., adept to the adoption and use of technology (Arsalan and Latif 2021), millennials (individuals aged 22-41 years in 2022) were greatly affected by the 2008 Great Recession more so, have been immensely affected by the skyrocketing costs of higher education together with the ensuing student loan debt crisis. This generation also faces another economic crisis, caused by the shutdowns due to the COVID-19 pandemic (Bolognesi et al. 2020). The findings of the National Financial Capability Study (NFCS) show that millennials lean towards relying heavily on debt, engage frequently in expensive short- and long-term money management, and exhibit very low levels of financial literacy. Considering that millennials are arguably the

largest (23 % of the global population), the most highly educated, and hence, they are society's most influential force and that is poised to play a vital role in the country's long-term social and economic development as mentioned by Bolognesi et al. 2020, this paper will look into the existing body of knowledge to provide a comprehensive understanding as to factors that are reported to affect FWB among millennials. To do this, the process employed by Shaffril et al. (2020) on systematic literature review (SLR) will be followed. Here, the researchers will start by framing a central research question. Subsequently, relevant reports in literature will be identified taking into account the various criteria development and search for articles (e.g., keywords used, article selection), appraisal of the quality of the selected literature reports, summarizing the evidence, and finally, interpretation of the results (Rys et al. 2009).

In the present review, the authors will be guided by the central research question-What are the factors that determine the financial well-being of Millennials? This review will attempt to gather relevant reports in the literature to understand the factors that affect the FWB of millennials. Millennials are selected primarily for their largest global population (23%), with high expectations for future economic growth (Bishop, 2006). Delineation as to specific regions and/or locations, however, was not employed in the present review as there are limited reports in literature dealing with the issue relating to millennials and their FWB. Finally, this review is presented to provide compelling pieces of evidence as to the burgeoning need in integrating strategies corresponding to economic and financial stability among millennials to possibly mitigate the financial crisis resulting from the ill-informed financial decision. The target audience for this work is economists, financers, researchers, further authors of systematic evidence syntheses, readers of reviews, and the wider research community.

2. Methodology

The Review Protocol

The Reporting Standards for Systematic Evidence Syntheses (ROSES) proposed by Haddaway et al. (2018) are employed in this present study to ensure that the researchers offer the right information with the correct level of detail. Here, the researchers formulated the research question employing a combined PICO and SPIDER tools, followed by explaining the systematic searching tragedy consisting of identification, screening (inclusion and exclusion criteria), and eligibility of literature reports as mentioned by Shaffril et al. (2020). An appraisal of the quality of the selected reports followed by data abstraction and analysis was done. In the latter section, reports that are directly related (e.g. able to give answers) to the research question were tabulated, and based on the works of Braun and Clarke (2006), a thematic analysis identifying themes is performed.

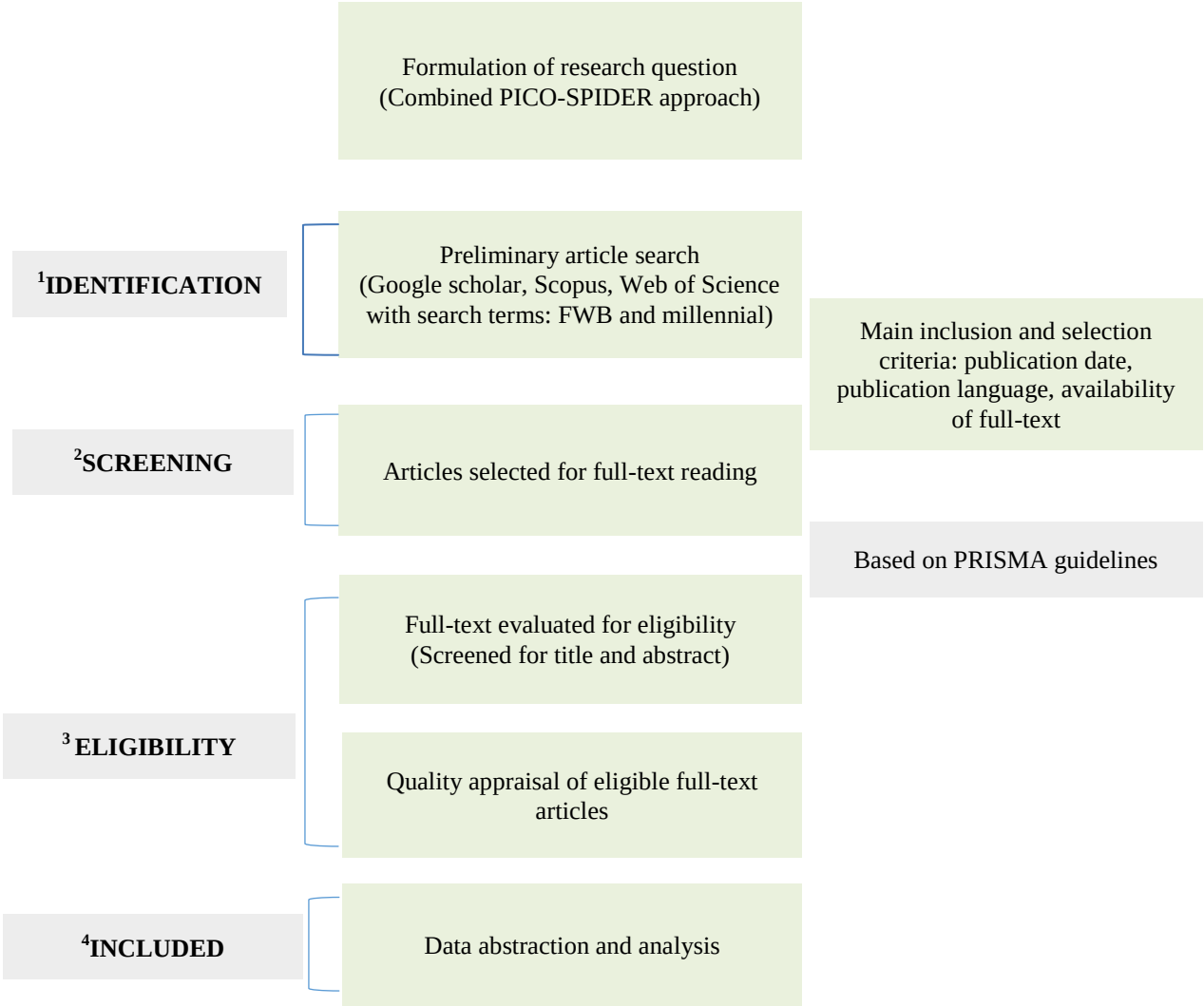
Formulation of the research question

Prior to deciding on the proposed review topic, a preliminary search to identify relevant literature reports was conducted to validate the research question, and consequently avoid duplication. The researchers did this by making a simple search in Google Scholar, Google Advanced Search, Scopus, or Web of Science with search terms financial well-being (FWB) and millennials. To address resource limitations, i.e., scarcity of published literature reports and for the research question to remain interesting, relevant, and timely, a combined PICO-SPIDER approach was employed. While PICO (Population, Intervention, Comparison, Outcome) tool is primarily useful for quantitative evidence synthesis, the SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) tool, on the other hand, is usually employed for qualitative and mixed methods (Tawfik et al. 2019). Based on the works of Tawfik et al. (2019) and Shaffril et al. (2020), a modified flow diagram for systematic review employed in the present review is presented in Figure 1. The widely accepted Preferred Reporting Items for Systematic Review and Meta-analysis statement (PRISMA checklist 2009, Moher et al. 2009) was adopted in evaluating the eligibility of searched literature reports.

Systematic searching strategies

As suggested by Tawfik et al. (2019), the basic search was created based on the research question formulation. In Google Advanced Search, for example, search strategies were employed by placing the descriptors "financial well-being publication" with "millennials" under the exact word or phrase entry and/or any relevant subject indexing expected to retrieve relevant studies. Searched literature reports were subsequently screened and evaluated for eligibility as shown in Figure 1.

Figure 1: Flow diagram of systematic review applicable for the present review



3. Results

Background of the Selected Articles

Globally, there is a growing consensus for individuals to improve their financial lives. In the pursuit of improving their financial well-being, individuals make financial decisions to grow their assets and protect their resources (Sehrawat et al. 2021). This paper has sought to provide compelling evidence as to factors in relation to economic and financial stability to possibly alleviate the financial crisis among millennials. Based on a systematic literature review on financial well-being, a total of 15 articles were selected for full-text reading and subsequently grouped according to the following themes, namely: financial behavior, financial literacy, personal traits, social and economic environment, and life stages. These articles were primarily chosen as these target millennial respondents, specifically those belonging to middle and lower-class families, young adults, emerging adults, and working professionals. The publication dates of the selected articles are shown in Table 1.

Table 1: Article title, authors, and publication dates of select articles corresponding to financial well-being among millennials

Article title	Author(s)	Date of publication	Thematic classification
1. Millennials' Retirement Saving Behavior: Account Ownership and Balance	Yao & Cheng	2017	Financial Behavior
2. Antecedents and Consequences of Household Financial Management in Brazilian Lower Middle Class	Mioto & Parente	2015	Financial Behavior, Personal Traits
3. Personality and young adult financial distress	Xu, Beller, Roberts & Brown	2015	Financial Behavior, Financial Literacy, Personal Traits
4. The relationship of debt management, compulsive buying behavior and financial well-being.	Kuknor & Sharma	2017	Financial Behavior
5. Recession Jitters Among Professional Class Families: Perceptions of Economic Strain and Family Adjustments	Zvonkovic, Lee, Hurst & Lee	2013	Financial Behavior, Personal Traits
6. The Mediating Role of Rational Buying in the Relationship between Financial Literacy and Financial Well-being	Shusha	2016	Financial Behavior
7. Credit Constraints and the Delay of Homeownership by young households in Japan	Yukutake & Moriizumi	2017	Financial Behavior
8. Pathways to life success: A conceptual model of financial well-being for young adults	Shim Xiao Barber & Lyons	2009	Financial Literacy, Social and Economic Environment
9. Factors influencing adult earnings: Findings from a nationally representative sample	Furnham & Cheng	2013	Financial Literacy, Personal Traits, Social and Economic Environment
10. The Influence of Financial Literacy, Money Attitude, Financial Strain and Financial Capability on Young Employees' Financial Well-being	Sabri & Zakaria	2015	Financial Literacy, Social and Economic Environment
11. Does family affect financial outcomes and psychological biases? Evidence from small investors in Bangladesh	Khan & Tan	2020	Financial Literacy, Life Stage Attributes
12. User-Source Fit and Financial Information Source Selection of Millennials	Huang, Lassu & Chan	2018	Personal Traits, Life Stage Attributed
13. Patterns of financial attributes (Lusardi A. , 2019) and behaviors of emerging adults in the United States	Sinha, Tan & Zhan	2018	Personal Traits
14. Understanding Financial Well-being Over the Lifecourse: An Exploration of Measures	Collins & Urban	2018	Life Stage Attributes
15. Exploring Family Millennials' Involvement in Family Business Internationalization; who should be their Leader?	Cirillo, Maggi, Sciascia, Lazzaroti & Visconti	2022	Life Stage Attributes

The themes and the sub-themes

Financial Behaviour: Among millennials, saving practices are seen as crucial to financial well-being. To prevent current spending and preserve money for the future, building a financial buffer demands self-control and a preference for the future (van Raaij 2016). Retirement savings (75%) and creating an emergency fund (51%) are among millennials' top financial concerns, according to a Bank of America survey from 2020. A higher level of risk tolerance, better health, and a higher rate of retirement account ownership were all characteristics of millennials who were motivated to save for retirement (Yao et al. 2017). However, it has become more difficult for Millennials to plan for retirement due to the rising lifespan and low-interest rate economic climate (Genay & Podjasek, 2014). Shim et al. (2009) proposed that one's socialization roles should include self-actualizing personal values, formal financial education at school, and financial education at home because these will ultimately lead to improved academic success and overall life satisfaction, as well as psychological and physical health.

To understand more about financial behaviors, Sinha et al. (2018) identified four different classes among emerging adults, these are: financially precarious, financially at-risk, financially striving, and financially stable. The former two are characterized by having fewer financial socialization opportunities, lower access to banking services, and thus the desperate need for intervention opportunities (Lin et al. 2014). An interpersonal difference in debt attitude is another factor determining one's financial success. Since FWB is also equated to maintaining debt at sustainable levels (Agyei et al. 2019), debt management is therefore becoming critical not only in maintaining economic stability but also in mobilizing financial resources. According to Almenberg et al. (2018), being uncomfortable with debt leads to significantly lower debt levels, and being uncomfortable with debt is correlated between parents and their children, indicating intergenerational transmission of debt-related behavior and attitudes. In relation to the theory of planned behavior in predicting an individual's intention to engage in a behavior at a specific time and place (Ajzen 1991), one of the most widely researched areas, particularly in Western countries, is the effects of compulsive buying on an individual's FWB (Lins and Lage 2016). Compulsive buying, which is associated with craving and withdrawal and is frequently characterized by euphoria and/or relief from negative emotions (Weinstein et al. 2016), raises the risk of over-dependence on loans and can be indirectly associated with the risk of individuals falling into financial trouble (Owusu et al. 2021). Individuals who are more aware of the consequences of their purchasing behavior and have more control over their purchasing are perceived to have a high level of financial well-being (Ajzen, 2001).

Financial Literacy: As it plays a crucial role in more effectively managing income and expenses, understanding personal financial difficulties is being more recognized as an area of important financial relevance. It also affects a person's capacity to make financial decisions for themselves, including those regarding investments, financial risk tolerance, saving, borrowing, and lifestyle behaviors that affect economic stability and growth (Widdowson & Hailwood, 2007; Sarigül, 2014). Individuals eventually make mistakes that could have major repercussions for their financial situations due to a lack of information and expertise in handling budgetary concerns, interest, investments, loans, and other banking services. However, families may be able to grow their surplus and reduce the real trend of tough financial situations by improving their financial management skills as they become more financially literate. On the other hand, the greater one's financial literacy, the better one's financial management, which could help families increase their surplus, thereby reducing the actual trend of difficult financial situations. According to a study conducted by Lusardi and Oggero (2017), millennials in the major advanced economies (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) are far more financially literate than their counterparts in emerging economies (Brazil, China, India, Russian Federation, and South Africa). Yet even within these two groups of countries, financial literacy rates still vary widely, from 43 % in Japan to 72 % in Germany among advanced economies and from 27 % in India to 43 % in South Africa among emerging countries. Generally, millennials who are financially literate are expected to be better able to demonstrate good financial behavior for their economic security and well-being resulting in the overall community's economic development (Dewi et al. 2020).

Huang et al. (2018) suggested that financial practitioners, educational institutions, and employers can improve their "fit" as financial information sources to millennials by co-creating financial information with

them, customizing communication channels, and improving the accessibility of information. This is because financial knowledge is important as a predictor of an individual's FWB.

Financial behavior and financial attitude are significant aspects of financial literacy because, according to Lusardi (2019), financial literacy encompasses not only knowledge and understanding of financial concepts and risks but also the abilities, drive, and confidence to put that knowledge and understanding into practice. Inadequate financial skills, on the other hand, can result in several pitfalls, particularly people being easily drawn into debt. Low levels of financial literacy have been linked to sub-optimal financial behavior, as previously mentioned and low-literate individuals are generally less likely to engage in a wide range of recommended financial practices (Hilgert et al. 2003).

In addition to other factors influencing financial literacy, Danes and Yang (2014) identified early childhood consumer experiences (ECCE) as a significant determinant of financial strain among adults. According to Sabri and MacDonald (2010), individuals (i.e. students) with positive ECCE are more likely to engage in active financial behavior and are less likely to report financial problems; thus, ECCE aids in making sound financial decisions and controlling financial strain, which improves adults' financial well-being. Positive early consumer experiences, according to Zabri and Zakaria (2015), improve young employees' financial literacy, which has a significant effect on their financial management and thus increases their perceived level of financial well-being. It would seem effective to teach this group of young employees the fundamentals of personal finance to prepare them to become accountable and wise customers (Zabri & Zakaria 2015).

Personal Traits: According to research, personality and financial security are related. According to studies conducted by the Consumer Financial Protection Bureau, attitudes and non-cognitive skills may play a role in mediating the relationship between knowledge and behavior. An internal frame of reference (locus of control), persistence, executive functioning (being a planner or having self-control), and financial self-efficacy (or confidence in their ability) are among the main characteristics that have been discovered (CFPB, 2015). Similarly, Mioto et al. (2015) emphasize in their study that factors such as self-control and planning proclivity have been incorporated into models to improve the companies' default predictions. Individuals with lower levels of self-control, like those with a lower tendency to plan, tend to manage their finances ineffectively, resulting in a higher incidence of bad debt situations.

Xu et al. (2015) investigated how personality factors, explain individual differences in financial hardship in young adulthood. This was done because millennials set the foundation for financial security for lifelong financial well-being. A number of financial hardship indicators are thought to be significantly explained by the Big Five personality traits. Particularly, more neurotic young adults are more likely to go through financial hardship than more conscientious ones. Similarly, Furnham & Cheng (2013) confirmed and expanded on personality traits that are related to financial well-being, particularly intellect (openness), emotional stability (low neuroticism, high adjustment), and trait intellect (openness), which is nearly as important as parental social class and education in this regard.

Working professionals who have a stronger positive attitude toward debt had higher financial well-being, according to a study by Kuknor and Sharma (2017). Individuals who engage in compulsive buying have financial misery as a result of their habit, which is negatively correlated with financial well-being. Likewise, Zvonkovic, et al, (2013) in a time of economic uncertainty, emphasized the adjustments made by families in the professional class to handle economic repercussions. These families feel reasonably certain and secure in their work. Families showed varied propensities for making specific sorts of family adjustments in the face of economic stress and uncertainty, as well as a drop in their leisure and dining out spending. Understanding the perception of economic strain, as well as the effects of a fast pace and work pressure, is critical for a family's financial well-being.

Social and Economic Environment: Financial services are an important resource or opportunity provided by the economic environment that influences the financial well-being of families. Huan et al. focused on Millennials' source selection when searching for financial information to improve financial well-being (2018). The study provided evidence to assist financial services firms and other institutions in achieving a better understanding of Millennials' frames of reference (Woudstra & van den Hooff, 2008), thus increasing their

"fit" as financial information sources with three action steps: (a) involve Millennials in financial information co-creation; (b) tailor the communication channel; and (c) improve accessibility.

As illustrated in Zvonkovic et al. Al (2013) found that family leisure, specifically the frequency and cost of eating out, influenced family expenses. The emphasis on family adaptations to economic hardship adds accuracy to the body of knowledge that focuses on family adaptations in two ways: (a) revealing different propensities for making certain types of family adaptations and (b) the associations of variables with family adaptations. Economic hardship revealed the feeling of precariousness that adult workers felt concerning their family finances, as evidenced by lower investments, less discretionary income, and less positive feelings about the financial situations of their family. From a life course perspective, adult workers revealed a subjective sense of pressure combined with time demands from their work that is unprecedented in the history of their working lives at this juncture in the current historical moment.

Nevertheless, Furnham & Cheng (2013) investigated the relationship between adult earnings and several factors, including family social background, childhood intelligence, educational and occupational attainment, and personality factors. They confirmed that education and occupational attainment were the best predictors of adults' financial well-being and that they were linked. However, it is also important to note that parental social status (class) had a direct influence on adult education.

Life Stage Attributes: Millennials are a well-educated, ethnically diverse generation who are now the largest living adult generation (Lusardi, 2019). This generation grew up during the Great Recession's unfavorable financial and economic conditions. Millennials' lives are defined by three "major ages": the information or digital age, the globalization age, and the crisis age (Cirillo, et al, 2022). Because they enter the labor force during a period of low employment, they are economically vulnerable. While the Millennial wealth gap is significant, two key factors on its side provide a reason for optimism: time and education. Because the majority of this generation's working lives are still ahead of them, there will be more opportunities for higher earnings, savings, and investing, all of which can promote higher rates of wealth accumulation. Some of the advantages of this cohort over previous generations include being more technologically savvy, better educated, more open to ethnic diversity, adept at social networking, and more oriented toward engaging in socially responsible activities (Collins et al, 2018). The globalization age that millennials have experienced has resulted in them being better educated than previous generations (Crumpacker & Crumpacker, 2007), with a marked goal-achievement tendency and an inclination to excel and meet all of their aims and ambitions (Kaifi et al, 2012. Furthermore, they are a highly educated group, with roughly four out of ten having a four-year college degree (Bialik & Fry, 2019). Given the strong link between education and wealth, their income and wealth trajectories may accelerate to overcome significant financial shortfalls and get back on track.

Lusardi (2019) provided a thorough examination of Millennials' financial well-being. It was emphasized that Millennials' financial well-being is lower than that of the elder working-age group. It is noteworthy that this might be caused by the differences in life stages. Additionally, it was discovered that financially savvy Millennials are more likely to have higher financial well-being. The financial status and life experiences of Millennials also matter a lot. Millennials with assets exhibit greater financial health, but if those assets are also carrying debt, they perform substantially lower. Additionally, Millennials who have higher levels of education (bachelor's or post-graduate degrees) tend to have higher financial well-being compared to some colleges, but no bachelor's degree. This may be due to student loan debt and the ability of a student to repay student loans. Also found, single and unemployed millennials are more likely to experience lower financial well-being compared to those who are married and employed. Moreover, the younger Millenials tend to have higher financial well-being than older ones (Lusardi, 2019).

Similarly, Mohamad et al, (2015) upon investigating the determinants of perceived financial well-being among young employees, discovered that financial capability is an indicator of financial well-being because financial capability will help young employees of the millennial generation keep track of their money so that they can make ends meet and be helped in making sound decisions in the event of any circumstances or unexpected situations. Also, a positive attitude or confidence level of young employees toward money indicates that they have control over their finances, which helps individuals to be careful with their money

through budgeting and planning for their future financial needs. Furthermore, it is clear that positive early consumer experiences improve financial literacy among young employees, which has a significant impact on their financial management and, as a result, increases their perceived level of financial well-being. This initiative may highlight the importance of financial literacy as a living skill for millennials by educating them, taking advantage of their life stage to develop and maintain healthy financial behavior and habits for financial well-being.

Discussion: This systematic review found fifteen articles and identified five themes. This section provided an in-depth examination of the developed themes. Financial Literacy is one of the strongest predictors among the five themes developed, as it is an important indicator of a millennial's ability to make financial decisions. Financial literacy is more than just knowledge and understanding of financial concepts and risk; it also includes skills, motivation, and confidence in applying such knowledge and understanding to make effective decisions in a variety of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life, according to The Organization for Economic Cooperation and Development (Lusardi, 2019). Thus, the more educated in financial literacy, the better handling of finances that could help families increase their surplus, thereby minimizing the actual trend of difficult financial situations. On another important note, financial literacy links with financial behavior for financial literacy refers not only to knowledge, at the same time as to behavior. Generally, millennials who are financially literate are expected to be better able to demonstrate good financial behavior for their economic security and well-being resulting in the overall community's economic development (Dewi et al. 2020).

Financial behavior is an important factor in millennials' financial well-being, particularly retirement savings and perceived behavioral control. Compulsive buying, on the other hand, causes financial distress and is negatively associated with financial well-being. Thus, debt management attitude and compulsive buying as predictors of financial well-being. The use of a person-centered approach as an indicator of financial attitude and behavior perceived by young adults through financial education was linked to financial well-being, which was then linked to overall life satisfaction. Debt management is another important factor in mobilizing financial resources while maintaining economic stability.

Furthermore, personality traits are all strongly linked to millennials' financial well-being. Linking the big five personality traits to financial well-being helps to better understand the relationship between behavioral intention, financial well-being, and personality, which can lead to long-term behavior change and increased financial stability. Individuals with extroversion, consciousness, and openness were more likely to have a significant relationship with financial well-being.

In examining and comprehending the financial well-being of millennials within the contexts of their social and economic environment. A growing body of evidence confirms the significance of financial services in the economic environment that influences a family's financial well-being. It is worth noting that Millennials prefer financial information channels that are tailored to their specific needs. Family and employer were at the top of their list of preferred sources, while social media and advertisements were at the bottom. Financial service firms ranked third, indicating that they were perceived as a valuable source; however, they were unlikely to be referred to by millennials for financial information.

Additionally, in the midst of economic hardship caused by the recession and pandemic, professional families tend to cultivate behavioral and financial adaptations in an attempt to protect the economic situation or adjust to the decline. While education and occupational attainment were the strongest predictors of financial well-being, other factors such as family social background, childhood intelligence, educational and occupational attainment, and personality factors were also significant.

The information or digital age, the globalization era, and the crisis-era brought on by the great recession and the covid 19 pandemic have all played a significant role in defining the lives of these Millennials. But because they are a well-educated, multiethnic population with experience in the globalization era, they flourish and achieve all of their goals and desires. Given the close relationship between wealth and education, it is likely that their income and wealth trajectories will accelerate to make up for major gaps in money and get back on track. Markedly, Lusardi, A. (2019) discovered that Millennials are more likely to have higher financial well-

being if they are financially literate, have assets, have high levels of education, are married, and have jobs. Additionally, young millennial workers' upbeat attitudes and assurance show how in charge of their finances they are thanks to diligent planning and budgeting. By teaching millennials, this effort highlighted the significance of financial literacy as a life skill for them and took use of their life stage as millennials to help them build and sustain healthy financial behavior and habits for financial well-being.

4. Conclusion

This systematic literature review seeks to delve into the existing body of knowledge to provide a comprehensive understanding of the factors influencing millennial financial well-being. Fifteen articles were identified, and five themes affecting millennial FWB such as financial behavior and financial literacy, personal traits, social and economic environment, and life stage attributes were developed as a result. With all of these identified factors, financial literacy was discovered to be the most powerful, as higher financial literacy translates into better financial management, resulting in surplus and thus a better FWB. Financial behavior and attitude are also important because they require the ability, motivation, and confidence to apply knowledge and understanding. Personality traits, as well as social and economic environment factors, as well as social support from firms and institutions, all remained strong predictors of financial well-being.

There were very few publications in the literature discussing the topic relating to millennials and their FWB, which is one of the review's main weaknesses. Therefore, the present review did not use any demarcation to specific regions or locales. Furthermore, this systematic review only developed five themes, which future researchers can develop further or further into sub-themes. To potentially alleviate the financial catastrophe brought on by the ill-informed financial decision; this review is offered as conclusive proof of the growing necessity for millennials to integrate solutions related to economic and financial stability. Economists, financiers, researchers, other writers of systematic evidence syntheses, review readers, and the larger research community are the intended audience for this work.

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Investigating the Factors Influencing Students' Acceptance of Esports as a Career Choice

Mahiah Said*, Ammar Azfar Azli & Shahnaz Shafiza Sabri
University Tenaga Nasional, Putrajaya, Malaysia
*mahiah@uniten.edu.my, ammarazfar14@gmail.com, shafiza@uniten.edu.my

Abstract: Esports is a digital entertainment and gained its popularity due to technological advancements, technology accessibility and elite competition. Esports is recognized as a formal industry and a form of occupation and led to higher career opportunities. In 2019, more than 11,000 job vacancies were advertised and are projected to reach more than 22,500 jobs in 2020. This study investigates the relationship between Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) & Facilitating Conditions (FC), towards esports Career Choice Intention (CCI) among 365 private university students. The regression analysis shows that PE, EE, SI and FC have a significant impact on CCI. The independent variables indicate that the five factors significantly predict CCI - $F(5, 359) = 40.562$, $p<0.001$. And the R^2 result of 0.603 postulated that the model explains 60.3% of the variance in CCI. The research on esports as a career choice intention is few and limits the number of referencing. Possible future research on the key success factors of esports companies could illustrate the industry's career progression. Alternatively, industry players should look at the allocation of budgeting and resources, and its relationship with attitude towards esports.

Keywords: *Esports; Acceptance; Career Choice Intention; UTAUT; Expectancy.*

1. Introduction and Background

Esports as a sector of the economy and a type of career are starting to receive acceptance in most contemporary societies. Popular franchises like StarCraft and Counterstrike developed further to become some of the most notable esports in the history of the field, attracting record-breaking viewership of up to 50 million viewers overall (Olsen, 2015). More and more games are being released to become competitive. Currently, MOBA and FPS games are largely in control of the esports sector. Defense of the Ancient - Dota Annual's main tournament broke records for multimillion-dollar prize pools in single tournaments in 2017, with over 3000 events taking place (Elasri-Ejjaberi et al., 2020). The esports career seekers must fulfill the requirements within this industry such as higher levels of competitiveness, skill development, and social motives before they can become professional esports players. Thus, the younger players were more likely to seek career opportunities as professional esports players than older players with competitive gaming experience (Banyai et al., 2020). Many companies in South Korea are already developing their presence in this industry such as SK Telecom, Korea Telecom and Samsung by creating their teams and branding (Snavely, 2014). This could be due to the country having the required infrastructure, affordable gaming and internet options (Lokhman et al., 2018). Whilst in China, esports is integrated into the postgraduate or vocational curricula (Meng-Lewis et al., 2020).

The US is following this trend by enhancing and expanding its esports infrastructure (Lokhman et al., 2018). Therefore, it is not surprising that esports is considered a career option and is most popular among youth who represent the largest proportion of esports consumers (eNet, 2017). The reason for this popularity because of its similar motivational patterns to traditional sports such as intrinsic motivation, reward, professional athlete identity, respect and fame from the community and winning lucrative prizes (Rottensteiner et al., 2015; Clancy et al., 2016; Lochbaum et al., 2016). Banyai et al. (2020) postulated that esports require high levels of competition, skill development, and social motivations for career planning. It is imperative to identify the motive for career plans for players with competitive gaming such as socialization, skill development, and competition motives. These indicators determine the esports players' career choices and the companies support and finance them to be part of professional esports teams (Banyai et al., 2020). Around the world, Covid-19 has halted traditional sports and people resort to esports such as Riot's League of Legends - an esports version of the English Premier League (Heere, 2018). Other esports gradually adopted a similar framework to maintain their competition and popularity (Kim et al., 2020) and the results were outstanding - the LoL Worlds tournament received 44 million viewership in November 2019 (Kou & Gui, 2020).

Malaysia is still behind the rest of the world in terms of competitive gaming connectivity, infrastructure and full-time specialist (Hakim, 2019). Recently the government has recognized the potential of this multi-billion-dollar industry (Ministry of Youth and Sports Malaysia, 2019) but the subpar rewards deter Malaysians from becoming full-time esports athletes. According to Gomes (2020), more investors are investing within Asian regions that spur the growth of esports (Gomes, 2020). There is various academic literature on esports expanding into the fields of business, cognitive science, informatics, law, media studies, sociology, and sports sciences. However, there is no trend toward esports human resources, career management research within the context of the sub-fields of the esports literature. Thus, this study examined how the career choice intention in the esport industry among the Malaysian students at a private higher learning institution.

2. Literature Review

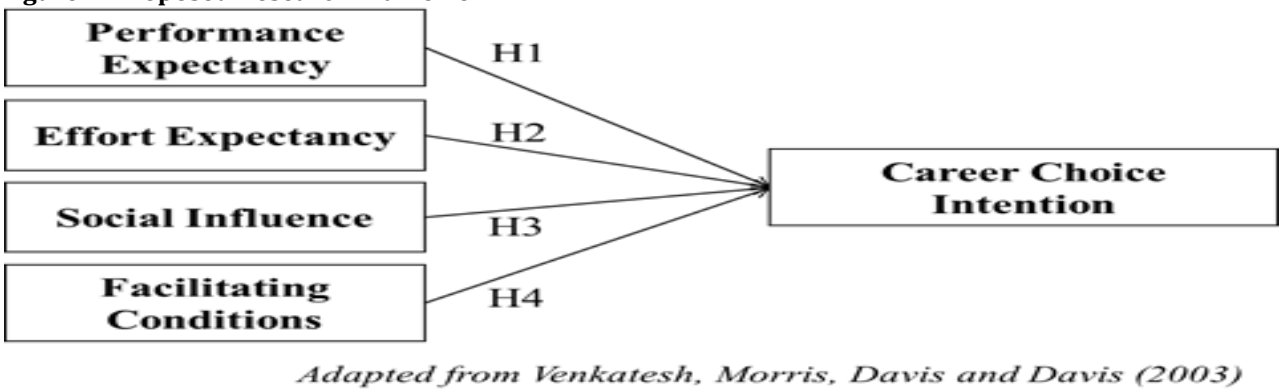
Esports is defined as a type of sporting activity used through the medium of electronic systems consisting of player or team-driven decision-making and outputs from a human-computer interface (Hamari & Sjöblom, 2017). It is a competitive video gaming industry managed by various leagues, businesses and sporting organizations (Newzoo, 2021). Numerous works have also underlined the involvement of governments in recognizing and regulating the emerging esports industry (Furrer, 2020). This study is adapting the Universal Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) due to its relevance in addressing consumers' acceptance & use behavior of technology-related topics. According to Sabah (2016), behavioral intentions are defined as both a quantifier of how strong an individual's intent is on behaving a certain way as well as an indication of acceptance (Sabah, 2016). There was a significant relationship between behavior and usage loyalty (Kim & Kim, 2020). In this study, behavior intention is the intent or consideration given to esports as a potential mode of occupation by the UNITEN students. In this study, behavioral intentions are termed career choice intention (CCI) and it will be a representative of acceptance. Many studies defined Performance Expectancy (PE) as the degree to which one believes that using a specified system or platform will aid in their job performance (Oh et al., 2009) (Silic & Back, 2017). The study differs in that the researchers define performance expectancy closer to framing where it is the motivation of action or behavior of an individual based on the desirability or ability to realize an outcome (Venkatesh et al., 2003).

In this research context, PE is measured in the expected viability or mileage that can be gained out of esports as a career in Malaysia. Effort Expectancy is defined as the degree of ease that is associated with a specified entity or system under study (Attuquayefio et al., 2014). EE is contextualized as the level of convenience associated with esports as an occupation in direct comparison to existing conventional industries. EE has been proven in previous studies to affect the intentions of the use of technology (Hallmann & Giel, 2018; Silic & Back, 2017). Social Influence is the relationship established between an influencer & the influenced for a specific action (Peng et al., 2017). SI looks at how esports players perceive other influential parties in their lives view esports and how it affects their views & pressure toward esports. Subjective well-being has been postulated to be significantly influenced by achievement, friendship and social dimensions (Kim & Kim, 2020). These factors affect the players' intentions toward technology – esports in this context (Sabah, 2016). Facilitating conditions is defined as the level of perception to use organizational and technical infrastructure to support the use of new systems (Venkatesh et al., 2003). The perception of conditions that facilitate esports as an industry such as active advocacy, policymaking as well organizations related to esports (Todd & Bowers, 2014). A study postulated that the usage of blended learning was significant between FC and user behavior (Yeop et al., 2019). This means that facilitating conditions would logically affect players' use behavior, or in general, intention towards esports as a career choice.

3. Research Methodology

The study adapted the UTAUT model and incorporated four main constructs - Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions and determines the influence of these constructs on the respondents' career choice options as an esports professional. Figure 1 depicts the framework of the study and four hypotheses were developed to uncover the career choice intention of the esports players.

Figure 1: Proposed Research Framework



Adapted from Venkatesh, Morris, Davis and Davis (2003)

Participants were active students of a private university in Malaysia, pursuing their education. The questionnaire was the chosen instrument of this study and the data were collected using Google Form online survey. This is to accommodate and ease the respondents' participation during the data collection. 375 respondents completed the survey. From the 4 variables, 26 related statements were used as the measurement items that were adapted from various sources (Rahi et al., 2019; Madigan et al., 2016; Venkatesh et al., 2003).

4. Results

Table 1 depicts the demographic profile of the 375 participated respondents who are students of a private university in Malaysia.

Table 1: Demographic Profile

Variables		f	%
Gender	Male	248	67.9
	Female	117	32.1
Ethnic Group	Malay	252	69
	Chinese	35	9.6
	Indian	60	16.4
	Others	18	4.9
Origin	Local Students	364	99.7
	International Students	1	0.3
Education	Foundation	34	9.3
	Diploma	55	15.1
	Bachelor	266	72.9
	Others	10	2.7
Specialization	Engineering	136	37.3
	Energy Economics	78	21.4
	Information Technology	112	30.7
	Business Management	39	10.6

The majority of them were male – 67% and female respondents were about 32.1%. 69% are of Malay ethnic origin, 16.4% Indian and only 9.6% are Chinese. Almost all (99.7%) of the respondents are Malaysian. There are about 73% are pursuing their bachelor's degree programs, diploma students 15.1% and foundation students only 9.3%. Most of the respondents are specializing in Engineering (37.2%), followed by Information Technology ((30.7%). Whilst there are about 21% in the Energy Economics field. Only 10.6% are specializing in Business Management. The results of the reliability analysis show that the Cronbach's Alpha values of all the variables are between 0.824 and 0.893 as presented in Table 2. These outcomes fulfilled the reliability criteria of above 0.7 (Hair et al., 2018), thus, all the items are retained for further analysis.

Table 2: Summary of Reliability Analysis

Variables	Cronbach's Alpha
PE	0.824
EE	0.893
SI	0.885
FC	0.854
BI	0.882

The results of the correlation coefficient fall between, 0.41 to 0.70 (in Table 3) which indicates a moderate relationship between the constructs (Guildford, 1973).

Table 3: Summary of Correlation Analysis

		PE	EE	SI	FC	BI
PE	Pearson Correlation					
	Sig. (2-tailed)					
EE	Pearson Correlation	.480**				
	Sig. (2-tailed)	.000				
SI	Pearson Correlation	.663**	.467**			
	Sig. (2-tailed)	.000	.000			
FC	Pearson Correlation	.572**	.387**	.662**		
	Sig. (2-tailed)	.000	.000	.000		
CCI	Pearson Correlation	.605**	.458**	.704**	.687**	
	Sig. (2-tailed)	.000	.000	.000	.000	

Table 4: Analysis of Variance (ANOVA)

Model		Sum of Squares	DF	Mean Square	F	Sig
1	Regression	202.812	4	40.562	109.031	<.001[b]
	Residual	133.558	359	.372		
	Total	336.370	364			

a. Dependent Variable: CCI
b. Predictors: (Constant), SI, FC, EE, PE

The significant value of Analysis of Variance (ANOVA) depicted in Table 4 is 0.000, which is lesser than its significant level value of <0.001. The result demonstrates that the dependent variable Career Choice Intention towards esports has substantial effects on the independent variables – PE, EE, SI and FC. This indicates the significant level of dependent variable and independent variable models are well fit. Table 4 also shows that the independent variables significantly predict CCI with the score of F-ratio = 109.031, p<.001. Thus, concluded that PE, EE, FC and SI have a significant impact on CCI (Kim and Choi, 2019). Whilst, R^2 of 0.603 indicates that the model explains 60.3% of the variance in CCI as shown in Table 5.

Table 5: Model Summary

Model	R-square	Adj. R Square	Sig. F change	Std. Error of the Estimate
1	0.603	0.597	< 0.001	0.60994

Predictors: (Constant), SI, FC, EE, PE

Table 6 summarizes the findings of the study. All hypotheses are accepted because all the constructs - Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Factors - have significant relationships with Career Choice Intention.

Table 6: Summary of Analysis

Hypotheses	Relationships	B	t	p-value	Finding
H_1	PE→CCI	.157	2.299	.022	Accepted
H_2	EE→CCI	.121	2.662	.008	Accepted
H_3	SI→CCI	.435	7.426	<.001	Accepted
H_4	FC→CCI	.353	7.129	<.001	Accepted

Discussion

The study confirmed that PE, EE, FC and SI have a significant impact on CCI, which supports the study by Kim and Choi (2019). This means that students would consider esports as a new opening for career opportunities provided that the gain in Performance Expectancy meets the criteria of a viable career in the esports industry. The findings confirmed that Performance Expectancy influences the adoption and career choice intention (Silic & Back, 2017). Meaning that those who wish to pursue a career in esports have to have the knowledge, skills and ability in using the specified system or platform to guide and assist them in the performance of their work. Similarly, Effort Expectancy also influences career choice intention due to its convenience and flexibility, as well as the on-the-job entertainment factors that affect the intentions (Hallmann & Giel, 2018; Silic & Back, 2017). The younger generations may prefer this career option since it combines work and entertainment and may not require a physical office presence. Of course, Facilitating Conditions are imperative and must be relevant and suitable to meet their expectations.

Meanwhile, Social Influences such as friends and family were major influential factors in their career choice intention in the esports industry. It is common knowledge that the esports industry offers a multitude of employment and profit opportunities (Karadakis and Painchad, 2022). The lucrative monetary gained as an esports player prompts the younger generation to delve into this career option. These findings could provide necessary insights for governments and industry players to consider the esports industry as a real industry. This would escalate the creation of infrastructure and facilities for esports. Thus, highlight the required improvement on existing policies relating to the esports industry. Furthermore, the outcomes of this study provide insights for the esports organizations or potential investors about the Malaysia esports market and opportunities. This would prompt them to take part in business investments in starting or advocating the local esports industry.

5. Managerial Implications and Recommendations

The respondents were undergraduate students in one university, thus the findings should not be generalized. Other settings could reflect different outcomes. This study could be extended by distinguishing the preference towards PC-based esports and Mobile based esports. The relationship between resource allocation and attitude towards esports could also be investigated to confirm the public preferences in choosing a career in this industry. Although esports careers differ from traditional sport, it requires similar skills such as professionalism, work ethic, communication, critical thinking, problem-solving, teamwork, leadership, career management, and intercultural fluency. For those who wish to take up and have a sustainable career in esports, they have to acquire advanced knowledge, lifelong learning skills, passion and desire.

Conclusion

This study established the basis of university students' career choice intention in the esports industry. It is postulated that Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions have a positive significant influence on esports Career Choice Intention among university students. The rapid technological development and popularity of the industry would escalate the attractiveness of building a career out of esports.

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The Effects of Foreign Labor towards Labor Productivity in Construction Industries

Saffiah Mohammad Nor[1], Geetha Subramaniam[2], Zahariah Sahudin[3]*
[1,3]Faculty of Business Management, Universiti Teknologi MARA, Shah Alam, Malaysia
[2]Faculty of Education, Language, Psychology & Music, SEGi University, Malaysia
*zahariah128@uitm.edu.my

Abstract: The focus of this study is the demand for foreign labor in the construction industry. While labor productivity contributes significantly to the economic growth of the country but the trend has decreased over recent years. Hence, this paper aims to identify whether the increase in the labor force or other factor inputs contributes significantly to the labor capacity of construction projects in Malaysia. Results show the relationship between labor and other factors related to employment productivity in the construction industry of Malaysia from the year of 1986 to 2020. Factor inputs consist of variables such as capital, local labor, and foreign labor. The research objective is to identify the effects of labor force and other factor inputs on labor productivity. This study employs the Cobb-Douglas production function. The findings show that there is a significant relationship whereby the financial assets have a significant relationship, whilst the local and foreign workforce has a negative relationship in terms of their impact on labor productivity. These findings provide some scientific evidence for improving the project performance of the construction industry in Malaysia. It will be useful in identifying which factor inputs have a huge impact on construction labor productivity.

Keywords: *Foreign labor, local labor, capital, labor productivity, construction industries.*

1. Introduction and Background

The construction industry plays a significant part in enhancing recruitment which will basically provide opportunities for unskilled, semi-skill, and skilled workmen (Abdul Aziz & Sing Wong, 2010; Khan, 2008). Simultaneously, unemployment will be reduced and in the long run, poverty can be minimized (Khan et al., 2014). It also holds a crucial function in boosting the economy to produce resources and financial values, job openings, building construction, and infrastructures enhancement which support GDP advancement and socio-economic development in Malaysia, as well as promoting the utilization of domestic product materials which could enhance job opportunities in the downstream industry.

The construction subdivision contributes a significant contribution to job recruitment. For instance, in 2021, 1.1 million workers were recruited in the construction sector, which represents 7.69% of the overall working force. Table 1 illustrates the increasing trend of contributions from the recruitment division in the construction sector. The results indicate that the construction industry represents an exceptional part of socio-economic advancement by boosting sources of income and job opportunities whilst at the same time, reducing unemployment. Additionally, the engagement of foreign employees in the construction industry was experiencing an increasing trend from 1985 to 2021 (Department of Statistics Malaysia, 2022).

Table 1: Recruitment in Construction Sector and Foreign Workers in Construction Sector, 1986-2021 ('000)

YEAR	EMPLOYMENT	FOREIGN WORKERS
1986	339.7	29.7
1996	585.2	131.2
2006	776.2	132.8
2016	971.5	280.2
2020	959.9	213.5
2021	965.6	194.0

Source: Department of Statistics Malaysia, 2022

Advancement of productivity, modernity and quality in Malaysia is essential in constructing a feasible environment for the construction industry, in which it was successfully implemented in domestic intricate

construction projects, and is capable to take part in major international projects. However, several arising issues needed to be identified and overcome (Aziz & Hafez, 2013) as this industry was affected by time overrun, disintegration, overpricing, overspending and hazards (Ikuma et al., 2011).

The efficacy of the construction industry should be expedited to compete domestically and internationally. It also must be productive and capable of meeting the demand of its customers (Ibrahim et al., 2010). Nevertheless, quite a few scholars concluded that the construction industry is having some issues and disputes could decrease its capacity (Olanrewaju & Abdul-Aziz, 2015; Khan et al., 2014; Shehu et al., 2014). Thus, it is important to ensure that a comprehensive measure could be taken to analyze the challenges in promoting the efficacy and productivity of this industry. The construction field is known to be the least fruitful sector in comparison with other subdivisions with the amount of RM36,669, based on value added per enrolment in 2021. Table 2 showed the labor productivity in the construction, production, agriculture, and services sectors in Malaysia. The productivity of workers in all sectors declined tremendously from 2019 to 2021 (Department of Statistics Malaysia, 2022).

Table 2: Sector Labor Productivity, 2019-2021('000)

Year	2019	2020	2021
Construction	45,421	38,322	36,669
Agriculture	54,225	53,114	52,786
Manufacturing	123,881	120,645	128,807
Services	89,568	84,336	84,716

Source: Department of Statistics Malaysia, 2022

Therefore, the primary objective of this research is to analyze the connection between the productivity of local and foreign workers, along with the labor resources in the construction industry of Malaysia and find out whether labor or capital significantly influences labor productivity in the construction industry of Malaysia. Correspondingly, this is the extension of a previous study that proposes a significant connection between foreign labor and the employment capacity of the construction industry in Malaysia.

2. Literature Review

The construction industry had been recognized as one of the major and impactful sectors in Malaysia. It also contributes to economic growth as it adds up to the GDP (Kamal et al., 2012). Nonetheless, it is still in the modest share in comparison with other fields such as services, agriculture, and manufacturing sectors. In the year 2020, Malaysian has the vision which has been introduced in 1990 with the aspiration of uplifting Malaysia from a developing country to a competitive, robust, dynamic, resilient, and prosperous nation. It has acknowledged the fundamental roles of the construction industry in expanding the economy of this nation as this dynamic industry encompassed the onward and reverse relationships with other fields (Chia et al., 2014; Khan et al., 2014; Berawi et al., 2019). In addition, the construction sector utilized the economic infrastructures for industrial advancement and essential amenities such as residential and commercial sections, dams, expressways, stadiums and playing fields, ports, railways, airports, health maintenance units, power generators and supplying stations, as well as communication facilities. These are the foundation for other fundamental infrastructures in developing countries towards promoting the living standards of the communities (Ibrahim et al., 2010; Al-Shayea et al., 2019).

The advancement of the Malaysian economy is greatly influenced by the productivity of major industries such as construction (Naoum, 2016). There were several issues faced by this industry, and the most critical issue is the low productivity (Jarkas & Bitar, 2012) which has been a concern for most nations around the globe (Lim & Alum, 1995; Egan, 1998; Thomas & Sudhakumar, 2013; Ayele & Fayek, 2019). In terms of the economy, the decrease in productivity level could lead to social conflict, inflationary pressure, and disagreement (Drucker, 2012; Dixit et al., 2019; Shoar & Banaitis, 2019). By recognizing the aspects that contributed to the low productivity of construction labor, the arising issues could be addressed at the initial stage by project managers, in which it could reduce the time and cost overruns (Kaming et al., 1997; Kaming et al., 1998; Abdul Kadir et al., 2005; Palikhe et al., 2019; Seddeeq et al., 2019). Construction labor productivity (CLP) essentially affected the expediency of the construction corporations, and thus becomes a primary source of

project risks as it demonstrated the highest variability among other project capitals (Tsehayae, 2015). The impacts of labor productivity were also the most complicated components to be defined, managed, and quantified. Considering this, it is essential to recognize the components that influenced labor productivity towards managing labor forces efficiently (Kazaz & Acikara, 2015).

Understanding the crucial aspects influencing construction labor productivity (CLP) could aid in developing strategies to minimize incompetency and increase efficiency in managing construction's labor force as it will not only enhance the efficiency of construction companies but also increase their competitiveness, as well as their survival chances in this eminently competitive field (Wilcox et al., 2000; Ailabouni et al., 2007; Robles et al., 2014). Factors associated with CLP could be utilized to develop CLP models used for estimating and predicting CLP from several aspects (Tsehayae & Fayek, 2018). CLP forecasting models could be adopted in scheduling and structuring the phases of construction, as well as in improving CLP. In addition, the models are frequently applied since they served as effective tools in estimating and monitoring the equipment and labor capital (Parthasarathy et al., 2018).

Lindsay (2004) defined productivity as an assessment of the capability to develop products and services from a certain expense of resources, labor, supplies, the plot, time, education, or any combination of those. Nonetheless, Jarkas & Bitar (2012) referred to productivity as the connection between production and the method used to generate production. Another definition that is considered more relevant and commonly acknowledged among the players in the construction industry is by expressing productivity in the view of measuring performance such as determining how well the capitals are leveraged towards achieving goals or demanded outcomes (Durdyev & Mbachu, 2018).

Moreover, labor productivity and human resources are the most challenging issues in the construction field as those factors play crucial roles in determining the targets achieved and meeting the stakeholders' suggestions. Alaghbari et al. (2007) state that lack of experience and ability, combined with low labor productivity, are the fundamental causes that lead to the interruption within the construction industry in Malaysia. For that reason, productivity itself depicts the capability of the workforce to build the product. For instance, higher production generated by workers symbolizes a high level of workers' productivity. Most of the available definitions for productivity refer to a comparison between input against output. The administrative input in the production process albeit frequently unseen, has an undeniably significant impact on productivity levels. The distinct principal aspects of productivity comprised the ability to generate, which is the effort supporting the construction itself; the efficacy of constructive forces as an evaluation to what extent the assets were utilized and finally, the production per unit of effort (or rate) to assess the production output over a certain extent of time (Bamfo-Agyei et al., 2020).

Apart from making an exceptional contribution to the overall economic performance of this country, the construction sector also contributes as a source of job recruitment (Giang & Pheng, 2011). In terms of productivity level, labor serves as a relevant input to any construction project towards achieving the highest level of production (Hwang & Soh, 2013, Gerek et al., 2015). It is distinct compared to other resources as it has distinct traits (Kaming et al., 1998). Labour comprises the biggest allocation of overall project expenses. Studies show that it constitutes 20-50% of the overall project expenses (Kaming et al., 1998), hence the overall costs of the project can be significantly reduced by enhancing employment capacity (Kazaz et al, 2008). The significance of construction labor productivity (CLP) in ensuring the accomplishment of construction projects has been described previously in several studies (Sweis et al., 2009; Fayek & Tsehayae, 2012; Hamza et al., 2022). CLP has been identified as a fundamental and effective indicator of efficacy in the construction industry which directly affected the competency of Small and Medium Enterprises (SMEs). Thus, labor will persist as the essential element for successful development projects in the future (Tsehayae & Fayek, 2016). Accordingly, the advancement of CLP has been a primary concern at present, and in the future (Attar et al., 2012).

Heizer and Render (1996) have categorized productivity factors as labor characteristics. Those traits consist of experience, skills, motivation, and satisfaction in the workforce. Hence, this research intends to identify the characteristics of local and non-native workers in construction industries toward labor productivity. The construction industry of Malaysia is encountering a serious shortage of construction workers because of

openings left by the native workers that were more interested in joining the well-paid and conducive working surroundings in other sectors such as manufacturing and services (Fateh et al., 2020). Moreover, local workers are not interested in joining the construction industry since this industry has low demands for local workers, who were not paid well, have the long period of employment, abandoned labor policies and jobs dominated by foreign workers, the factors of 3Ds (Dirty, Difficult, and Dangerous,), incompatibility between the job and higher education level, the substandard image of this industry, companies preferred foreign workers over locals, the inexpert perception of the jobs, low repayment, and the status of the job (Najib et al., 2019).

Abdul-Rahman et. Al. (2012) proposed that local workers are more likely to migrate to other countries as they can offer higher salaries compared to Malaysia. Moreover, employers commonly offered a lower rate wage to foreign workers which could lead to the deterioration of the average salary rate of this sector and the increment is also much slower than in other sectors (Thomas & Sudhakumar, 2013). This situation eventually failed to attract local workers to be in this industry. 93% of the registered foreign labor under CIDB in the construction industry were untrained workers (Hisyam 2015). Apart from that, the introduction of foreign workers which increased the portion of a specific group of the population would put descending pressure on the recruitment rate for employees in that group, hence lowering the demand compared to the inflow of foreign labor (Mohd Fateh, et al., 2022). Abdul-Rahman et al. (2012) further commented that one of the factors that attracted immigrant workers to work in the construction sector in Malaysia is long-term employment whilst the local workers do not prefer furthering their career in this sector. It was concurred by Carpio et al. (2015) who found that the career movement for workers in the construction field is very limited.

On the other hand, the huge opening for immigrants and monopoly has become the factors hindering the locals and fresh graduates from entering the construction industry (Fateh, et al., 2022). According to CIDB (2017), a survey conducted by the Construction Industry Transformation Programme (CITP) showed that native workers commonly viewed the construction industry in a negative sense such as a challenging area to work in, which contributed to their unwillingness to accept job offers, making this sector to rely heavily on the foreign labor, thus resulting in 60% - 90% monopoly of the foreign workers (Lingard, 2013). In addition, the positions in the construction industry were commonly temporary or on project-base (Construction Industry Development Board, 2017). As the project is completed, the workers' contract will also end. This situation becomes one of the reasons why the locals did not want to find a job in the construction sector as most of them are seeking permanent jobs which offered stable and secure incomes. Workers will get the advantage of stability as it permits them to structure their funds and pay back their loans (Abdul-Rahman et al., 2012).

Furthermore, most of the researchers had the aim to examine the impact of local and foreign labor on labor productivity and the relationship between them, whether they are substituting or complementing one another. One of the research projects is from Bachtiar et. al (2015) who studied the preferences for the foreign workforce in the manufacturing sector of Malaysia. The authors found out that technical supervisors and experienced workers gave a significant contribution towards production growth and salary rates, which is equivalent to the local workforce in production stages. It was approved by Dickson (1975), as the introduction of foreign laborers will increase the productivity of local employees, leading to production enhancement. Concisely, the researcher considered that economic growth could be stimulated as the integral association between both workforces. However, several findings showed that native and external labor could not be replaced as they did not complement each other (Noor et al., 2011) in which the decline in the foreign workforce did not affect the efficiency of local labor.

Additionally, Pholphirul (2012) argued bringing more external workers into the country will contribute to adverse effects on productivity, including the lack of balance issues which could be more serious when the salary depression occurred because of salary allocation, which is less than the limit set by the government. Furthermore, the demands for property accommodation will increase with the overrunning of foreign workers which also will directly lead to the increment in prices of local properties, specifically in limited land areas of this nation. On the other hand, most countries are experiencing growing numbers of immigrants, succeeding in the uncontrolled intake of foreign labor. From the survey, about 56% of the respondents in Singapore felt that foreign workers have seized their job opportunities. Most countries believed that the

introduction of external workforces has jeopardized their positions, encouraging them to seek stable job opportunities abroad (Hui & Hashmi, 2007).

Palel et al (2016) discovered that local and foreign workers did not contribute significantly to the increase in productivity for the short term but both parties possessed a significant relationship to the enhancement of productivity in the long run. The study also revealed that foreign workers have less contribution towards labor productivity in comparison with locals. Another study conducted by Thangavelu (2012) showed that skills, human capital, and foreign workers' productivity contributed to their long-term growth hence giving direct impacts on the innovation and capacity to adopt new technology of the local companies. However, in short-term periods, periodic fluctuations and temporary deficits in the market the workforce can be tackled through the influx of foreign labor, which retained the competencies of the workforce market.

Things will go in an adverse direction as the situation becomes extreme. An uncontrolled influx of foreign workers, specifically the untrained or semi-skilled workers will bring adverse impacts to the nation's economy, political stability, and national threats. Growingly, the issues of illegal immigrants had contributed negative impacts on the salary structure which become the main concern of the stakeholders. Most foreign workers accepted lower salaries and working hours than the local workers, thus employers are more interested in employing foreigners to minimize the cost (Carpio & Wagner, 2015; Mahmood et al 2021). In addition, the poverty rate will increase if the inflow of foreign labor to Malaysia is not controlled, thus affecting the overall incomes of the workers, as they did not exceed the poverty line or equal to that, which could pull down the living quality of Malaysians.

Another factor of production productivity in construction industries is financial assets. Oftentimes, it was linked to the proportion of fixed capital to workforce input that further characterized the efficiency of a company in occupying its assets to produce goods or offer services (Chang & Singh, 1999; Sen & Farzin, 2000). In the construction sector, tools and supplies were frequently characterized as the capital of their production. Tools and automation used in production could affect the process of advancing the construction industry to be fully automated, likewise, influencing productivity and project performance. The impacts of automation technology, along with innovation in enhancing construction productivity was examined to identify and evaluate the effects of administration appliances in enhancing productivity in the construction sector (Loosemore, 2014; Dixit et al., 2019).

Additionally, Ameh & Osegbo (2011) investigated the relationship between time overruns and the productivity of workforces in development projects. Meanwhile, the industry of construction around the world is experiencing a huge number of delayed projects and projects that experienced cost overruns. The researchers were trying to identify the connection between time overruns and the productivity of the workforce in development projects in Lagos, Nigeria whilst finding a way to tackle the issue. The study suggested that the major causes of time overrun are insufficient cash reserve, poor planning, insufficient equipment, and shortages of stocks on site, whilst crucial aspects leading to low productivity of labor on the construction sites are the adoption of bad construction approaches, correction of drawings, and lacking construction materials respectively. The researchers suggested that hiring a project manager at the initial phase of the project could assure good management of assets and human resources which in turn, improved productivity, thus preventing time overruns.

Rivas et al (2011) conducted a study on the determinants that affect the productivity of the development business in Chile. The construction firms in that country compete with the global actors to remain significant in this industry. Thus, the productivity of construction firms in Chile must be improved so that they could remain relevant in the market, thus creating a competitive environment for the other non-native companies that seek to penetrate the construction market in that country. The authors also mentioned the leading aspects affecting construction productivity are insufficient materials, reworks, equipment and gears, the availability of heavy vehicles and employees' motivation.

Regarding that, it is likely to acknowledge the aspects influencing productivity such as capital, investment, or labor were significantly related, with the consideration of whether the output is regarded as capital investment or labor factor. This indicated that productivity can be represented by the capacity of the

characteristic factors of production. This condition can be regarded as the outcome of the process, in the form of products or services, whilst the determinant inputs consist of any physical and human assets used during production. To conclude, the effects of employment and other factor evidence towards productivity can be significant, insignificant, or not connected all, but generally, the relationship has negative effects, especially in the labor factor. Hence, it can be confirmed that the effects of labor factors specifically in foreign workers on the productivity of workers in the development field are more on negative relationships.

This study aims to create awareness for the teams of project management in construction industries from the perspective of employment and expenditure which causes the low productivity at work. This will assist the team members to acknowledge early indications of problems resulting from inadequate productivity levels, allowing them to take appropriate actions to put the construction work back on course.

3. Methodology and the Analysis Approach

The Solow growth model was used in this research. It was conducted by running the primary Cobb-Douglas production function in the Solow framework model (Noor, 2011). Here is the basic equation of the function:

$$Y_{t} = AK_{t}^{\alpha} L_{t}^{\beta} Mat_{t}^{\theta} \qquad (1),$$

According to the Cobb-Douglas production function, each variable in the comparison was split by the overall number of workers to convert it into a labor productivity equation (Noor, 2011). In this equation, labor was categorized into two groups, namely local and foreign labor. The complete variables were then converted into a logarithm. The estimated equation can be viewed below:

$$\ln y_t = A + \beta_1 \ln capital_t \ \beta_2 \ln llocal_t + \beta_3 \ln lforeign_t + \in_t \qquad (2)$$

As referred to in the equation above, where t =1, …, T, refers to the time.
Meanwhile,
1n y = logarithm of labor productivity (value added /total number of workers),
ln capital = logarithm of capital (fixed assets / the total number of workers),
ln local = logarithm of local workforce (the number of local workers / the total number of employees),
ln foreign = logarithm of the foreign workforce (the number of foreign workers / the total number of employees),

Equation (2) will be tested using Ordinary Least Square (OLS) method. Before commencing further analysis, data should be analyzed to determine the presence of time series problems by adopting the Unit Root Tests which consist of Augmented Dickey-Fuller unit root. Then, the Granger causality test was conducted to identify the causal connection between local and foreign workforces. The data were obtained through the survey executed by the Department of Statistics of Malaysia in the construction industry and collected each year before converting them into logarithms. The duration time for evaluation is between 1986 and 2020, utilizing the Ordinary Least Squares (OLS) method for data evaluation.

4. Results and Discussion

Descriptive statistics analysis was carried out in this study to calculate the fundamental conduct of the data. Table 3 below showed that the mean labor productivity in Malaysia is ($\bar{x}$ = 3.0688, s = 0.6214), in which capital ($\bar{x}$ = 2.2248, s = 0.5616) has the topmost values among other sets of independent variables, succeeded by local labor ($\bar{x}$ = -0.1765, s = 0.0716), and foreign labor ($\bar{x}$ = -1.9121, s = 0.4183). Jarque-Bera's analysis pointed out that the whole variables were distributed normally. Thus, Ordinary Least Square (OLS) can be adopted for this research.

Table 3: Descriptive Statistics

Analysis	Labor Productivity	Capital	Foreign	Local
Mean	3.0688	2.2248	-1.9121	-0.1765
Standard Deviation	0.6214	0.5616	0.4183	0.0716
Minimum	1.9082	1.1638	-2.8268	-0.3221
Maximum	4.2999	3.3299	-1.2895	-0.0610
Jarque-Bera	0.3952	0.2290	2.3995	1.6809
Probability	0.8206	0.8917	0.3012	0.4315

Table 4 showed that the Augmented Dickey-Fuller (ADF) Unit Root test for all variables was used to classify the variables whether they were stationary or not. The results showed that all variables for ADF at the first difference in the unit root test were stationary, I (1). Furthermore, with the trend and drift in the ADF unit root test, all variables were found to be stationary at the first difference.

Table 4: The Result of the ADF Unit Root Test

Variables	Augmented Dickey-Fuller (ADF) Unit Root test			
	Intercept		Trend & Intercept	
	Level	1st Difference	Level	1st Difference
Ln Output	0.1096	-4.1126***	-1.0552	-4.0325***
	(0.9619)	(0.0030)	(0.9220)	(0.0172)
Ln capital	-0.4355	-5.3860***	-1.8176	-5.3073***
	(0.8917)	(0.0001)	(0.6740)	(0.0007)
Ln local	-1.6761	-3.6214***	-2.9552	-3.6490**
	(0.4330)	(0.0110)	(0.1598)	(0.0417)
Ln foreign	-1.5834	-3.7699***	-4.6025	-3.9500***
	(0.4799)	(0.0077)	(0.0058)	(0.0216)

Succeeding the results, Ordinary Least Square (OLS) method was used to degenerate the equations in (2). The results are indicated in Table 5 below. It summarizes that all variables are significantly related. The results demonstrate that capital has a significant relationship at 1% to the labor productivity of the construction sector. It shows that the increment in the capital employment proportion by 1% will advance the capacity of workers by 1.07%. This conforms to the study from Durdyev & Mbachu (2017) and Gerges et. al (2016) that advocated overcoming the tools and equipment insufficiency will lead to the enhancement of labor productivity.

Table 5: Result of the Ordinary Least Square Regression

Variables	Coefficient	p-value	
C	-0.7213	0.2397	
Ln capital	1.0711***	0.0000	
Ln local	-2.9556***	0.0096	
Ln foreign	-0.4630**	0.0251	
R-squared			0.9749
Adjusted R-squared			0.9724
F-statistic			401.6405
Durbin-Watson statistics			1.6676

Nonetheless, local, and foreign labor have an insignificant connection with employment capacity in the construction business. It can be seen by an increase of 1% in local and foreign labor will decrease labor productivity by 2.95% and 0.46% respectively. This is consistent with the study conducted by Ismail (2015) and also Nor et al. (2023), which found that semi-skilled and inexperienced non-native workers contributed adversely to workforce productivity. Native workers possess lower productivity compared to non-native workers as the construction industry in Malaysia is facing serious insufficiencies of construction workers at present, resulting from the openings left by the local workers. Most of the native workers had more interest

in entering the manufacturing and service sectors as those sectors offered conducive working environments with higher pay (Fateh et al., 2020). The findings were also similar to research done by Dickson (1975), that proposed to introduce a non-native workforce in construction projects, so that the productivity of local workers could be increased, leading to the enhancement of production.

Hence, it could be concluded that the Malaysian construction industry is facing lower workforce productivity. The results showed the increment in labor used did not expand labor capacity, as the local workers were having lower labor productivity than the foreign workers.

Furthermore, the findings indicate that the Malaysian construction sector is moving towards boosting capital in nature as any increases in capital utilization will raise the ratio of labor, leading to the increment of labor productivity. R^2 explained the construction productivity representing 97.4% of the fixed variables in the model. Table 5 summarized the analysis result of the ordinary least square regression:

$$\ln y_t = -0.7213 + 1.0711 \ln capital_t - 2.9556 \ln llocal_t - 0.4630 \ln lforeign_t + \in_t \quad (3)$$

The original connection between local and foreign workers in (3) is calculated using the Granger causality test. The relationship is summarized in Table 6:

Table 6: Result of Granger Causality Test

Null hypothesis	Observation	F-statistic
Foreign labor does not Granger cause Local labor	25	10.4405 (0.0185)
Local labor does not Granger cause Foreign labor	25	18.2549 (0.0065)

The results indicate there was causality between local and foreign labor. The null hypotheses stated that non-native workers did not Granger cause local workers and vice versa were rejected. This shows that local and non-native workers have a positive relationship with each other. Therefore, it can be concluded that the non-native workers will complement the local workers by filling up the gaps due to the shortage of construction workers. Salleh et al. (2014) state that the insufficiency of the workforce in construction projects in Malaysia had led to the introduction of non-native workers, mainly from Bangladesh and Indonesia, to fill in the gaps and tackle the issues of labor insufficiency in the fastest way possible, without jeopardizing the cost. The statement complements the ILO & Australia Aid Report (2019) which concludes that non-native labour comprised 30% of the workforce (along with undocumented non-native workers) in Malaysia. As of the mid of 2019, the total of operating non-native workers in construction projects in Malaysia is approximately 435 000 people, summing up to 21.7% of the overall registered non-native workers (MOHR, 2019). The over-dependency on non-native workers had impacted the sustainability of human resources in the development industry of Malaysia (Rahim et al., 2016). The inflow of inexperienced non-native workers in construction projects had aggravated the insufficiency of experienced workers in Malaysia (Marhani et al., 2012; Hamid et al., 2013).

5. Conclusion and Recommendations

Essentially, the research objective is to recognize the determinants that influenced the productivity of workers in the construction industry of Malaysia. Variable factors used for this research are capital, foreign and local labor. This study used a series of data samples from 1986 to 2020 which have been collected annually. The theory used to analyze the relationships among those variable factors and employment productivity is the Cob-Douglass theory whilst the Augmented Dickey-Fuller test was adopted to test a unit root.

The estimation results show that capital has a positive impact on labor productivity. Nonetheless, local and non-native workers tend to show a negative relationship towards labor productivity in Malaysian construction industries. The findings demonstrate the factors of local and foreign workers have a significant connection with labor productivity in the construction field whilst other determinants possessed positive relationships. The adverse relationship of the labor factor could be the result of insufficient investments made

in human capital which resulted in the low productivity of labour.

Furthermore, Ibrahim et al. (2010) proposed some suggestions to overcome the issues of management shortages, unskilled employees, and other technical issues, the construction industry of Malaysia should expand the training to the employees and experts towards promoting their abilities, competencies, and functional achievements in local and international levels.
Accordingly, the authors also proposed the government enhance the competency of native and non-native workers by expanding industrial-based skill training by collaborating with experts from industry players and training academies (Varaprasad, 2022). On another note, companies could motivate their workers to be more productive by giving out incentives such as allowances and bonuses based on their performances and achievements in their workplace (Nikiforakis et al., 2019; Mohd Fateh et al., 2022).

Employers were also encouraged to provide safe and conducive working environments to captivate more native workers to join this sector (Verghese, Viswanathan, & Ramalingam, 2018). By doing this, local workers will be more interested to work in development projects, leading to an increase in motivation and productivity as this industry is known to be dominated by foreign workers. Fateh et al. (2020) concur that the accommodation for workers should comply with national legislation and global good practice. For instance, minimum space allocation for every worker, sanitary supplies, laundry and cooking facilities, and portable water supply should be improved to meet the standard set by local governments and international agencies.
Additionally, future studies should consider other elements that influence the increase of labor productivity in development projects which could enhance the understanding of other factor inputs in the perspective of labor productivity.

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The Effect of Social Media Influencers on Fashion Counterfeit Purchase Intention among Young Generation

Tamil Selvi Renganathan, Goi Mei Teh
Open Universiti Malaysia, Malaysia
Selvin16@oum.edu.my*, goimeiteh73@oum.edu.my

Abstract: This study aims to examine the effect of social media influencers on fashion counterfeit purchase intention among the young generation. Social Media Influencer (SMI) has been a dominant marketing trend and businesses heavily invest in SMIs to carry out promotional activities. However, the dimensions of SMI have not been examined widely on fashion counterfeit purchase intention among the young generation. A total of six dimensions of SMI namely, inspiring, technical skills, enjoyability, similarity, informativeness and credibility were used for this study. Data was collected from 389 young generations via online techniques. The findings show that technical skills and informativeness significantly influence counterfeit purchase intention among the young generation. The findings of the study are useful for policymakers to control social media influencers.

Keywords: *Social Media Influencer (SMI), inspiring, technical skills, enjoyability, similarity, informativeness, credibility, counterfeit purchase intention*

1. Introduction and Background

The counterfeit has been a prolonged problem for many businesses all around the world (Bian et al., 2016). The production and trafficking of counterfeit goods pose a significant risk to many major industries like electric and electronics (Huang et al., 2018; Liao & Hsieh, 2013), cosmetics (Mohammed et al., 2021; Morse & Repsha, 2021), and fashion and clothing (Bhatia, 2018; Song et al., 2021). Studies indicated that specifically footwear, clothing and leather goods scored top rankings in counterfeit production and trafficking (Chui & Yusuf, 2017). For instance, in Malaysia, fashion products like clothing, watches, handbags, accessories and footwear are the biggest target for counterfeit goods (Ong Lai Teik et al., 2015). Moreover, it is believed that counterfeit production has reached an alarming level, causing huge loss of revenue to governments across Southeast Asia including Malaysia (Lin et al., 2018). Countries like Malaysia have been losing a substantial amount of tax revenue, close to an estimated RM8 billion a year (Bernama, 2018) The prolonged counterfeit activities could have a negative effect on the growth of the world's economy and other related problems towards the government and the social environment. The International Trademark Association highlighted the need for more research on the illicit activities of counterfeit goods in Malaysia to aid policymakers and enforcement on the issue (Hashim et al., 2018).

Although studies on counterfeiting have occurred for a long period, the studies of counterfeit buying behavior still attract the attention of many (Bupalan et al., 2019; Jiang et al., 2018). Most studies in the field of counterfeiting heavily utilized two main theories (Gilal et al., 2019). The theories are mainly the Theory of Reasoned Action (TRA) (Arli et al., 2015; Eisend & Schuchert-Güler, 2006; Marcketti & Shelley, 2009; Penz et al., 2009) and Theory of Planned Behaviour (TPB) (Chiu & Leng, 2016; Eisend & Schuchert-Güler, 2006; Koklic, 2011; Phau, Teah, et al., 2009). These theories have been adopted to predict the purchase intention with the impact of subjective norms or attitudes (Gilal, et al., 2019). The emergence of the attitude-intention gap has been explored intensively without many new findings (Chui & Mohd Yusof, 2017; Cheng San & Yee, 2012; Hashim et al., 2018; Teik et al., 2013). Therefore, new antecedents of purchase intention need to be explored.

Recently, a show in which a few social media influencers are discovered to have been wearing fake goods in a Netflix reality show has attracted a lot of attention (Jacob, 2022). Over 15% of posts with trademarked hashtags on Instagram have resulted in counterfeit products (Stroppa et al., 2019). At par with the popularity of SMIs, researchers have aggressively examined the role of SMIs in the marketing fields. However, there is still a blurred line on the depth of SMIs' influence, particularly on the young generation's counterfeiting (Grigsby, 2020). Most past literature has focused on the demand factors of counterfeit products (Lund, 2019; Samaddar & Menon, 2020).

The existing counterfeit studies examined individual-related factors such as attitude (Y. Jiang et al., 2019; Moon et al., 2018; Sondhi, 2017; Tom et al., 1998), perceived value (Alsaid et al., 2019; Chen et al., 2018a; Poddar et al., 2012), materialism (Alsaid et al., 2019; Bakhshian et al., 2019; Furnham & Valgeirsson, 2007; Nagar & Singh, 2019; Saeed & Paracha, 2019; Ting et al., 2016), demographics (Bakhshian et al., 2019; Furnham & Valgeirsson, 2007), psychographics (Alsaid et al., 2019; Bakhshian et al., 2019; Ngo et al., 2020), integrity (Bakhshian et al., 2019; Jiang et al., 2019; Mir, 2013; Quoquab et al., 2017; Ting et al., 2016) and personality (Furnham & Valgeirsson, 2007; Kei et al., 2017). Due to the development of social media, Social Media Influencers (SMI) are playing a very significant role as news providers to the young generation (Cho et al., 2019). Research by Rakuten Insight depicted that Malaysians would buy at least one product endorsed by SMIs and most importantly 56% of the young generation buy products endorsed by SMIs (Joschka, 2021). Reports are stating that SMIs icons such as artists serve as major role models to the young generation and lead to the purchase of counterfeit products (Zain et al., 2021). SMIs as one external factor should be examined in detail. Academicians focus less on the contribution of social media influencers to counterfeit purchases (Priporas et al., 2015). A study by Islam et al., (2021) confirmed the fact that the role of social media and influencers in counterfeit consumption is under-researched. More specifically, how SMIs influence the young generation in purchasing counterfeit products is even more scant (Tamara et al., 2021). To confirm the role of SMIs among the young generation, this study aims to examine in detail the dimensions of SMIs toward fashion counterfeit intention purchase among the young generation.

2. Literature Review

Counterfeiting and Counterfeit: A lot of studies have focused on the purchase of counterfeit products in different countries, namely China (Yao, 2006), Kuwait (Riquelme et al., 2012), India (Bikoff et al., 2015), Australia (Phau & Teah, 2009a & b), Mexico (Perez et al., 2010), Brazil (De Matos et al., 2007), Indonesia (Triandewi & Tjiptono, 2013; Purwanto et al., 2019), Pakistan (Husanian & Akhtar, 2015), Bosnia and Herzegovina (Tatić, 2011), and the European Union (Penz & Stottinger, 2008). However, culture has been widely examined when it comes to counterfeit product purchases in Asia (Xiao et al., 2018). Due to the fact that a significant portion of the production of counterfeit products is from China (Sonmez et al., 2013; Yao & Lee, 2009), then increase the number of counterfeit product studies related to culture. The counterfeiting studies also gain popularity because many companies and governments see counterfeiting as a problem to the industry and market dynamics simply because they pose a significant threat to luxury brands, taint their reputation, lessen the demand for original products, incur additional costs for infringement protection, and further result in lower business revenues (Kapferer & Michaut-Denizeau, 2014; Chaudhry et al., 2005). However, Amar et al. (2018) found that exposure to counterfeit products can lead to moral disgust, which, in turn, leads individuals to avoid buying the original of these products. Romani et al. (2012) also argued that the widespread prevalence of counterfeit products can benefit original luxury brands. Nia & Zaichkowsky (2000) found that approximately 70% of their participants had the experience of looking for and purchasing counterfeit products.

Studies on counterfeiting have been increasing since the early 1970s and there is no indication of a decrease due to the widespread market acceptance, regardless of counterfeit-related wrongdoings and impairments (Bian & Haque, 2020b). In past literature, authors defined counterfeit in different ways. A few synonyms have been used to refer to counterfeit, such as 'replicas', 'fakes', 'imitations', 'knock-offs', 'me-too', 'copycat', 'palmed-off', 'pirated', and 'look-alike' products (Kaikati & LaGarce, 1980). Upon reviewing the definitions from past literature, authors used the terms illegal, unauthorized, copy, imitation and replicate to define counterfeit. Counterfeit is an illegal activity and it is a white-collar crime as it involves the reproduction of established or original brands (Green & Smith, 2002; Heinonen et al., 2017). For this study, counterfeit is defined as the activity of copying or faking the trademarks of established brands (Grossman & Shapiro, 1988).

Social Media Influencers (SMIs): SMIs do not necessarily need to be opinion leaders; as long as their personality is preferred, their thoughts and what they share and what they raise as issues will be accepted by consumers. Due to the popularity of SMIs and the emergence of influencer marketing, scholars extensively examined the role of SMIs. Many paradigms of SMI have been investigated and focused on the effect of SMIs on purchase intention (Nafees et al., 2021). SMI not only directly affects the behavior of individuals, but also acts as a stimulus to influence the cognitive, emotional and effectiveness of consumers (Awang et al., 2019;

Lee & Chen, 2021). Social Media Influencers as the stimulus has been used in a few studies (Aw & Chuah, 2021; Ki et al., 2020; Nafees et al., 2021; Pittman & Abell, 2021; Zhou et al., 2021). Due to the growth of social media, the role of the Social Media Influencer (SMI) in this young generation has widely been investigated (Han & Chen, 2021; Hassan et al., 2021; Pornsrimate & Khamwon, 2021). However, Kay et al., (2020) still urged researchers to investigate in depth the role of SMIs. The study on the impact of SMIs is still new and a lot of inconsistent findings found in past studies (Coco & Eckert, 2020; Jin et al., 2019; Rohde & Mau, 2021; Saima & Khan, 2020; Vrontis et al., 2021).

Reviewing the literature on the impact of SMI, there are a few discoveries made, (a) the brand contents endorsed by SMIs (Djafarova & Rushworth, 2017; Freberg et al., 2011) and, (b) the characteristics of SMIs towards that pulling factor for the followers from the SMIs perspectives (Casaló et al., 2020; Cooley & Parks-Yancy, 2019). Scholars focused on identifying the role of SMIs who influence followers' choices and determine their decisions (Ki & Kim, 2019; Lin et al., 2018). Very limited studies focused on the followers' perspectives, especially on what followers desire to fulfill by attaching to SMIs (Ki et al., 2020). Thus, to fill the gap, this study would investigate the attachment between SMIs and followers, especially the younger generation and their needs fulfillment perspective. Thus, the multidimensional scaling used by Ki et al., (2020) will be adopted in this study, namely, inspiration, technical skills, enjoyability, similarity, informativeness and expertise.

Inspiration: Due to the current trend of SMIs, more academicians and practitioners want to investigate this phenomenon (Nafees et al., 2020). Looking into the literature that investigated this inspiration, a few scholars have been found to have examined it in their studies (Jin et al., 2019; Ki et al., 2020; Noonan, 2018; Smorthit & Cooper, 2020). Thrash & Elliot (2004) stated that consumers will get motivated to take action and even incorporate into themselves the sources gained from inspiring individuals and well-known brands. Moreover, findings by Janavi et al. (2021) showed that consumers get inspired by the live presentation of the influencers and more often than not, they will end up committing to online purchases. This is especially applicable during the lockdown when more consumers are glued to social media or the mainstream media to get inspired by the influencers' live streaming and the way they demonstrate their product knowledge (Addo et al., 2020). Jin et al. (2019) asserted that followers that perceived SMIs as inspiring in terms of their personality and achievement would end up imitating them.

Technical skills: Harmonious with other similar studies, Ki et al. (2020) study portrayed similar descriptions to Hassan et al. (2021) but they used the visual aesthetics dimension. This visual aesthetics is described as the skills of presenting by SMIs that can grab the attention of individuals. Creative videos, interesting graphics, appealing stories and photography skills and filtered images are part of interesting, engaging content. These descriptions are what respondents of Ki et al. (2020) had given. The literature also reviewed technical skills that refer to the usage of filtered images to present content (Lou & Yuan, 2019). Thus, technical skills are defined as a technical way of presenting content by using filtered images, creative videos, graphics, appealing stories and photography skills that individuals perceive as appealing and attractive.

Enjoyability: Enjoyability as a dimension was adopted in past studies (Balaban et al., 2020; Balaban & Mustătea, 2019; Ki et al., 2020). Reviewing how enjoyability was executed in all the studies, the words sense of humor, funny and enjoyable was used. Nicolaou & McKnight (2006) suggested that only when followers enjoy the content produced by SMIs, that they would form a favorable attitude. Zytko et al. (2018) examined online users' acceptance of online platforms such as dating apps and they listed the features of the online platform, such as enjoyable rewards, and leading more online users to utilize the online platform.

Similarity: The extant literature showed that the majority of the studies examined similarity as the formative measurement (Abdullah et al., 2020a; Ki et al., 2020; Lou & Yuan, 2019). Although past studies had not examined it as a single variable, they found that similarity is an important dimension of SMI. This study further fills the gap to understand in detail how similarity plays the role of the stimulus. Past studies were also reviewed to see whether or not the dimension similarity had been examined towards the young generation. Yun et al. (2019) investigated the personality of a brand's Twitter account and the personality of its followers. The findings revealed that the young generation tends to display some similar characteristics just like the brand personality they follow on Twitter accounts. Schewe et al. (2013) in their study asserted

that the young generation with the same age categories such as the young generation displays a similar pattern of behavior and preference.

Informativeness: Due to the popularity of SMIs, scholars investigated the aspect of informativeness as one of the dimensions in their studies (Ferreira et al., 2021; Lokithasan et al., 2019; Lou & Yuan, 2019; Tan et al., 2021). Amongst these, only Tan et al. (2021) used informativeness as an independent and the rest of the studies used informativeness as one of the dimensions. Other studies that investigated SMIs were reviewed and different attributes were examined. For example, Awang et al. (2021) did not examine informativeness. Although the study adopted the S-O-R model, different attributes of SMIs such as credibility and attractiveness had been examined. Similarly, AlFarraj et al. (2021) have investigated a different attribute which is the credibility of SMIs.

Expertise: Some scholars have examined the concept of expertise in their studies (Chetioui et al., 2020; Lee & Theokary, 2021; Nafees et al., 2021). While all these scholars examined expertise as uni-dimension, Chetioui et al., (2020) have examined expertise as multidimensional. The scholars argued that the subject matter expert needs to be examined from different perspectives. An SMI may be an expert in copywriting, filtering images, also in the usage of technical aspects like video editing and animation that can attract followers. Following this, (Al-Qatami, 2019) studied expertise as multi-dimensional. The scholars examined the attractiveness, and endorsement of content quality or in other words copywriting. Other scholars also studied expertise as multidimensional and they examined expertise in copywriting and technology (Aviles & Eastman, 2012; Gonzales-Chávez & Vila-Lopez, 2020). However, in this study, the researcher was only interested in examining expertise as a uni-dimension.

Counterfeit Purchase Intention: The purchase intention of counterfeit is defined as consumers' readiness and the possibility to obtain counterfeit or original products (Eisend & Tarrahi, 2019). In the marketing field, a majority of past literature measures purchase intention (Geng et al., 2017; Noor & Muhammad, 2017). Purchase intention refers to the possibility to purchase or the consideration to purchase the items (Zeithaml, 1988). However, Bogozzi (1978) explained that a purchase intention is an individual act related to preferences. For this study, the purchase intention of counterfeit is defined as consumers' readiness and the possibility to obtain counterfeit products (Eisend & Tarrahi, 2019). Although there are arguments on the use of intentional behavior rather than actual behavior. Few studies have examined counterfeit fashion and adopted purchase intention (Fernandes, 2013; Sharma & Chan, 2017). In the study to examine counterfeit fashion purchase intention in the UAE, purchase intention functions as the measurement (Fernandes, 2013). Moreover, studies that intended to examine the actual purchase behavior also used purchase intention as the major indication of the actual purchase behavior (Sadiq et al., 2021). This is in spite of the fact that debates are circulating that purchase intention does not equal actual purchase behavior (Goh et al., 2016). However, a majority showed that purchase intention is the indication to purchase behavior, or more accurately the actual purchase behavior (Chen et al., 2021; Kanchanapibul et al., 2014; Nguyen et al., 2021). Since most of the buyers of counterfeit products do not voluntarily agree or admit that they purchase counterfeit products, the purchase intention will be used as the dependent variable of this study.

Recognizing the contribution of SMIs towards genuine brands, lately international channels have started to reveal some shocking articles involving SMIs and counterfeit. This had switched scholars' attention. They started to heavily examine the role of SMIs in contributing to counterfeit purchases (Grigsby, 2020). For example, Lou & Kim (2019) mentioned that there is a scarcity of studies examining the role of SMIs in influencing purchase intention. To fill the gap, Lou & Kim (2019) initiated the study and the findings showed that there is a positive relationship between SMIs and purchase intention. Evans et al. (2017) even went one step further to examine Instagram influencers' advertising capability's role towards students' purchase intention and the finding yielded a positive outcome whereby Instagram showed a positive outcome towards forming students' positive purchase intention.

The specific attributes of SMIs that lead to purchase intention were also investigated. The outcome of the investigation led to some interesting findings. Extant literature postulated a positive relationship between SMIs and purchase intention. The study further clarified that specific SMIs characteristics like being inspiring can well lead to the purchase intention (Jin et al., 2019). A similar study by Glucksman (2017) showed a

positive relationship between the inspiring personality of SMIs and purchase intention. Chopra et al. (2021) also jumped on the bandwagon when they probed into SMIs' attributes in influencing the millennials' purchase intention. The findings were also in favor of others, whereby amongst the other attributes inspiring was shown to lead to positive purchase intention. Thus, the following hypothesis is created for this study

H1: Inspiration positively affects the fashion counterfeit purchase intention among the young generation.

Due to the growing importance of SMI marketing, there were more studies carried out to determine the attributes of SMIs that can lead to purchase intention (Fernando et al., 2021). Among the few attributes of SMIs, technical skills were studied by Jin et al., (2019). The study highlighted that those technical skills are described as the capability of SMIs in displaying content using creative video editing, graphics animation, creative photo editing, and many others. The findings of the study pointed to a positive relationship between technical skills and purchase intention. A study by Batra et al., (2022) also examined the capability of SMIs in terms of their technical skills, especially their creativity in displaying cosmetics advertisements. The creativity in using lighting to show the before and after effects of using cosmetics would be able to influence consumers. The findings showed that technical skills do have a positive effect on purchase intention. Therefore, the following hypothesis is created.

H2: Technical skills positively affect the fashion counterfeit purchase intention among the young generation.

The medium of advertisement no longer depends on traditional media alone. Influencers play the role of a sender between the consumer and a brand. Whether consumers are accepting an advertisement and a product in it depends on the attributes of the influencers (Pop et al., 2022; Wu et al., 2022). One of those specific attributes is the likeability attributes of SMIs (Ki et al., 2020; Lee & Theokary, 2021; Wella Yanti et al., 2019). Likeability refers to the ability of SMIs to be funny, hilarious, cheerful, pleasant and playful (Benito et al., 2020; Ki et al., 2020; Pop et al., 2022). Academicians have been actively studying the effectiveness of these attributes. One of the studies by Benito et al., (2020) analyzed the effectiveness of SMIs on YouTube platforms. They were particularly interested in finding out what made followers form their purchase intention. The findings showed that there is a positive relationship between enjoyability and purchase intention. Specifically, followers prefer SMIs who are cheerful and pleasant.

Another study by Taillon et al., (2020) recognized that SMIs played a significant role in being a human brand that connects consumers and products being endorsed or sponsored. SMIs would generate a huge stream of revenue for a company. However, the study also acknowledged that being SMIs is not an easy task. There are specific attributes that make a particular SMI outstanding compared to the rest. The findings of the study reveal that there is a positive relationship between enjoyability and purchase intention. Consumers will be attracted to products that SMIs endorse or promote if they have injected a sense of humor into their content. Therefore, the following hypothesis is created

H3: Enjoyability positively affects the fashion counterfeit purchase intention among the young generation.

The way that individuals communicate, connect, and engage with one another has radically changed because of social media. The most significant aspect is that this platform is crucial in enabling increased influence (Abdullah et al., 2020b). However, to increase their influence, followers of SMIs are very selective. Followers only trust SMIs that have similar cultures, ages, tastes and preferences (Liu, 2022). A study by Taillon et al., (2020) was set to comprehend the importance of intimacy in the relationships that social media influencers have with their followers, and more especially, how the social media influencers may manage their human brands successfully. The findings showed that there is a similarity between the two and the SMIs do have a positive relationship with purchase intention. Besides, studies by Lou & Yuan, (2019) also asserted that similarity attributes did have a positive relationship with purchase intention. Therefore, the following hypothesis is created.

H4: Similarity positively affects the fashion counterfeit purchase intention among the young generation.

The role of SMIs becomes significant, especially during the COVID-19 pandemic (Femenia-Serra et al., 2022; Green et al., 2022; Sudaryanto et al., 2022). Many business sectors rely heavily on SMIs during this pandemic. This is because the content created by popular SMIs would be able to provide good guidance, timely information, relevant information, as well as good sources of facts (al Khasawneh et al., 2021; Daud & Zulhuda, 2020; Jacobson & Harrison, 2022; Szymkowiak et al., 2021). Researchers summarized those descriptions as informativeness. This is the same variable used by other scholars (Green et al., 2022; Ki et al., 2020). For example, Sudaryanto et al., (2022) studied the role of SMIs in endorsing cosmetic products during the pandemic. The study depicted that SMIs become the connecting point as the followers trust their guidance. When consumers are confined to long periods of quarantine, to avoid boredom, females particularly, turn up to SMIs content to seek guidance on ways to apply cosmetic products. The findings showed that informativeness does have a positive relationship with purchase intention.

Other businesses, like tourism, which were heavily affected too by the COVID-19 pandemic also show reliance on SMIs (Femenia-Serra et al., 2022; Kim et al., 2021). Both these studies asserted that popular SMIs with a high number of followers are paid to create content on popular tourist spots. The factual content created serves as a good source of information to followers, subsequently leading to the high demand for virtual tours. SMIs also create content that provides guidance and helpful information on ways to navigate virtual tours. The findings of the study showed that informativeness does have a positive relationship with purchase intention. Therefore, the following hypothesis is created:

H5: Informativeness positively affects the fashion counterfeit purchase intention among the young generation.

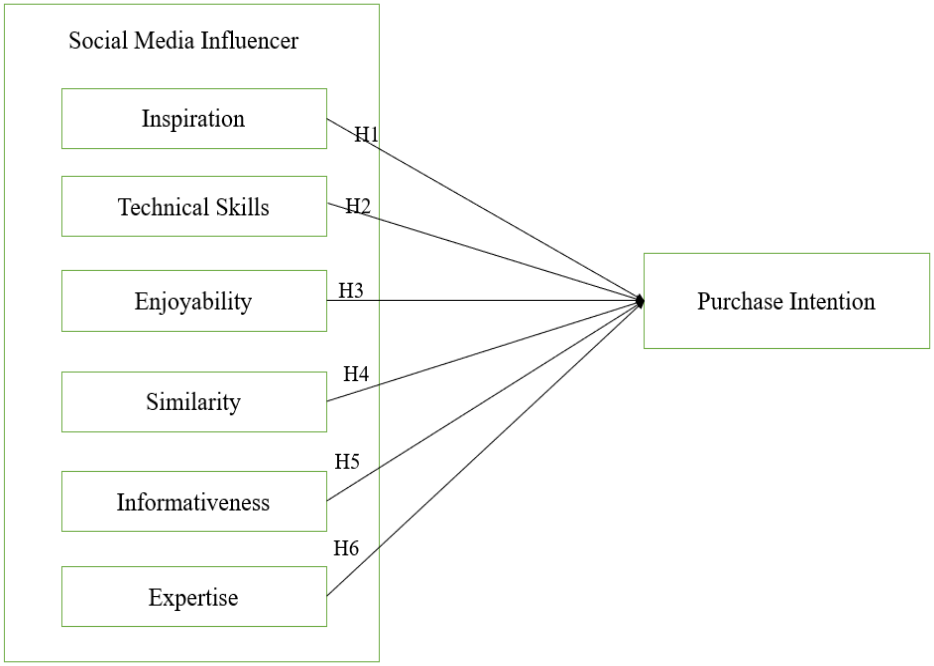
The influence exerted by social media influencers (SMIs) on consumer behavior and decision-making has grown significantly in recent years (Koay et al., 2022). This explains the accumulating academic interest in figuring out how SMIs translate their meaning to approved brands and influence customers' constructive behavioral intentions. Koay et al., (2022) had taken the initiative to bridge this knowledge gap. The study intended to investigate how followers' purchasing intentions are affected by SMI expertise. The findings showed that expertise does have a positive relationship with purchase intention. A study by Weismueller et al., (2020) offered some similar findings whereby expertise does have a positive relationship with purchase intention. The variable expertise is judged based on the content values by SMIs. This encompasses the content that delivers relevant knowledge, or one that shows SMIs claims and content that display the experiences gained by the SMIs (Munnukka et al., 2016).

However, Dean et al., (2021) who also studied the credibility of SMIs specifically in terms of their expertise in encouraging the young generation towards accepting Islamic banking, offered a different perspective. The findings revealed that expertise does not directly contribute to the behavioral intention of the Islamic bank among the young generation. It means that expertise does not have any positive relationship with purchase intention. The findings further claimed that the existence of the mediator or moderator might have positive findings. In line with this, Lin et al., (2021) studied the expertise of SMIs in promoting products. The findings showed that expertise does not directly contribute to purchase intention. In other words, expertise does not have any positive relationship with purchase intention. With these mixed findings, the following hypothesis is created:

H6: Expertise positively affects the fashion counterfeit purchase intention among the young generation.

Figure 1, illustrates the proposed framework. All the hypotheses stated to facilitate the understanding of the proposed framework.

Figure 1: Propose framework



3. Research Methodology

A self-administered online survey questionnaire was used to collect the research data. (Hair et al., 2014) recommended sufficient samples of more than 250 to conduct Structural Equation Model (SEM) with a good alternative for managing missing data of less than 10 percent. University students are used as the sample group to draw young consumers. University students fall into the Millennial or Generation Y age groups respectively. The questionnaire was made available online and students from various universities were invited to participate and a total of 389 samples were collected. In designing the valid and reliable measurement, verified measures from past literature were adapted and rephrased to meet the counterfeit context. Inspiration was measured using a 7-item scale adapted from Bottger et al., (2017). Technical skills were measured using a 6-item scale adapted from Ki et al., (2020). Enjoyability was measured using a 7-item scale adapted from Voss et al., (2003). Similarity was measured using a 5-item scale adapted from Ki et al., (2020) and Munnukka et al., (2016). Informativeness was measured using a 6-item scale adapted from Blanco et al., (2010) and Tsang et al., (2014). Expertise was measured using a 5-item scale adapted from Munnukka et al., (2016). Purchase intentions were measured using a 5-item scale adapted from Ha & Janda, (2017) and Jiang et al., (2019).

4. Results

Table 1 summarizes the profiles of the samples selected for this study. The outliers and missing data were checked and a total of 389 were validated and used for this analysis. In 2019, there were 41 percent of male and 59 percent of female students enrolled in public higher education in Malaysia (Hirschmann, 2020). The sample consisted of 43.4 percent of males and 56.6 percent of females, which is consistent with the data reported. All the respondents purchased at least one type of counterfeit goods endorsed by SMIs. Fashion is the highest (76.9%) counterfeit goods purchased by the respondents.

Table 1: Respondents' Profile

Variable	Classification	Frequency	Percentage (%)
Gender	Male	169	43.4
	Female	220	56.6
Education	High school or below	65	16.7
	Bachelor's degree	237	60.9
	Certificate or Diploma	69	17.7
	Postgraduate education	12	3.1
	Professional certificate	5	1.6
Status	full-time Student	297	76.3
	Part-time student	40	10.3
	working for others	25	6.4
	unemployment	19	4.9
	Self-employed	8	2.1
Experience purchasing counterfeit products endorsed or wearing SMI	Yes	389	100
Types of counterfeits purchased	Household	122	31.4
	Fashion	299	76.9
	Sports	289	74.3
	Entertainment	262	67.4
	IT	271	69.7
	Medical	126	32.4
Frequency of purchase	Rare	69	17.7
	Sometimes	109	28.0
	Always	211	54.2

To determine the validity of the construct used for each variable, factor loading is used. Based on Hair, (2015) a loading value of at least 0.50 and ideally greater than 0.70 indicates that the items' standardized factor loading is highly related to the latent construct. In some cases, the cut-off for the factor loading above 0.60 is still considered to be a reasonable loading, nevertheless. Additionally, it is suggested that the variable item with a loading of less than 0.60 is removed from the statistical analysis to increase the scale's content validity. The outcome of the factor loading presented for each variable is presented in Table 2.

Apart from validity, the reliability of the variables in this study is also examined. The reliability was measured using Cronbach's Alpha (CA) and composite reliability (CR). Both these CA and CR are components of the internal consistency measurement. How closely the items are related to the variables being examined is indicated by the internal consistency metric. If a variable's composite reliability value and Cronbach's alpha both meet or exceed the suggested level of 0.7 as suggested by Hair, (2015), it is deemed reliable. Even though Cronbach's alpha index is frequently used to evaluate reliability, some academics contend that it undervalues this factor. In light of this, using composite reliability had been recommended as a superior Cronbach's Alpha substitute (Hair, 2015; Joreskog & Yang, 1996). As a result, the researcher used the composite reliability as well as Cronbach's alpha values as the criterion for explaining the reliability in this study. All of the variables in this study are reliable and have fulfilled the requirement of convergent validity.

Average Variance Extracted (AVE), is regarded as a more conservative test in addressing convergent validity, is another sign of convergent validity in this study. The error-free variance from a collection of construct-related items is measured using the AVE (Fornell & Larcker, 1981). In other words, AVE is used to calculate how much variance is attributed to measurement error. Additionally, it has been asserted that convergent validity is only considered adequate when the value of AVE is equal to or greater than 0.50 (Hair, 2015). The results demonstrated that all AVE values are above the prescribed value of 0.50 set by Hair et al (2010).

Table 2: Measurement Model for Inspiration

No	Inspiration	F.L	CA	C.R	AVE
1.	My favorite social media influencer's personality stimulates my imagination about counterfeit products.	0.88	0.90	0.90	0.65
2.	My favorite social media influencer's personality influences me with new ideas about counterfeit products.	deleted			
3.	My favorite social media influencer's personality makes me explore counterfeit products.	0.75			
4.	My favorite social media influencer's post inspires me to buy counterfeit products.	0.78			
5.	My favorite social media influencer's post sparks my desire to buy counterfeit products.	0.81			
6.	My favorite social media influencer's post increases my desire to buy counterfeit products.	0.82			
7.	My favorite social media influencer's post motivates me to buy counterfeit products.	deleted			
	Technical Skills				
1.	My favorite social media influencer's content is artistically pleasing.	0.77	0.94	0.94	0.71
2.	My favorite social media influencer's content is attractive.	0.76			
3.	My favorite social media influencer's content is visually appealing.	0.82			
4.	My favorite social media influencer's angle of pictures impresses me.	0.90			
5.	My favorite social media influencer's creativity in presenting beautiful videos impresses me.	0.91			
6.	My favorite social media influencer's photography skills are appealing.	0.88			
	Enjoyability				
1.	I find my favorite social media influencers are funny.	0.74	0.93	0.93	0.69
2.	I find my favorite social media influencers are hilarious.	0.92			
3.	I find my favorite social media influencers do have a sense of humor.	0.72			
4.	I find my favorite social media influencers are cheerful.	0.92			
5.	I find my favorite social media influencers are pleasant.	0.75			
6.	I find my favorite social media influencer's posts enjoyable.	0.90			
7.	I find my favorite social media influencers are playful.	0.74			
	Similarity				
1.	I find my favorite social media influencer's culture is similar to me	0.97	0.96	0.96	0.88
2.	I find my favorite social media influencer's content matches my interest	Deleted			
3.	I find my favorite social media influencer's personality similar to mine.	0.93			
4.	I find my favorite social media influencer's age group to be the same as mine.	0.90			
5.	I find my favorite social media influencers to have similar tastes and preferences as mine.	0.94			
	Informativeness				
1.	I feel the content made by my favorite social media influencers offers timely information.	Deleted	0.95	0.95	0.82
2.	I feel the content made by my favorite social media influencers is more informative than other advertising sources.	Deleted			
3.	I feel the content made by my favorite social media influencers	0.85			

	is helpful.				
4.	I feel the content made by my favorite social media influencers is a good source of product/service information.	0.95			
5.	I feel the content made by my favorite social media influencers does not offer me irrelevant information.	0.84			
6.	I feel the contents made by my favorite social media influencers offer me guidance to make purchase decisions.	0.97			
	Expertise				
1.	When looking at my favorite social media influencer's content, I feel he/she knows a lot about the counterfeit product	Deleted	0.94	0.94	0.84
2.	When looking at my favorite social media influencer's content, I feel he/she is competent to make assertions about the counterfeit product	Deleted			
3.	When looking at my favorite social media influencer's content, I consider he/she to be an expert in promoting the counterfeit product	0.92			
4.	When looking at my favorite social media influencer's content, I consider he/she to be an expert in using fashion counterfeit products.	0.89			
5.	When looking at my favorite social media influencer's content, I consider he/she sufficiently experienced to claim the counterfeit product.	0.94			
	Purchase Intention				
1.	I consider purchasing fashion counterfeit product(s)	0.76	0.93	0.93	0.69
2.	I intend to buy fashion counterfeit product (s) after being exposed to social media influencer personality	0.82			
3.	I might possibly buy fashion counterfeit product(s) from content provided by the social media influencer	0.91			
4.	I would consider to buy fashion counterfeit product(s) after seeing social media influencer information about it	0.83			
5.	I am willing to buy a fashionable counterfeit product if it is promoted by my favorite social media influencers.	0.82			

The results of the mean and standard deviation for overall variables are presented in Table 3. The discriminant validity of all measures is supported by the fact that the square roots of the AVE for each variable are larger than its correlation.

Table 3: Descriptive Statistics

Variables	M	SD	1	2	3	4	5	6	7	8
1. Inspiration	4.04	0.59	**0.81**							
2. Technical Skills	3.62	1.03	.20	**0.84**						
3. Enjoyability	3.75	0.85	.13	-0.03	**0.83**					
4. Similarity	3.44	1.17	.17	.68	-0.12	**0.94**				
5. Informativeness	3.47	1.04	.19	.59	-0.06	.69	**0.90**			
6. Expertise	3.37	1.04	.19	.64	-0.05	.72	.74	**0.92**		
7. Purchase Intention	3.43	1.07	.19	.72	-0.04	.70	.73	0.71		**0.83**

Structural Equation Modeling (SEM) was performed using AMOS software. SEM is capable of estimating the direct effects of all the dimensions of SMIs on counterfeit purchase intention. The findings for each hypothesis are displayed in Table 4. The regression weight for inspiration, enjoyability, similarity, and expertise in the prediction of purchase intention is not significantly different from zero at the 0.05 level. For this reason, H1, H3, H4, and H6 are not supported. For technical skills and informativeness, the regression weight for technical skills in the prediction of purchase intention is significantly different from zero at the 0.001 level. Hence, H2 and H5 are supported.

Table 4: Path analysis

Paths	Estimate	S.E	C.R	P Value	Result
H1: Inspiration → Purchase intention	0.04	0.05	0.81	0.42	NS
H2: Technical skills → Purchase intention	0.27	0.05	5.52	0.001**	Support
H3: Enjoyability → Purchase intention	0.01	0.04	0.18	0.86	NS
H4: Similarity → Purchase Intention	0.04	0.05	0.77	0.44	NS
H5: Informativeness → Purchase intention	0.21	0.04	5.08	0.001**	Support
H6: Expertise → Purchase intention	0.05	0.06	0.84	0.40	NS

Note:**p<0.01,NS=Not Support

Discussion

The results of this study provide the first empirical proof that not all the dimensions of SMIs directly affect counterfeit purchase intention. The results of this study add to the body of knowledge regarding how the dimensions of SMIs affect counterfeit purchase intention among the younger generation. This is a significant result because it prevents the younger generation from buying fashion counterfeit products. This study also provides accurate dimensions that need to be focused on by policymakers and marketers. Since SMIs have a significant impact on the behavior of younger generations, this study shows that SMIs also have an impact on their behavior of counterfeit products. This study aims to make several contributions to the area of counterfeit products.

Firstly, this study found that inspiration is not significantly related to counterfeit purchase intentions, and this result is not in line with the existing literature (Chopra et al., 2021; Glucksman, 2017). They prefer credibility while making purchase decisions instead of getting inspired by SMIs. This shows that the inspiration, as the attribute of SMIs does not influence the fashion counterfeit purchase intention of the individuals. Previous research has focused on a famous brand, which explains this study's result. This shows that the young generation does not get inspired by SMIs while purchasing.

Secondly, the findings revealed that technical skills positively correlate to counterfeit purchase intentions among the young generation. This result is supported and aligned with one of the previous studies (Jin et al., 2019). Like other attributes of SMIs, their technical skills are also considered to give them an upper hand over other marketing media. Most SMIs possess and develop the required technical skills to carry out video editing, graphic designing and other operations. This helps them provide a better version of the product they are sponsoring. The creativity of SMIs helps attract more users, encouraging them to spread positive word of mouth to develop brand value. However, the younger generation is highly influenced by the innovative ideas of SMIs, which are represented in their promoted images and videos. Such discussions help in encouraging the results of the present study, showing that technical skills positively affect fashion counterfeit purchase intention among the young generation.

Thirdly, enjoyability is not a significant predictor of counterfeit purchase intentions among the young generation. The current findings do not align with past studies (Monge-Benito et al., 2020; Taillon et al., 2020). The role of SMIs as the sender between the brand and the customers is mainly being promoted these days. The attributes of SMIs contribute to making a brand popular as they help attract younger users. However, the SMIs' likeability attribute is highly focused as funny and playful influencers are likely to engage a larger audience of younger people. Therefore, the enjoyability of SMIs merely helps individuals pass their time, and their decision-making processes are not influenced by it.

Fourthly, based on the statistical results, it is depicted that similarity did not have a significant association with counterfeit purchase intentions. This current outcome is not in line with a few past studies (Lou & Kim, 2019; Taillon et al., 2020). Similarities between the SMIs and the people help them connect emotionally, but when it comes to practicality, the people consider their consciousness instead of being driven by emotions. Conscious consumers are shoppers who make the conscious decision to buy local, ethical and environmentally-friendly products. Their choice of companies to shop in is often based on how environmentally or socially conscious they are.

Fifthly, the present findings show that informativeness is significantly and positively related to counterfeit purchase intentions among the young generation, and this outcome is in line with the previous literature (Femenia-Serra et al., 2022; Kim et al., 2021). SMIs eventually became the source of information for many followers. The young generation is even brought up in the digital world, which explains their dependency on social media for obtaining the necessary information. Thus, the SMIs' informativeness impacts the users' purchase intention as they had no other effective source of information during the covid-19 pandemic. This has eventually become the routine of many users.

Finally, the results highlighted that the expertise of SMIs is not significantly related to purchase intentions. The current study's findings showed that the outcome is not in line with previous studies (Koay et al., 2021; Weismueller et al., 2020). However, it supports the findings of Lin et al. (2021), which stated the negative impact of expertise on the purchase intention of individuals. The experts provide the young generation with various perspectives to guide them toward a better future. Despite this, the young generation often likes to make their own decisions, and they enjoy their autonomy in this case.

5. Managerial Implications and Recommendations

One of the main limitations of this current study was related to the choice of product. This is because the product selected to represent this study is a fashion counterfeit. During the early stage of research design, screening questions were prepared to identify the most frequently purchased counterfeit products. In the screening questions, six types of counterfeit products were given which are households, fashion, sports, entertainment, IT and medical. Out of these six options, fashion counterfeit appears to be most frequently purchased by the younger generation. The idea that the brands are exclusive is appealing to many people, especially young people. It is tempting to possess something that is not widely available but unaffordable. This is the justification as to why consumers, especially the young ones turn to fake goods and Reddit, for instance, has opened a channel of a huge fashion replica community. The limitation of this is that the findings of this are restricted only to fashion counterfeit products. It cannot be generalized to all counterfeit products in general. This is because the young generation may not only purchase fashion counterfeit products but also purchase entertainment and IT-related counterfeit products. Therefore, future studies can also focus on common counterfeits to get further insights.

Finally, this study has not included the mediating effects of any variable on the relationship between SMIs and counterfeit purchase intention. Based on the stimulus-organism-response model that has been used widely in consumer behavior, mediating should be added to the model. Future studies could investigate the mediating role of motivation factors. For example, self-determination can be used as the mediating variable in the study of counterfeit purchase intention.

Conclusion

The findings could offer marketing practitioners new approaches, how to stop the young generation from purchasing counterfeit products. Technical skills and informativeness are found as important skills of SMIs in influencing the younger generation in purchase intention. Therefore, marketers should support or sponsor individuals or SMIs who are well-versed in technical skills and information. Additionally, marketers might give SMI more information to promote pattern products. Accurate information is important that allows the younger generation to understand the difference between counterfeit and original products.

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An Application of Lean Principle in a Call Center at Sarawak

Zalina Salmah Abdul Wahed[1], Azilah Anis[2] & Azimah Daud[3]
[1]Arshad Ayub Graduate Business School, Universiti Teknologi MARA, Sarawak, Malaysia
[2,3]Faculty of Business and Management, Universiti Teknologi MARA, Selangor, Malaysia
*zalinawahed@gmail.com, azilahanis@uitm.edu.my, azimah348@uitm.edu.my

Abstract: Customer follow-ups or repeat calls are common in a call center primarily due to unresolved cases that turn into aging cases. Different case category presents different complexity with different outcome which this case study demonstrates. The present study thus proposes the Lean principle to be applied in the workflow to analyze each process activity in an attempt to find the root cause of the aging cases that do not conform to the established time function mapping. Five respondents were chosen amongst the call center personnel for a semi-structured interview enabling them to express themselves freely within the context of the dilemma they are facing. The respondents share the same desire to receive timely answers or information to maintain customer satisfaction levels. The Lean principle enables this case study to formulate a recommendation that ties in with Lean true nature for continuous improvement.

Keywords: *Lean principle; Call center; Process flow; Time function mapping; Continuous improvement, Fishbone diagram.*

1. Introduction

The service industry has evolved with customers becoming more affluent expecting quality services, especially since Covid-19 that has changed the consumer landscape thus shifting most services towards digital or online transactions. Customers expect front liners to express more care and attentiveness via online interaction or phone. Measuring customer level of satisfaction is becoming one of the most important metrics to ascertain service quality level. Even in the marketing world, 81% of marketers view customer satisfaction level as the main competition area in their industry (Szyndlar, 2022). In Sarawak, a renowned well-established service provider owns a call center and multiple service counters throughout Sarawak. The objective of the call center is to provide a window of communication for customers in Sarawak to make inquiries via phone calls and emails. The opening of the call center provides an additional platform apart from the existing customer service counter as a point of contact with the customer service team. It reduces unnecessary visits to the counters for the customers. The call center adds an additional platform that helps to distribute responsibilities and tasks so as not to overwhelm the service counter team.

This case study will be focusing on the call center's daily process flow. The call center's structure consists of staff who are the first point of contact with customers and shift supervisors who monitor the operation during shift. The 1st layer team i.e., the support team sends resolved cases back to the shift supervisor. Another team which is the 2nd layer team is the case experts that receive cases from the support team for cases that require further analysis. To identify categories with problems, two (2) case categories are selected for comparison which are 1) new account application and 2) billing. The process for both categories is expected to be completed within 60 days. Table 1 shows a high percentage of aging cases of more than 60 days of 11.46% (251/2,191) for the new account application category. This poses a question as to why this occurs. Its total, cases recorded for the year 2021 is 2,191 applications. However, for the bill category which comprising of bill adjustment, copy bill request, payment, penalties, etc., despite a high number of billing cases handled which is 11,660 in total for the year 2021, the cases aging more than 60 days are only 4.80% (560/11,660).

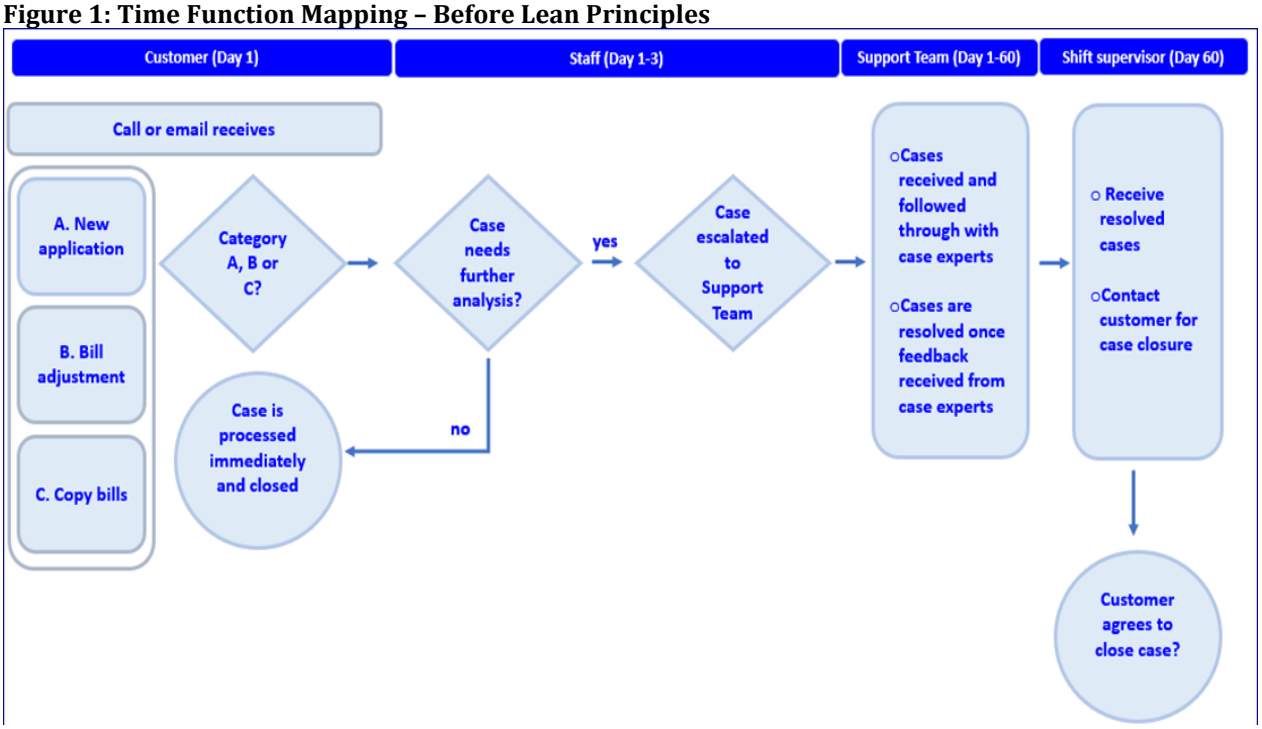
Table 1: Aging Cases More Than 60 Days for Year 2021

Item	Category	Total Cases	Aging More Than 60 Days	%
1	New account application	2,191	251	11.46%
2	Billing	11,660	560	4.80%

Time function mapping for new account application time is presented in Figure 1. The time function mapping serves as a step-by-step guide in ensuring process activities are completed within a specified duration until

the information obtained is conveyed to the customer on time. When the staff is able to provide customer information at the first point of contact, the call or email is completed or termed as first call resolution (FCR). Queries from customers are varies ranging from account balance, and billing adjustment to new application matters. Non-complex cases such as helping customers to unlock their mobile app account password, copy bills request or make appointments with the customer service counter can be done by a call center staff, hence is categorized as FCR. Another example of non-complex cases are bill adjustment and credit card autopay requests. With the completed supporting documents provided by the customer, the staff at the call center can complete the request within three days with the assistance of the supporting team.

Figure 1: Time Function Mapping – Before Lean Principles



However, there are instances when information is not available among the call center team. The support team then emails the case inquiry to the 2nd layer case expert i.e., the application team which is located in a different department. The support team then needs to wait for the reply from the case expert. Follow-up emails are also made every other week in case of no reply. Until such time, the respective department responds with the information that the customer needs. The case then is escalated back to the shift supervisor to provide feedback to the customer and the case is then closed. The process flow is expected to be completed within 60 days for the new account application category. Nevertheless, as shown in Table 2, the year-end data for 2021 shows a bill category that had approximately 5 times more cases than the new account application category and yet the application category has a higher percentage of aging cases of more than 60 days. Longer aging cases hint lack of timely responses to resolve and complete the cases to feedback to the customers. By realizing the above scenario, the present study thus aims to assess waiting time for the aging cases of the call centers that are related to the new account application complete cycle. Moreover, the study intends to identify underlying critical issues which caused aging cases, particularly for the new account application at the call center. Consequently, the study will propose some recommendations to address the delay within the aging cases process of the new account application.

2. Literature Review

Year after year, the service industry has been finding methods to improve its customer service delivery. For instance, concepts that had been promoted such as Total Quality Management (TQM), Six Sigma, Lean application, Business Process Re-engineering, Just-in-Time (JIT), Kaizen and Business Excellence (Roy Andersson, 2006). In general, Lean application relies on three very simple ideas namely, 1) deliver value from

the customer's perspective, 2) eliminate waste (things that don't bring value to the end product) and 3) continuous improvement (https://www.routledge.com, 2021). Lean in manufacturing for instance, is a production method which primarily aimed at reducing times within the production system as well as response times from suppliers and to customers which are called "The Toyota Way" or "Toyota Production System" (TPS) (https://en.wikipedia.org, n.d.). Toyota Production System is centered on the philosophy of continuously improving performance by systematically eliminating waste on the manufacturing floor (Thangarajoo & Smith, 2015). The Toyota Motor Corporation's vehicle production system established the "Lean manufacturing system" which has come to be well-known and studied worldwide (Toyota, n.d.). The main objective of Lean is to deliver quality and improved service to customers by detecting undesirable gaps in work processes, eliminating waste, and re-establish Leaner processes whilst seeking continuous improvement moving forward.

Service companies have been implementing Lean only in recent years. A paper investigated a different context of the application of the Lean methodology in the tertiary, to understand the differences in implementing Lean in services compared with the manufacturing industry, and what are the typical ways of adopting it (Portioli-Staudacher, 2014). In that research, a total of 600 service companies were contacted to find if the Lean approach was presented and less than 2% claimed to be adopting a Lean technique. This low percentage indicates how the Lean concept is still an insignificant concept in the services industry. The banking, insurance and healthcare industry only however be known to implement Lean. They further came to realize that comparing service industries is not the way to analyze Lean effectiveness. Instead, they should focus on differences among processes (value streams in the Lean terminology) with different structures within the same industry. Another aspect of difference in manufacturing and service under Lean implementation is the presence of customers in the service delivery system (Portioli-Staudacher, 2014). This view is agreed by another research on the potential of the Lean approach for improvement in service activity. Stating the presence of customers in the service delivery system brings an element that is new compared to manufacturing operations. Customers transform their role in the value application department, being a value stream creation partner (Sanz-Lobera, 2015).

It is also reported that very few studies were conducted on the Lean application effectiveness in a call center. Oneknown academic research was conducted, between January 2002 and June 2004 on the three (3) UK call service centers in financial service to assess the suitability of Lean application in a pure service context, the paper presented its results in the form of observations and numbers on the operational performance before and after Lean implementation (Piercy & Rick, 2009). The positive results which arise from its Lean implementation validate the effectiveness and usefulness of Lean in services and call centers. The apparent reduction in the number of calls per day after Lean implementation implies satisfied customers who no longer need to make repeat calls or the term they called 'failure demand'. The paper reported the implementation exercise further skipped two (2) departments involved in a total cycle of process flow which means unnecessary steps were removed. Greater research is still needed to verify real Lean applications in the pure service section (Piercy & Rick, 2009). From this perspective, this paper will be focusing on the call center's process flow in investigating its process activities. Using the Lean principle as guidance, the study will identify critical areas in its process activity(s) with waste potential that will affect customer satisfaction levels.

3. Research Methodology

This case study analyses the underlying critical issues of the new account application category within its process activities. With limited knowledge about the Lean concept in call center process activities (Piercy & Rick, 2009), the present study has a limited capacity to describe or assess using quantitative investigation methods. Instead, the qualitative method is used to fully understand the complexity of the issues within the process flow and time function mapping. The qualitative method will also give a better understanding of respondents' viewpoints on how they maneuver the handling and explaining to customers unresolved cases. Data is collected by conducting a semi-structured interview to offer respondents flexibility to express their views on the subject during the phone conversation. Respondents are selected by using a purposive sampling technique by considering the respondents' job responsibilities who are most impacted by the circumstances i.e., as the most relevant respondent for the study. The group of respondents consists of three (3) shift supervisors and two (2) staff in the call center. The group represents front-liners who have direct contact with

customers and the shift supervisors as the last point of contact with customers. The phone interview was a one-time session.

Table 2: Respondents' Profiles

Item	Respondent	Position	Years of Experience	Job Description
1	Shift Supervisor 1	Executive	8 years	i. Oversee the service level performance. ii. Monitor the team call queries.
2	Shift Supervisor 2	Senior Executive	10 years	iii. Manage communication with internal and external departments.
3	Shift Supervisor 3	Senior Executive	10 years	iv. Feedback to customers on resolved cases.
4	Staff 1	Executive	3 years	i. Attend to incoming inquiries from customers.
5	Staff 2	Executive	8 years	ii. Escalate cases to the support team for cases that require analysis.

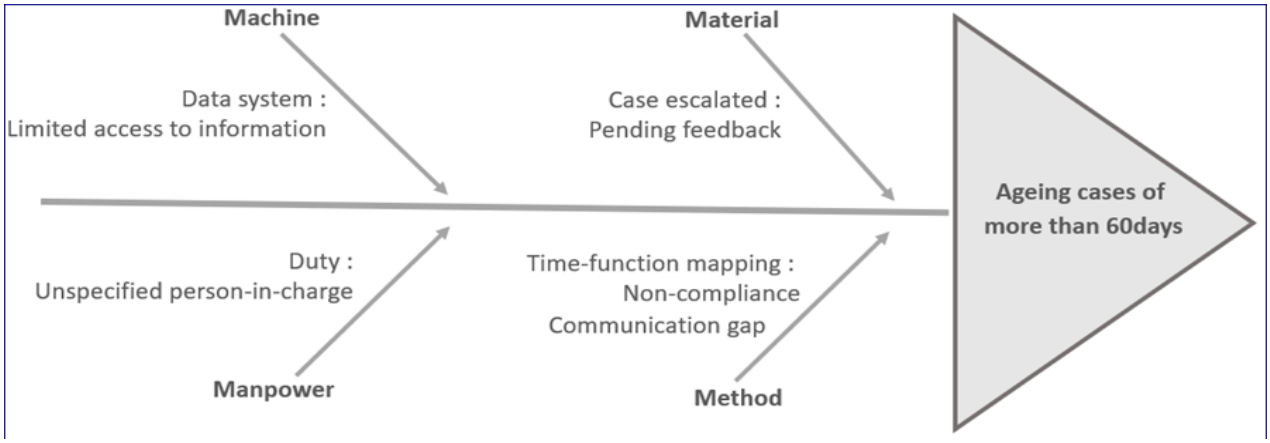
Three (3) questions were prepared before the scheduled interview to ensure the researcher's readiness in observing respondents' dynamics in answering the questions. The interviews lasted between 10 - 15 minutes each. The questions prepared are as follows:

- From the data given to me, shows some critical problems in your department for new account applications. Can you elaborate?
- From your experience and the information that you have, can you share the challenges your department faces in the delay in resolving the cases?
- How do you think this issue can be resolved?

4. Results

One glance at the case data in Table 2 might have given the impression that the callcenter team is inefficient in handling cases for timely completion. The call center would be perceived as slow in analyzing problem cases or probably lack of manpower to manage unresolved cases. It is believed such an issue could only be better understood through interviews in giving respondents the space and flexibility to express their opinions along the lines of the questions asked to determine the actual root cause. A fishbone diagram in Figure 2 is used to relate the issues that trigger the problem. Multiple variables are stated in the fishbone to explore the possibilities of how extreme each variable contributes as the potential cause(s). From the fishbone overview, one can understand why the waiting time occurs. Better still, to have an in-depth knowledge of which variable affects the waiting time the most is consequently identified as a critical area that needs attention and improvement.

Figure 2: Fishbone Diagram on Root Cause



As shown in Table 5 below, from the questions posed in the first column, answers from the interview resulted in diverse opinions, but respondents share the same goal; they wish to give timely feedback. The respondents expressed their dilemma about customers making repeat calls (follow-up calls) whereby cases have no information update after a stretched period of time. They share a common sentiment articulating issues concerning information availability. Two (2) shift supervisors remarked the same frustration of having no control over cases and information. In other words, they are not able to obtain the latest information even though it is readily available, because the application department personnel do not provide updates.

The other shift supervisor further remarked that they do not know what goes on within the applicable department or at which stage the case has progressed. To a point, the shift supervisors call customers to obtain updates if any colleagues from the application department had been in touch with the customers as a means of progress. The two (2) staff when interviewed used the same phrase "If I were to put myself in the customer's shoes." this clearly came from their empathy towards their customers' requests but have nothing to update customers. The call center staffs also commonly use the term 'pending application' when conveying updates to customers, as there is no information available at the time of the call while awaiting a shift supervisor and support team to send another follow-up email to the application department. In the fishbone diagram in Figure 4, this issue or problem can be viewed in the material section whereby 'Material' in this diagram is the case escalated that has yet to receive feedback from this respective team.

Limited access to system information under 'Machine' in the fishbone diagram also plays a significant role in information update that was expressed by respondents wishing that management would grant the call center access to the application department system to view information, instead of waiting for email replies from the application department. The majority of the respondents expect the managers in the application department to be more cooperative with the call center for information updates. This is classified under 'Manpower' in the fishbone diagram regarding personnel that should be assigned as a person in charge or a focal point to obtain information. The issues gathered from the respondents are closely related to the time-function mapping requirement which is to be within 60 days which clearly shows a high percentage of cases under new account applications that have exceeded the time frame. This issue is classified in the fishbone diagram under 'Method'. The research can conclude that the new account application category poses a high percentage of aging cases of more than 60 days for the year 2021 influenced by the factors gathered from the respondents.

Table 3: Feedback from Respondents

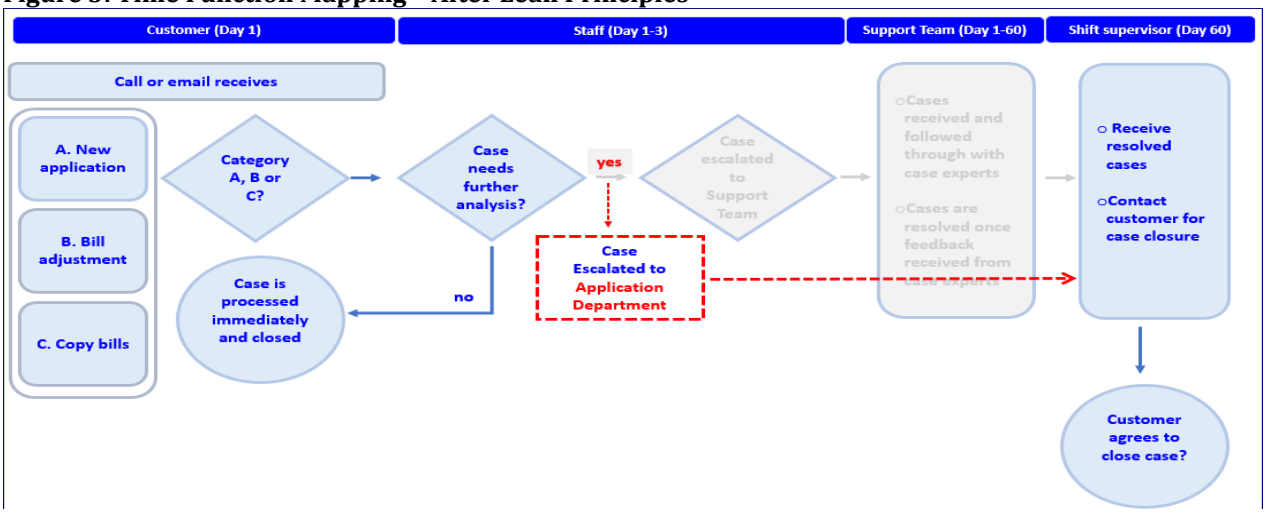
Item	Question	Shift Supervisor 1	Shift Supervisor 2	Shift Supervisor 3	Staff 1	Staff 2
1	From the data given to me, it shows a critical problem in application department for Application category. Can you elaborate	>Materials no stock. >Unfavorable answer from application department.	>Slow progress on update. >This has been a longtime issue.	>No step-by-step progress. >Obtain information from customers instead, to find out progress at the site.	>Materials no stock. >Delays from external vendors engaged by application dept. >Pending application department.	>Pending application department.

2	From your experience and information you have, can you share the challenges your department faces in the delay in resolving the cases?	>Bottlenecks. >Call center has no control over information. >How to please customer repeat calls.	>Call center has no control over information. >What to tell customer. >No information. >Repeat calls.	>No exact information.	>No exact answer. >Repeat calls.	>No access to system information. >What to tell the repeat call customers.
3	How do you think this issue canbe resolved?	>The application department be more stringent with their team information management and cooperative in providing information to call center.	>Increase in number of applications should prompt application department to increase manpower. >Appoint personnel as focal point of feedback call center. >Request for system access for information update.	>Application department and call center should be in one direction in their mission.	>Appoint personnel as focal point to feedback call center. >The application department personnel to give a timeframe of work progress.	>Be transparent on step-by-step progress. >Request for system access for information update. >Online meet with personnel for updates.

The findings elaborate on the complexity of a call center complaint environment with respondents hoping that the case expert team from the next level of process to give better cooperation. It is not particularly easy to apply the Lean concept when 'people matter' is involved in an attempt to improve the waiting time (aging cases). For Lean manufacturing, wastes such as machinery inefficiency in untimely delivery performance or an over-production can be adjusted by tweaking the machine control setting. However, in the service context environment, the process flow involving the human element such as in a call center whereby staffs have to maneuver their way in handling complex cases and convince customers without information at hand is not similar to machines tweaking in Lean for manufacturing. Customer satisfaction level within the call center can be measured by observing the repeat calls received because of unresolved cases. Study of Lean applicability in a call center affecting repeat calls which the study termed as 'failure demand' was conducted in the UK with three (3) financial institutions mentioned earlier in this paper.

Resulting in decreased numbers of repeat calls after Lean implementation (Piercy & Rick, 2009) signifying the importance of this research in obtaining repeat calls as a variable for analysis. The difference in Lean manufacturing, the factory does not receive repeat calls from the customers about their cars that are not yet fully assembled. This is why the human element must be fully considered in every aspect of their motivation, morale, skills and capability when recommending the Lean principle in a service context. From the respondents' remarks, though they have not realized or are familiar with the full benefits of Lean principles, their responses are an indicator they desire Lean principles along the process flow implying that Lean principles are in existence only if every person involved in the process activities cooperate and conform to the timeline. Lean concept is not just looking at personnel effort, it also filters through the process flow and elements involved within the process activities that can be improved to eliminate the waiting time. If combined personnel collaboration and improvement in the process flow waiting time, the Lean principle is therefore easily applied.

Figure 3: Time Function Mapping – After Lean Principles



As seen earlier in Figure 1 – before the Lean principle, for comparison and suggestion, the following is a recommended process flow associating changes in the process flow and management by intervening with the Lean principle. See also Figure 3 above for time function mapping - after Lean principles:

- Management to recommend the customer relationship management (CRM) system that is currently used in the call center to be extended and rolled out to the application department. A rollout to one of the technical departments was successfully done in stages to ensure information and instruction seamlessly flow from the beginning of the call received until the customer's issue is resolved. The same approach can be applied to the application department. In the Lean principle, a smooth flow of information from start to finish will ensure efficiency and improve customers' satisfaction whereby information is conveyed to customers on time. Recording and reporting of case escalations timeframe delivery by the CRM system can thus be analyzed for continuous improvement.
- Steps within the process flow are reduced whereby the case is escalated by staff via CRM directly to the application department. Instead of into the support team case pool which currently still needs the support team to collect the cases and distribute them to the respective department via emails. The time used to perform this escalation could be used bythe support team to analyze more complicated billing issues. Reduce waiting time or eliminating waste in time consumed, gives the personnel involved in the process activities to focus more on valuable cases such as bill disputes that require more attention to enable responding to customers promptly.
- Different timeframes set for each pending application department job can be categorized and justified according to most complex to least complex. The categorization reflects the critical areas within the application department which they can continue to work on within their department for continuous improvement in the future.
- Align with the KPI for the call center and application department for cases received related to the department's task to give the sense of ownership and responsibility to respond to the call center according to the time function mapping set. KPI is a systematic approach to monitoring staff performance for continuous improvement. The Lean concept emphasizes finding loopholes in the system for correction and re-training of staff to sharpen their skills.
- Grant the call center system access to enable the team to view updated information which can be translated into first call resolution for staff without the need to escalateto another level and await the support team to distribute the queries via email which has no value in the process flow.

Managerial Implications and Recommendations for Future Research: A call center department can use findings from this study to understand the dynamic of the process flow and process activities in gauging the underlying issues in the attempt to improve customer satisfaction level. This study provides constructive guidelines for firms to mitigate the consequences of complacency within the work culture by making full use of the system and manpower readily available to maximize efficiency. Lean principles are used as a form of 'box-ticking' in ensuring every element in Lean principles is fulfilled without being too rigid as there is a

human element that matters as far as the service context. Because of the limited research at the call center within the service industry concerning Lean principles, as suppose to the popularity of study about Lean in the manufacturing sector i.e., composed mainly of machineries, firms must have care and consideration towards employee's involvement within the process activities. Employee's motivation, ability and capacity to cope with the changes when introducing Lean principles is an utmost concern. Coupled with the day-to-day demand from customers could affect their enthusiasm and spirit. It is also recommended for future studies to be conducted in other service organizations that involved many respondents. It is also advisable for the present study to extend the application of the Lean principle in a quantitative approach so that the generalization of the results can be obtained and reported.

5. Conclusion

The majority of respondents' feedback expressed plight for more control in the process activities especially in obtaining information for customers. The core of call center activity is information escalation as the main product, yet it is a pressing issue with the application department. When a department sets a target and priorities in its key performance index (KPI), they are set in accordance with their departmental goal. The call center KPI mostly revolves around customer service in managing cases within the specified timeframe which may not be aligned with other department's KPI. Customer focus and centricity level therefore vary. Being one of the largest service organizations has its challenges in promoting competitive culture. Complacency culture slows down the work process. Urgency is deemed unnecessary by some departments since there is no pressing need to stay competitive in the market, unlike other service industries that fight for market share.

Customers will notice this, thus labeling the organization as a whole for being uncaring and non-attentive towards customers' requests. Lean principles concept looks into saving time within the process activities to improve efficiency. All it takes is re-engineering the process flow to simplify and cut the current time required or steps that do not add value. The lean principle in a service environment such as in a call center can be applied but it must be applied with due consideration of the personnel affected in the process activities. One must view it as beneficial to both the organization and its employees in terms of skillset training and development. The lean principle does not view critical areas that need correction as faults, instead, as a learning platform for continuous improvement. Changes are required to meet customers' expectations. Customers' satisfaction and positive testimonials are necessary to sustain the organization's reputation in the market as caring and efficient. Some of the best talents will be attracted to an organization that has been maintaining its service quality thus becoming the most sought-after employer in the market.

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4th Industry Revolution Digital Marketing Adoption Challenges in SMEs and its Effect on Customer Responsiveness

Shee Mun Yong
School of Business, UOW Malaysia KDU University College, Malaysia
sm.yong@uow.edu.my

Abstract: The 4th industrial revolution of cyber-physical technologies (4IR) intersecting digital technologies and entrepreneurship serves as an external stimulus in fostering a new method of venture creation transforming customers' purchasing and consuming behavior. Whilst large corporations are taking the lead in leveraging on 4IR digital marketing (DM) for their marketing strategy, studies have shown that small and medium enterprises (SMEs) are lacking behind. This study explores the conundrum using an exploratory sequential mixed method. Semi-structured interviews were carried out on a sample size of ten SME participants selected using non-probability purposive sampling and determined through attaining thematic saturation of discursive patterns. Scale development for quantitative instruments was performed using SPSS statistical software v22. A quantitative study was carried out on a sample size of 153 SME respondents. Analysis was undertaken using SPSS supported by paired-samples T-test. Kuskal-Wallis H test and Spearman's rho correlation test due to the nonparametric nature of data distribution. The outcome reveals that although SMEs are increasingly reliant on DM for their marketing strategy, most of these SMEs are only willing to invest in building low-level DM capability citing a lack of financial budget, inadequate technology infrastructure to support such setup, cyber security issues and lack of DM knowledge. Financial budget and technology infrastructure are considered the most critical concerns by SMEs with low and moderate DM adoption. However, these concerns are less pronounced in SMEs with high DM adoption. Finally, the weak but significant correlation between SMEs' DM adoption and customer responsiveness infers the significant role of 4IR technology as an enabler of digital marketing strategy that also depends on other critical contributing factors such as price and quality.

Keywords: *4IR; digital marketing; 4C's; SME; exploratory sequential mixed method.*

1. Introduction and Background

Digitization has changed the nature of entrepreneurial activity by adequately contributing to personalize marketing. The industrial revolution has made available a huge amount of information and depending on how this information is used could positively or negatively impact the trust-building factors of the business and their customers. Although digital marketing is not new to Small and Medium Enterprises (SMEs) the usage is rudimentary around products and brand promotion on popular internet and mobile apps and social media sites favored by younger generations. Malaysian Communications and Multimedia Commission (2018) reported that the percentage of Internet users at the national level has risen from 76.9% in 2016 to 87.4% in 2018. Nine out of ten Internet users are now using smartphones (93.1%) to go online. This survey is a testimony of the increasing influencing power of disruptive technology on the purchasing pattern of consumers. A trend SMEs simply cannot ignore. In the context of this study, SMEs is defined as small to medium enterprise under two main categories. In the manufacturing category, SME is defined as sales turnover not exceeding RM50 million or the total number of full-time employees not exceeding 200. SME in Service and Other Sectors category is defined as having a sales turnover not exceeding RM20 million or a total number of full-time employees not exceeding 75 (SMECorp Malaysia, 2020).

In addition to the changing consumer spending pattern, 4th Industry Revolution technology (4IR) combines engineering practices with powerful technological tools such as big data analytics, additive manufacturing, cloud computing, and internet-of-things (IOT) revolutionizes digital marketing shifting the way traditional mass marketing and digital marketing work. The new marketing era is moving towards personalized marketing requiring providers to stay connected, agile, proactive, and intimate with their target market. Although the Malaysian government through its Industry4wrd readiness assessment has allocated RM210M from 2019 to 2021 to support SME 4IR readiness (Malaysia Productivity Corporation, 2019), it is yet proven a success. A previous study (FMM ICT Adoption Study, 2016) has reported that 20 percent of SMEs use Information and Communication Technology (ICT) applications actively. However, only 16 percent embark

on e-commerce activities. Despite the incentive by the Malaysian government, just between 10 and 15 percent of SMEs have successfully taken steps to adopt 4IR. For most parts, these SMEs do not have a choice due to their dealing with tier-one MNCs (Mok, 2019). It is intriguing that given the incentive and a shifting socio-economic and technological paradigm, SMEs are still struggling to adopt 4th industry revolution digital marketing (DM). This study intends to further explore these conundrums and the effect of DM on SMEs' customers.

2. Literature Review

The introduction of 4IR which focuses heavily on interconnectivity, automation, machine learning, real-time data and smart digital technology has raised the standard of marketing capabilities. Digital marketers now have the ability to access limitless digital content and channels building better brand positioning and leveraging on specific needs of social media communities (Digital Marketing Institute, 2017). Marketing strategies are no longer about the 4P's of product, price, place, and promotion but the new 4C's of Co-creation, Currency, Communal Activation, and Conversation which represent a revolutionary model of brand-to-customer communication (Pamastillero, 2017). In this model, companies involve customers early during the ideation stage in the Co-creation process to customize and personalize elements according to their community needs. Pricing, like Currency, is set dynamically depending on the spending pattern of the consumer and customizes according to the customer's historical purchase pattern and the proximity of prospects' location to the store. Distribution is carried out using Communal Activation which leverages 3D and online portals to allow customer access to products anytime and for the products delivered directly to your doorstep. Selling is no longer a passive object of convincing customers of the merits of your products but multiple ways of engaging with your customers. Conversation can further enhance DM providing companies with in-depth analytics and search engine rankings.

To page views, likes, and comments that eases their engagement with customers (Digital Marketing Institute, 2017). From the consumer perspective, this revolutionary digital marketing increases their authority as consumers get to enjoy and reap the benefits of unparalleled freedom in selecting media and entertainment options according to their preferences. With the power of cloud computing facilitating on-demand data storage and computing system resources, digital and social media platforms are no longer restricted and confined to the limitation of their computing capacity. It led to a change in software development behavior of focusing on quality rather than worrying about storage limitations. The plethora of new mobile and web cloud apps that provide convenience and ease of use have captivated the interest of digital users resulting in the high dependency of consumers on digital electronics in their everyday life (Lekhanya, 2015). Business uses this opportunity to reach and capture the interest of potential customers globally through the simultaneous use of multiple digital platforms. Mogos (2015) postulated that firms and manufacturers are progressively implementing digital marketing to capture and respond positively to the profusion of choices and ever-changing needs of consumers whilst building and improving existing customer relationships. Having a better understanding of consumer needs and preferences would lead to product differentiation and innovation of new products and services.

Simmons, Armstrong and Durkin (2011) identified four key factors that are likely to influence the adoption of websites and technology. These elements include the owner-manager's willingness to embrace technology and the opportunities it offers, a procession of an "e-Vision", the ability in understanding customers and their needs on how they might want to engage with the business online and having an online value proposition that takes the form of information on products and services but with customer feedback mechanisms. However, these factors do not account for the low adoption rate of DM among SMEs compared with tier-one corporations (Jones, Alford and Wolfenden, 2015). The difficulties with embedding DM stemmed from several reasons. The notable ones are employee resistance, a lack of technical 'know-how' (Leeflang, Verhoef, Dahlström & Freundt., 2014) and a lack of marketing competency, along with all the other associated limitations of a small business (Xiang & Gretzel, 2010) such as lack of finance, lack of business resource (Thompson et al., 2013). The Technology-Organization-Environment (TOE) framework based on the elements of technology, organization, and environment seems more apt in explaining technology adoption decisions (DePietro, Wiarda & Fleischer, 1990). Whilst external task environments such as industry and market structure, technology support infrastructure, and government regulation form the environmental context.

Organizational context includes the firm size, resource availability, and linkages among employees. The final element of Technology infers the availability and characteristics of both the internal and external technologies relevant to the firm. These three elements present "both constraints and opportunities for technological innovation" that influence the way a firm adopts new technology (Tornatzky and Fleisher 1990). Whilst it is not disputable that the identified challenges are banes to SMEs' adopting DM, not investing would impede their ability to grow their bottom line. Studies such as have indicated a correlation between the use of digital technology and a company's growth. This literature seems to infer a myopic attitude on the part of SMEs that focus on short-term results which begs the question of whether this line of thinking ramifies the slow adoption of advanced technology among SMEs. In our attempt to answer the question, two objectives were established:

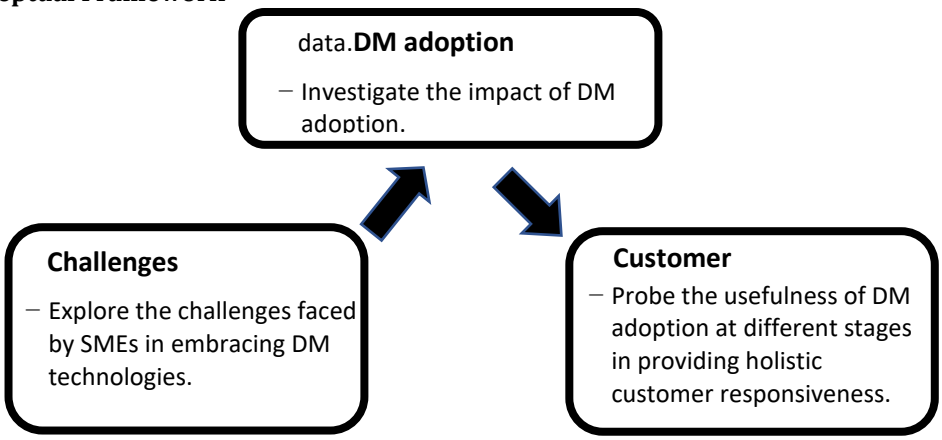
- Explore the challenges faced by SMEs when investing in DM for long-term profitability.
- Investigate the impact of DM adoption in small business organizations.

One key role of DM is as a support mechanism for enterprises to develop and strengthen their relationships with customers (Alford & Page, 2015). It's about caring for customers, listening to their needs, and finding the right solution that would build an emotional connection between the customer and the brand (Morgan, 2018). Having the right marketing strategy enables small businesses to create values and build brand loyalty while strengthening the business' competitive position both locally and abroad (Correia, et al., 2016). Deployment of DM further increases the effectiveness of customer care by providing quality information, individualizing information, and enhancing the quality of data disseminated to the target market. Having such actions would enhance business reputation, develop innovative products and services that would drive up sales and increase efficiency while assuring the reliability of product images and reduction in cost intended for traditional marketing tactics. Although the benefits of DM adoption are not disputed, what specifically lacking is how adopting 4IR digital marketing in SMEs affects their customer responsiveness. This question forms the third research objective which is to probe whether SMEs utilizing DM could effectively respond to market needs, create better brand awareness, and build superior and holistic customer care collectively made up of customer responsiveness (Signpost, 2022).

3. Research Methodology

From the arising research questions, three qualitative objectives form the core of this study:
QLRO1: Explore challenges faced by SMEs in embracing DM
QLRO2: Investigate the impact of DM adoption in small business organization
QLRO3: Probe the usefulness of DM in providing holistic customer responsiveness.
Based on these objectives, this study hypothesizes the research's initial themes through a conceptual framework (Figure 1) prior to data collection and supports them with evidence gathered from the data in the form of codes (Byrne, 2022).

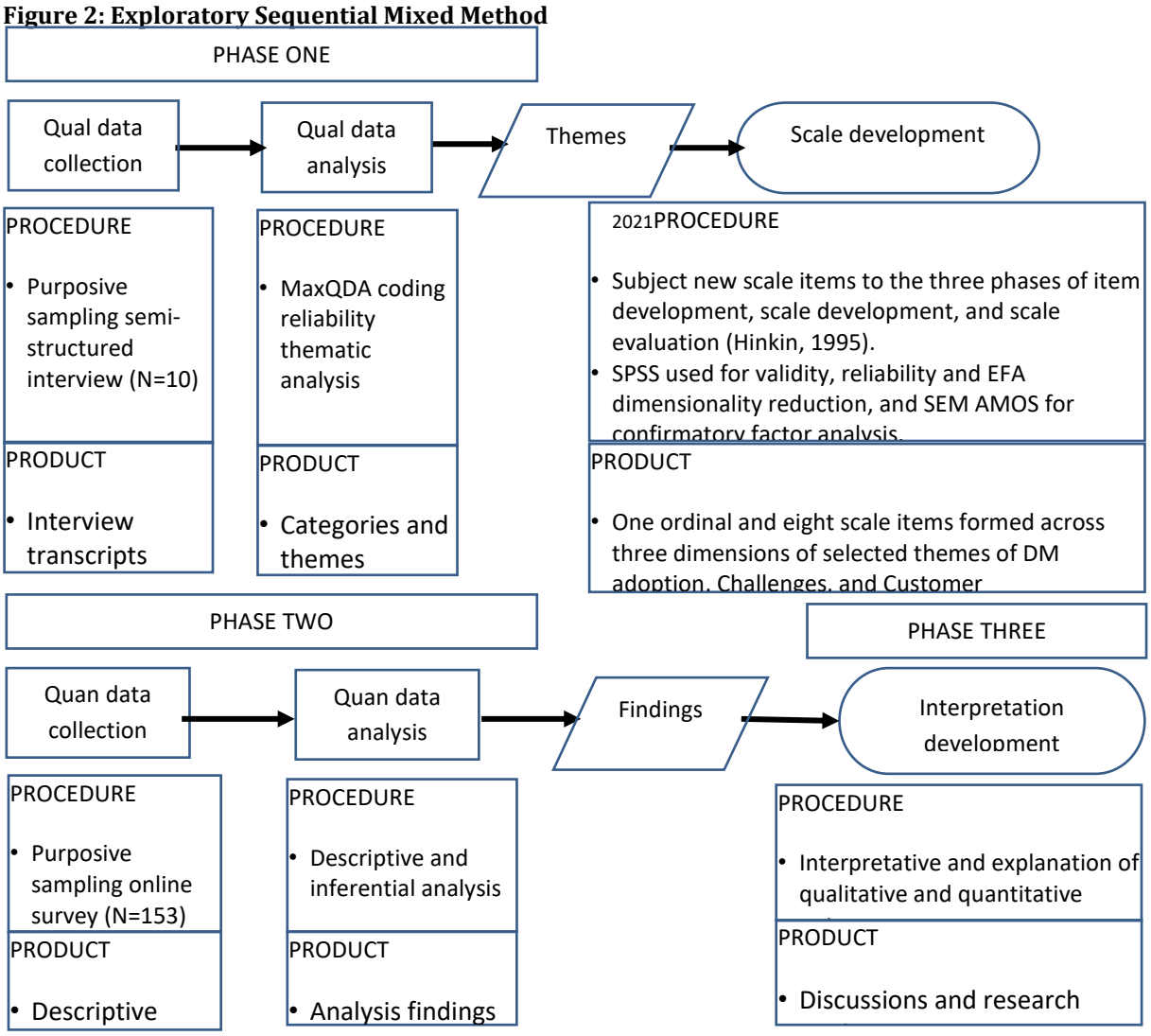
Figure 1: Conceptual Framework



The construct of DM adoption forms the core of the framework affected by its environmental challenges and influences the construct of customer responsiveness.

Exploratory Sequential Mixed Method Approach: This study explores the conundrum using the three-phase exploratory sequential mixed method study design (Figure 2). The first phase is an inductive exploratory primary qualitative phase in which data collected from purposive sampling semi-structured interview was analyzed using MaxQDA coding reliability thematic analysis (Hinkin, 1995). Based on the core themes, the scale development process was carried out to transform domain items into scale items for use in quantitative studies to triangulate the qualitative outcome (Greene, Caracelli, & Graham (1989). The second phase involves using a similar non-probability purposive sampling technique by sending emails to SME representatives and inviting them to complete an online survey. The sample was analyzed using a combination of descriptive and inferential analytical methods. Although the non-probability purposive sampling method is commonly used in qualitative research to identify and select participants who could provide related information-rich cases, it can be used for both qualitative and quantitative research techniques (Palinkas et al., 2013). In the final integration phase, findings from both qualitative and quantitative studies were collated and interpreted to explain the outcomes that connect both strands of data (Fetters, Curry & Creswell, 2013).

Figure 2: Exploratory Sequential Mixed Method



4. Analysis

Phase One: Inductive Exploratory Approach: In the exploratory qualitative phase, participants (Table 1) were selected for their DM knowledge, and their companies having implemented some forms of 4IR digital marketing tools. The interviews that took place at the onset of the Covid-19 pandemic in Malaysia involved

participants who were either founders or senior managers of SMEs located in Shah Alam, the state capital of Selangor in Malaysia.

Table 1: Participant Profiles

Actor	Industry	Roles	Company Registration Date
A	NLP consultancy, B2B	Founder	2010
B	Sportswear manufacturer, B2C	Founder	2012
C	IT services, B2B	Founder	2009
D	Food and beverages supplier, B2B	Founder	2014
E	Power tool distributor and supplier, B2B and B2C	Senior Manager	2007
F	Fashion designer and manufacturer, B2C	Founder	2008
G	Education services, B2C	Founder	2011
H	Green technology, B2B and B2C	Founder	2006
I	Financial services, B2C	Founder	2010
J	Trading (jewelry), B2B	Founder	2014

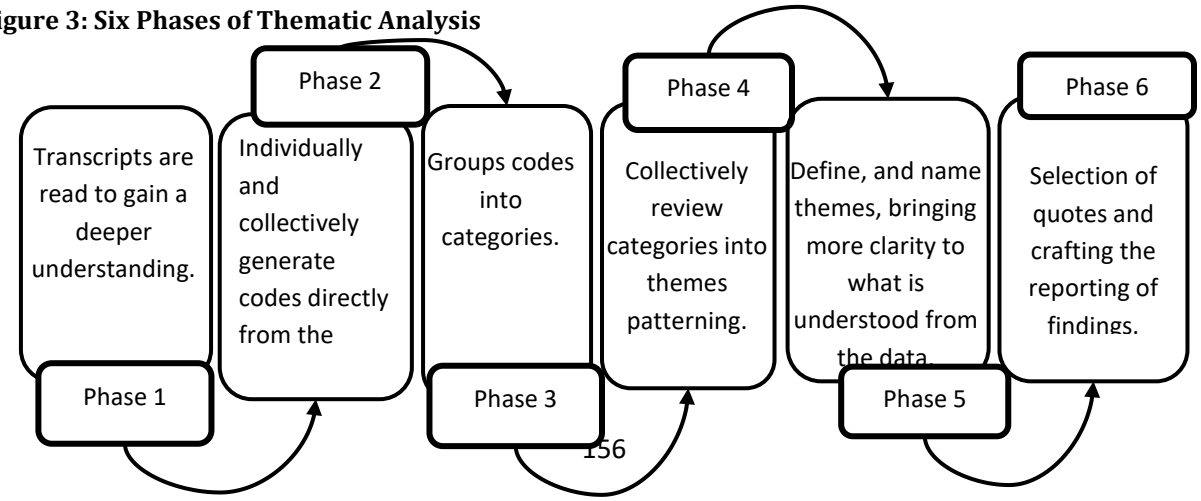
The sample size was determined through the attainment of thematic saturation of discursive patterns (Morrow, 2005) and consistency and repetition of findings (Vasileiou, 2018) from an encompassing examination of incremental sample data collected during interviews. As the study has a narrow scope around the three mentioned objectives, we were satisfied after having interviewed the tenth actor that we have achieved the desired thematic saturation and consistency of discursive patterns. Prior to the interview, a pre-test was carried out internally to verify that the questions used for the interview are well understood and do not make respondents feel uncomfortable or confused. These questions were created based on the research conceptual framework (Table 2).

Table 2: Questions

Semantic Themes	Question
Challenges	Can you share some of the difficulties your company faced with embedding 4IR digital marketing into your marketing strategy?
DM adoption	How would you describe the adoption of 4IR digital marketing in your company?
Customer responsiveness	What is the impact on performance, effectiveness, efficiency and creativity after implementing 4IR digital marketing?
	Has 4IR digital marketing positively or negatively affected your relationship with your customers?

Data collected was analyzed using thematic analysis (TA) which uses a flexible process to provide valuable, comprehensive, and complex descriptions of data (Vaismoradi, Jones, Turunen, & Snelgrove, 2016). As the central focus of the study is to explore and examine the generalized semantic themes, an inductive approach was used to seek and examine if "generalizations" can be drawn by going from the specifics. TA comprises a six-phase process 1. Data validation, 2. Initial code generation, 3. Categories generation, 4. Themes patterning, 5. Defining and 6. Naming themes and reporting of findings (Maguire, 2017) (Figure 3).

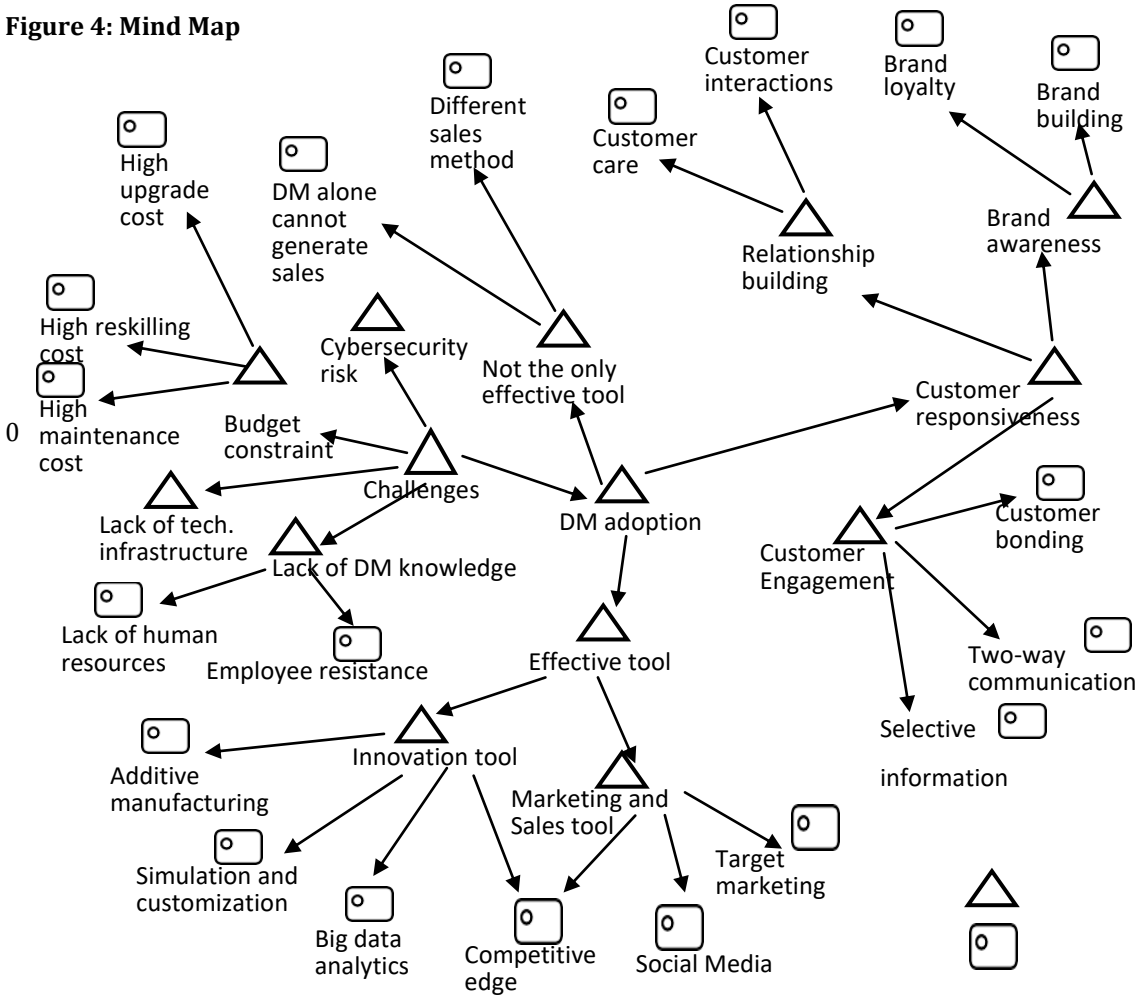
Figure 3: Six Phases of Thematic Analysis



Initial Coding and Labeling: The actual interview session was audio recorded after assuring respondents of the descriptive validity of the data collected and receiving their consent. The data including non-verbatims were transcribed and verified by an independent party before the participants were asked to give their concurrence that the contextualized data is in accordance with the conversation and observations captured during the interview. Initial codes were generated based on keywords and patterns of the participants' statements. The labels represent the important features of the data and thus, help to summarize and synthesize the responses. Labels that are congruent in meaning are kept in the same category or subcategory to help with the provision of details for analytical theme development (Vaismoradi et al., 2016).

For example, to the question "What is the impact on performance, effectiveness, efficiency, and creativity after implementing 4IR digital marketing?" participant F responded, "So to sum it up, it is a vital marketing tool for companies to innovate and build a competitive edge in the market." Accordingly, from the three keywords "vital marketing tool", "innovate", "competitive edge" extracted, "vital marketing tool" was placed under "Effective tool" category and labelled as "Marketing and Sales tool" and "competitive edge" label placed below "Marketing and Sales tool" indicating the superiority of the tool. "Innovate" on the other hand was placed under "Effective tool" category and labelled as "Innovation" indicating the creative use of the different 4IR technologies. These labels were further scrutinized on the meaning of their codes and how they relate to one another. Related labels were collapsed to form categories for more efficient analysis. As a result, twenty labels and fourteen categories and subcategories were created in the mind map (Figure 4).

Figure 4: Mind Map



Challenges: The first of the broad categories is "Challenges". Broad category groups are associated with subcategories of the central phenomenon or concept in a study. This "Challenges" broad category is made up of issues that are detrimental to the adoption of DM expressed in the question: "Can you share some of the difficulties your company faced with embedding 4IR digital marketing into your marketing strategy?" Almost all participants agreed that the most prevailing challenges are a financial constraint. Participant A expressed: "Company has to spend millions in upgrading their technology, reskilling workers, and employing new talent when embarking on further DM upgrades and that does not even include the post-upgrade maintenance cost". Participant B concurred saying: "Limitation on the budget" is hindering their ability to reskill the "whole company to mentally and physically prepare the employees". SMEs unlike big corporation are at most time running on shoe-strung budget that is barely enough to cover their day-to-day operation. The additional cost brought about by technology upgrades would further strain the sustainability of their business without any guarantee of return on their investment. Asides from budget constraints, there is consensus that SMEs are hampered by the lack of DM knowledge and technology infrastructure in managing advanced technology.

Participant G said: "We don't have enough skilled employees relying on a few workers including me (the founder) to perform multi-tasking duties". To excel, "we (SME) need to spend lots of time and effort not to mention the cost to keep our systems and technology infrastructure up to date, create quality contents, build algorithms and online relationships in an ever-changing marketing process that we could barely afford given our resource constraints". Participant H asserted: "Upgrading technology infrastructure is very costly. We spent a lot in getting our infrastructure ready to support cloud computing and simulation because of the need to comply with the advanced technology standard of our large client". The final challenge that was raised by participants is a cyber security risk. There is fear amongst SMEs that automation of their marketing strategies would risk information pilferage. New technologies have design flaws and vulnerabilities that could be exploited by technologically advanced criminals. Security compromise can have a devastating effect on small businesses since they do not have the capabilities and resources to recover from such attacks. Participant C reacted: "If the company and customer's data and information is leaked …dragging our reputation down…lose its customer's loyalty and... destroy the company". Unless pragmatic solutions can be found to alleviate the concerns of cyber attacks, the loss of confidence would further serve as a setback to SMEs adopting DM. It is noted that these companies are using different levels of DM for their marketing strategy.

Digital Marketing Adoption: The adoption of DM forms the second broad category. The data were analyzed based on responses given to the question: "How would you describe the adoption of 4IR digital marketing in your company?" Two subcategories were formed. The first is "Not the only effective tool". Whilst most see value in using the tool, a few of the participants are of the opinion that 4IR digital marketing tool is not the only effective tool. Participant C opined: "For some B2B, having just technology-driven digital marketing is not enough due to the large spectrum (different ways) of doing business". Participant A concurred stating: "There is no evidence to suggest that digital marketing capabilities alone bring in new customers". He further states that "customer conversion is a result of a few factors primarily pricing and quality of products". Although there are currently not many studies that empirically determine the correlation between DM and new customer acquisition, studies such as the 2019 Digital Marketing Survey Results (Powderkeg, 2019) have postulated the importance of digital marketing as an effective lead generation tool. Another Study has indicated that on average, the conversion rate for lead generation in B2B business is between 5% and 10% (Rivard, 2016).

For well-designed digital marketing, the conversion rate can even go up to 25% (Ortner, n.d.). These studies as well as others infer the effectiveness of digital marketing in generating leads and that more leads would invariably result in higher chances of customer conversion. The other subcategory is using DM adoption as an "Effective Tool". Most participants found value creation in using DM for innovations and developing a business competitive edge. In support of innovation as an effective tool: Participant H asserted: "We use algorithms that our data analytics experts have created to analyze data from many different sources to examine market trends that help drive our green marketing campaign". Participant I opined: "We interact with our customers and respect their opinion, so it (opinion) helps in customizing our services using computer simulation". Participant F stated: "Staying connect(ed) with customers and then have the marketing team works with our fashion designers to create 3D printing of new designs". In support of using DM as an effective marketing and sales tool to develop a business competitive edge, all participants agreed that it has a

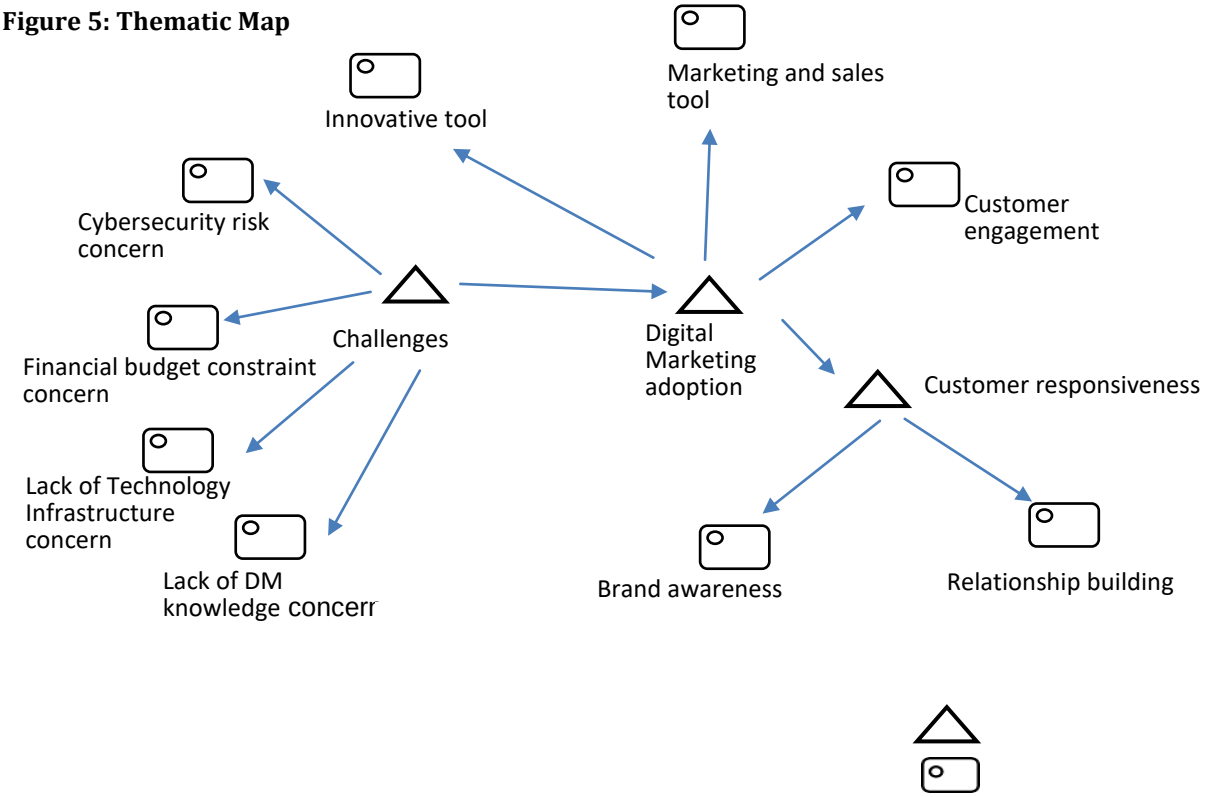
major role in their social media marketing in promoting content and generating sales leads. It is also a great target marketing tool for selective information dissemination.

Effect of DM on Customers: The third and final broad category is the effect of DM on customers. Although all participants saw value in using DM, there is still the question of its effect on consumers which is assumed in two associated sub-questions: "What is the impact on performance, effectiveness, efficiency, and creativity after implementing 4IR digital marketing?" and "Has 4IR digital marketing positively or negatively affected your relationship with your customers?" There was consensus among almost all participants of a positive impact including building relationships, generating brand awareness, and engaging with customers. In support of customer engagement: Participant D replied: "DM is a very efficient way for us to connect with the customers and for them to give suggestions, and comments for improvement ".
Participant I opined: "We interact with them and respect their opinion, so it (opinion) helps in customizing our services using computer simulation creating a bond between us".

In support of brand awareness:
Participant F stated: "Having additive manufacturing in the form of 3D printing boosted my brand and helped (achieved) go-to-market strategy creating brand awareness and loyalty".
In support of building relationships:
Participant E reflected: "Using DM helps us establish close interactions with our big corporate clients, especially in supply chain management."
Participant J concurred: "With the use of advanced technology tools, we can be more empathy to our customer needs…providing high-value products shows that we genuinely care for our customers".
Based on the participants' responses, three associated subcategories of relationship building, brand awareness, and customer engagement were developed and consolidated under the broad category of "Customer Responsiveness".

Themes Patterning: In the final stage of our analysis, we rationalized the categories into designated distinct themes by identifying, analyzing, and interpreting patterns of themes within the qualitative data (Maguire & Delahunt, 2017). It results in the extraction of three major themes and nine categories (Figure 5) from the initial list of categories and coded labels.

Figure 5: Thematic Map



Theme 1: Digital Marketing Adoption: At the core is the "Digital Marketing adoption" theme that is used primarily to investigate research objective QLRO2 on the impact of SMEs adopting DM. From a semantic theme standpoint, DM can be an effective marketing and sales tool for personalizing and customizing a company's products and services in accordance with market needs. However, the latent aspect of the theme infers that SMEs have yet come to terms with the industrial revolution of advanced technology. This is reflected by their hesitation to upgrade and expand on their DM especially during the Covid-19 pandemic citing the identified challenges despite acknowledging the superiority of the advanced technology. As SMEs are running on a shoe-string budget, most are not willing to take risks and will only do so when their retained earnings allow them to increase the financial budget.

Theme 2: Customer Responsiveness: The other aspect of our research objective QLRO3 is to probe the usefulness of DM adoption in providing holistic customer responsiveness. The semantic theme indicates a general agreement amongst participants that DM is a great tool for engaging with customers, building relationships, and establishing brand awareness. However, relationship building, innovations and brand awareness alone may not translate into sales as buying decision process depends on other critical factors such as price and quality (Yong & Renganathan, 2019). The latent theme infers that branding must be accompanied by innovations that strive on price to quality consideration to achieve positive customer responsiveness. It's about caring and fulfilling the needs of customers at every touch point he or she has with the company. Having holistic customer care goes a long way toward mitigating churns and generating repeat sales and customer referrals. This strategy is cost-effective as studies have shown that companies are spending five times more acquiring a new customer than retaining an existing customer (Wertz, 2018). Using "Customer responsiveness" as the theme appropriately reflects the inductions of both semantic and latent in that it establishes an emotional connection between the brand and its customers and holistically addresses the needs of its customers.

Theme 3: Challenges: The final research objective of QLRO1 is to explore challenges faced by SMEs in embracing DM. Findings indicate that SMEs are facing various concerns about expanding their existing DM capabilities. Apart from the two participants, most are reluctant to upgrade and harness the power of 4IR technology despite acknowledging its benefits citing several reasons. First is the financial budget constraint concern that SMEs with their limited budget find the high transition cost difficult to bear. There is also the automation cost associated with setting up technology infrastructure including license fees, the need for huge data analytic storage, and engaging IT consultants. Moreover, relieving workers from duty for reskilling and upskilling training would leave a void that is critically needed in operation and revenue-generating activities which leads to the second concern of the lack of DM knowledge. In a thinly spread organization of typical SMEs where every employee is expected to multitask, specialization and employees resisting new technology would have a negative impact on the organization's depleted resources.

Although these happen in big corporations, the impact is circumvented by the larger pool of resources. Big corporation also has the financial clout of hiring technical experts for their technical work. Unfortunately, SMEs do not have the same luxury. Having inadequate DM know-how resources would seriously undermine the ability of SMEs to move forward with automation. Third is cyber security risk concern. Most SMEs are equipped with basic malware protection. As the full-scale DM model requires huge data storage more economically solicited through cloud computing, the transmission and storing of sensitive information in the public internet cloud have raised a concern. Although cloud providers such as Amazon Web Service or Microsoft Azure offer security tasks such as monitoring, patching, and incident response (Dekker & Liveri, 2015) the security protection is confined to the internet cloud service providers whilst SMEs' own IT infrastructure continues to be exposed.

Scale Development: Having accomplished the three qualitative research objectives, two clarifying questions arising from the study that required confirmation. One, we were unable to determine the magnitude of these challenges. For instance, do SMEs have the same level of concern for all challenges or does the level of concern varies across different stages of DM adoption? Two, what are the linkages between different stages of DM adoption and customer responsiveness and how tightly coupled are these linkages? We intend to resolve these clarifying questions through the formulation of two quantitative research objectives:

QTRO1: Examine the level of concern of the challenges within each stage and across different stages of DM adoption.
QTRO2: Determine the linkage between different stages of DM adoption and customer responsiveness.
As part of the sequential explanatory mixed method framework, the scale items used in resolving the clarifying questions were developed via the three stages of item development, scale development, and scale evaluation (Hinkin, 1995). Adoption of the DM theme was set up as an ordinal scale following Russel's (1995) stages of (1) awareness, (2) learning the process, (3) understanding the application of the process, (4) familiarity and confidence, (5) adaptation to other contexts, and (6) creative applications to new contexts. As the research scope covers companies that have implemented some level of DM, both "awareness" and "learning stages" were not included in the study. "Understanding the application of the process" is classified as low degree of adoption, "familiarity, and confidence" as moderate, and both "adaptation to other contexts", and "creative applications to new contexts" as high degree of adoption. In addition, four scale items were developed representing the Customer Responsiveness theme that comprises brand awareness, relationship building, and customer engagement. Two of the scale items 1. Faster responses to issues, needs, or complaints and 2. Faster, and easier-to-use options follow Wagner and Majchrzak (2006) postulation of customer engagement.

As an intensity of customer participation with both representatives of an organization and its customers in a collaborative knowledge exchange process. As Customer relationship management (CRM) is a critical component in DM of being responsive to the customer (P2P, 2022), a scale item "Staffs are knowledgeable and responsive to customer needs" was conceived. Finally, brand awareness is represented by "Clear, consistent brand messaging and information". The challenge theme is made up of four scale items with each representing the category of 1. Financial budget concern 2. Cyber security risk concern 3. Lack of technology infrastructure concern and 4. Lack of DM knowledge concern. Both Customer Responsiveness and Challenge variables are measured using a five-point psychometric Likert scale ranging from "1 = Strongly disagree", "2 = Disagree", "3 = Neutral", "4 = Agree" and "5 = Strongly agree". From the initial scales generated, the items were evaluated using SPSS v28 Exploratory Factor Analysis (EFA) for dimensionality reduction. Fit indices of Confirmatory Factor Analysis (CFA) were examined using SPSS AMOS structural equation modeling. The final scale was validated using Cronbach's Alpha (Hinkin, 1995) (Table 3). Based on the rule of thumb of an ideal ratio of ten participants for each scale item (Nunnally, 1978), the required sample size for the eight items is 80 respondents although the actual sample size used in the scale development was 125 respondents.

Table 3: Scale Development

Theme	In-Person Interview	Item development	EFA Factor		Scale evaluation
			1	2	
		Ordinal: Level of Adoption			Challenge Cronbach's Alpha: .812
DM adoption	How would you describe the impact of digital marketing on your company?	Low: Understanding the application of the process Moderate: familiarity, and confidence High: Adaptation to other contexts, and creative applications to new contexts			Customer Resp. Cronbach's Alpha: .805 **Fit Values** p-value = .032
		Factor 1: Challenges			
Challenges	Can you share some of the difficulties your company faced with embedding 4IR digital marketing into your marketing strategy?	C3. Cybersecurity is no longer a huge concern	.837		Cmin/df = 1.726 GFI = .954 AGFI = .903 TLI = .944 CFI = .966 RMSEA = .069
		C2. Financial budget to support 4IR digital marketing is adequate	.753		
		C4. Tech. the infrastructure supporting 4IR digital marketing is sufficient	.785		

		C1. Sufficient knowledgeable 4IR digital marketing employees	.619
		Factor 2: Customer responsiveness	
Customer Resp.	What is the impact on performance after implemented DM? Has DM positively or negatively affected customer relationship?	R3. Clear, consistent brand messaging and information (Brand Awareness)	.821
		R1. Faster responses to issues, needs or complaints (Cust. Engagement)	.792
		R2. Products and services are responsive to customer needs (Relationship building)	.769
		R4. Faster, and easier-to-use service options (Cust. Engagement)	.765

Phase Two: Quantitative Analysis

Distribution Method and Data Collection: The actual study was carried out using a non-probability purposive sampling method drawn from a population of 318,888 SMEs that have implemented 4IR technology representing 26% of the SMEs registered under SME Corporation Malaysia (DOSM, 2021). Of the total 191 responses received, 38 were rejected as they did not meet the requirement of a company having some form of 4IR technology to support their marketing strategies giving a quantitative sample size of 153 respondents.

Analysis: Data for the actual run was analyzed using SPSS statistical software v28. Descriptive statistics were used to understand the demographics and characteristics of the respondents. Inferential statistical testing was carried out to determine the level of concern companies have for the challenges and correlation between DM adoption level and customer responsiveness. Screening and validity tests showed no multivariate and multicollinearity issues with the sample collected.

Descriptive Statistical Analysis: Demographic profile of the respondents (Table 4) shows that 84.3% were from the Information and communication, Manufacturing, Mining, Quarrying, and Services industry with the remaining 15.7% of the respondents from the Agriculture and Construction industry. There is a wide spread of 4IR technology used. Big data analytics (24.8%) is the most widely used application followed by cloud computing (16.3%), additive manufacturing (13.1%), system integration (11.1%), augmented reality (9.8%), internet of things (9.2%), and robotics (7.2%). Cross tabulation between the Industry Sector and Types of 4IR technology adopted shows Information and Communication technology industry uses mostly big data analytics, cloud computing, and system integration followed by the Manufacturing industry mostly on additive manufacturing, the internet of things, and robotics and finally the Service industry uses mostly simulation. In terms of employment position, the majority of the respondents are in management roles (83%) either as Managing Director/CEO, senior manager, or manager with the remaining 17% as owners or proprietors.

Table 4: Demographic Profiles

Item	Classification	Frequency	Percentage
Industry Sector	Agriculture	8	5.2
	Construction	16	10.5
	Information & Communication	33	21.6
	Manufacturing	40	26.1
	Mining & Quarrying	26	17.0
	Services	30	19.6
Type of 4IR Technology Adopted	Additive Manufacturing	20	13.1
	Augmented Reality	15	9.8
	Big Data Analytics	38	24.8
	Cloud Computing	25	16.3
	Horizontal & Vertical System Integration	17	11.1
	Internet of Things	14	9.2
	Robotics	11	7.2
	Simulation	13	8.5
Employment position	Owner/Proprietor	26	17.0
	Managing Director/CEO	41	26.8
	Senior Manager	41	26.8
	Manager	44	28.8
	Other	1	0.7

Inferential Statistical Analysis: In our quest to understand the clarifying question of whether companies have the same level of concern for all the challenges, the samples were first segregated into the three distinct stages of DM adoption. At each stage, a paired-samples T-test was carried out to compare and determine the significance of paired mean difference (Table 5). This approach was taken to eliminate possible variations between samples that could be caused by other factors. The outcome shows that within each stage of DM adoption, SMEs with low DM adoption are most concerned with Financial budget (B Mean= 2.74, SD=.900) and Technology infrastructure (I Mean = 2.82, SD =.927) indicated by the low mean value. In addition, the difference in mean value between Financial budget concern (B) and DM knowledge concern (K Mean = 3.26, SD = .686) (B/D paired difference t=4.269, sig. = .000) and between Financial budget concern and Cybersecurity risk concern (S Mean = 3.15, SD = .899) (B/S paired difference t=-2.890, .005) are statistically significant.

Moderate DM adoption SMEs are most concerned with Technology infrastructure (I Mean = 2.73, SD = .899) indicated by statistically significant low mean value when compared with the other three concerns (K t = 5.441, sig.= .000; B t = 2.164, sig. = 0.034; S t = 4.281, sig. = .000). This is followed by Financial budget concern (B Mean = 3.00, SD = 1.16), DM knowledge concern (K Mean = 3.43, SD = .810) and Cybersecurity risk (S Mean = 3.27, SD = .899). It is interesting to note that SMEs with high DM adoption have the highest mean value (K Mean = 3.56, SD = .112; B Mean = 3.70, SD = .869; S Mean = 3.48, SD = .108; I Mean = 3.63, SD = 1.08) for all identified concerns with no significant paired difference. The results imply that SMEs with high DM adoption understand the valued contributions of 4IR technology in augmenting their digital marketing strategy and driving their business to the next level of response to market needs.

Table 5: Paired Samples T-test

Paired samples test (Low-level DM adoption)

				K Paired Diff.		B Paired Diff.		S Paired Diff.	
	N	**Mean**	**SD**	**t**	**Sig.**	**t**	**Sig.**	t	Sig.
DM knowledge (K)	66	3.26	.686		Null				
Financial budget (B)	66	2.74	.900	4.269	.000		Null		
Cybersecurity (S)	66	3.15	.899	1.000	.321	-2.890	.005		Null
Infrastructure (I)	66	2.82	.927	4.536	.000	-.516	.608	2.900	.005

Paired samples test (Moderate level DM adoption)

				K Paired Diff.		S Paired Diff.		B Paired Diff.	
	N	Mean	SD	t	Sig.	t	Sig.	t	Sig.
DM knowledge (K)	60	3.43	.810		Null				
Cybersecurity (S)	60	3.27	.899	1.398	.167		Null		
Financial Budget (B)	60	3.00	1.16	2.943	.005	2.456	.017		Null
Infrastructure (I)	60	2.73	.899	5.441	.000	4.281	.000	2.164	.034

Paired samples test (High-level DM adoption)

				K Paired Diff.		B Paired Diff.		S Paired Diff.	
	N	Mean	SD	t	Sig.	t	Sig.	t	Sig.
DM knowledge (K)	27	3.56	1.12		Null				
Financial Budget (B)	27	3.70	.869	-.779	.443		Null		
Cybersecurity (S)	27	3.48	1.08	.263	.795	1.442	.161		Null
Infrastructure (I)	27	3.63	1.08	-.254	.802	.402	.691	-1.28	.212

In our attempt to answer whether the level of concern for these challenges varies across different stages of DM adoption, the Kruskal-Wallis H test, a rank-based nonparametric without an assumption of homogeneity of variances (Laerd Statistics, 2022) was used to eliminate the possibility of Type-1 error due to the nonparametric structure of DM adoption groups (Low DM adoption (N=66), Moderate DM adoption (N=60), High DM adoption (N=27)). The outcome shows that there is no significant paired difference for DM knowledge concern (K Kruskal-Wallis sig. = .221) and Cybersecurity risk (S Kruskal-Wallis sig. = .186) across the different levels of DM adoption (Table 6). However, it is interesting to note a reducing concern on Financial budget concern (L Mean = 2.74, SD = 0.90, M Mean = 3.27, SD = 0.90, and H Mean = 3.70, SD = 0.87) as it progressed from low to high DM adoption. This finding is supported by a statistically significant adjusted paired difference particularly between those at low and higher DM adoption stages (L/M adj. sig. = 0.012, L/H adj. sig. = 0.000). The other interesting finding is that whilst both low and moderate DM adoption SMEs are concerned with Technology infrastructure (L Mean = 2.82, SD = 0.93, M Mean = 2.73, SD = 1.02), SMEs with high DM adoption have lesser such concern (H Mean = 3.63, SD = 1.08). The finding is supported by the significant adjusted paired difference between low and high (L/H adj. sig. = 0.003), and that between moderate and high DM adoption (M/H adj. sig. = 0.001).

Table 6: Challenges

		DM knowledge (K)				**Financial budget (B)**			
		Pair-wise comparison sig. (adj. sig.)				Pair-wise comparison sig. (adj. sig.)			
N	Adoption	Low	Mod.	Mean	SD	Low	Mod.	Mean	SD
66	Low (L)	Null		3.26	0.69	Null		2.74	0.90
60	Mod. (M)	Null	Null	3.43	0.81	.004 (.012)	Null	3.00	1.16

27	High (H)	Null	Null	3.56	1.12	.000 (.000)	.050 (.151)	3.70	0.87
	Kruskal-Wallis sig. = .221					Kruskal-Wallis sig. = .000			

		Cybersecurity (S) Pair-wise comparison sig. (adj. sig.)				Infrastructure (I) Pair-wise comparison sig. (adj. sig.)			
N	Adoption	Low	Mod.	Mean	SD	Low	Mod.	Mean	SD
66	Low (L)	Null		3.15	0.90	Null		2.82	0.93
60	Mod. (M)	Null	Null	3.27	0.90	.578 (1.00)	Null	2.73	1.02
27	High (H)	Null	Null	3.48	1.09	.001 (.003)	.000 (.001)	3.63	1.08
	Kruskal-Wallis sig. = .186					Kruskal-Wallis sig. = .001			

The final clarifying question is to determine the correlation between the variables of DM adoption level and customer responsiveness. Due to the ordinal and non-parametric structure of the DM adoption level, a combination of the Kruskal-Wallis H test and Spearman rank-order correlation was used to determine the strength and direction of association (Laerd, 2022) between DM adoption level and customer responsiveness. The outcome reveals a weak but significant direct correlation (coef. = .228**) between the variables (Table 7). This result is supported by a pair-wise comparison showing a significant adjusted paired difference (adj. sig. = .007) in customer responsiveness between low and high DM adoption.

Table 7: Customer Responsiveness

	Pair-wise comparison sig.				**Correlations (Spearman's Rho)**		
	sig. (adj. sig.) Low	Mod.	Mean	SD		DM adoption level	Cust. Resp.
Low (L)			3.70	0.8	DM adoption level	1	
Mod. (M)	.254 (.763)		3.91	0.6	Cust. Resp.	.228**	1
High (H)	.002 (.007)	.034 (.101)	4.22	0.6			
Kruskal-Wallis sig. = .01					** Significant at 0.01 level (2-tailed).		

Phase Three: Interpretation: The final stage of exploratory sequential mixed method study involves integrating and interpreting the outcomes connecting both qualitative and quantitative strands of data (Table 8).

Table 8: Interpretation

Research objective	**Qualitative findings**	**Quantitative findings**	**Interpretation**

QLRO1: challenges faced by SMEs in embracing DM technologies. QTRO1: Examine the level of concern about the challenges within each stage and across different stages of DM adoption.	• Lack of financial budget • Inadequate technology infrastructure • Lack of DM knowledge • Cybersecurity risk	**Within each stage of DM adoption** • SMEs with low DM adoption were most concerned with financial budget and technology infrastructure. • SMEs with moderate DM adoption were most concerned with technology infrastructure. **Across different stages of DM adoption** • SMEs with high DM adoption have the least concern with all four challenges. • DM knowledge and cybersecurity were the least concerns for all stages of DM adoption.	• When comparing the four concerns within each stage of DM adoption, technology infrastructure and financial budget were the most critical concerns followed by lack of DM knowledge and cybersecurity risk for SMEs with low and moderate DM adoption. However, no such observation was made for SMEs with high DM adoption that have no significant differences among the four concerns. • When comparing across different stages of DM adoption, financial budget concern was more pronounced in low and moderate DM adoption than those with high DM adoption. Similar observation was made for technology infrastructure that was perceived as more concerning for SMEs with low and moderate DM adoption stages. • Although DM knowledge and cybersecurity are still concerns, their mean values across all stages of DM adoption show relatively less critical when compared with the others.
QLRO2: Investigate the impact of DM adoption in SMEs. QLRO3: Usefulness of DM in providing holistic customer responsiveness. QTRO2: Determine the linkage between different stages of DM adoption and customer responsiveness	• Great tool for product and service innovation and an effective marketing and sales tool • Relationship building, engaging with customers, and creating brand awareness. • May not translate into sales as buying decision process depends on other critical factors such as price and quality	• Outcome reveals a weak but significant direct correlation between DM adoption level and customer responsiveness. • Customer responsiveness mean value increases progressively from low to high DM adoption. • Significant difference in customer responsiveness between low and high DM adoption.	• Outcome of quantitative test supports qualitative findings of correlation between DM adoption and customer responsiveness. Finding also shows that companies with high DM adoption have the highest customer responsiveness and the least concern with the identified challenges. The weak but significant link between the two variables supports the qualitative finding that although DM promotes customer responsiveness (significant**), it alone would not generate demand without considering other contributing factors (coeff. = .288).

Findings: The findings from Phase 3 interpretation reveal the reasons for SME slow adoption of DM attributed to the lack of financial budget and technology infrastructure especially for SMEs with low and moderate stages of DM adoption. These SMEs are running on a shoe-strung budget. The high cost of 4IR transformation coupled with the COVID-19 pandemic has caused many SMEs that have not fully adopted 4IR DM to scale back from a further capital investment into the advanced technology. With the economy yet to return to its pre-pandemic level (Lee, 2022) there is hardly enough motivation for SMEs to undertake high-risk investments with no certainty of a positive return. The ramification of such a decision is a delay in implementing the desired technology infrastructure to support 4IR which then underpins the low need for DM knowledge and Cybersecurity. On the contrary SMEs with high DM adoption do not have significant issues with these concerns. Due to their adaptation ability and creative use of various applications in the context of DM, they were able to capitalize on this competitive advantage in building resiliency and responsiveness (mean = 4.22, SD = 0.6) to customer needs.

It is supported by the positive and significant correlation (coeff. = .288**) between DM adoption and customer responsiveness. For many of these high DM adoption SMEs, the explosion of digital culture during the COVID-19 pandemic due to lockdowns imposed by governments helps increase online sales that contain reductions in revenue from normal distribution channels. The final revelation is that although DM improves customer engagement, relationship building and brand awareness, this is only possible when applying the right strategy that is supplemented by 4IR as a technology enabler. This assertion supported by a weak but significant link (coeff. = .288**) between DM adoption and customer responsiveness indicates that DM driven solely by 4IR would not bring the desired effect as there are other consideration factors such as price and quality. In addition, having 4IR allows firms to incorporate new digital marketing strategies such as the 4C's of Co-creation, Currency, Communal Activation, and Conversation which involves customers from the early ideation stage (Co-creation) to customer engagement (Conversation) during commercialization. In essence to have a profound effect, a combination of strategies including the use of 4IR must be put in place for firms to establish competitive advantages and bring better customer experiences with long-term sustainability.

5. Discussion and Interpretation of Results

This study was undertaken to explore the three qualitative objectives:
QLRO1: Explore challenges faced by SMEs in embracing DM
QLRO2: Investigate the impact of DM adoption in SMEs
QLRO3: Probe the usefulness of DM in providing holistic customer responsiveness.
And the two quantitative research objectives:
QTRO1: Examine the level of concern about the challenges within each stage and across different stages of DM adoption
QTRO2: Determine the linkage between different stages of DM adoption and customer responsiveness
In response to the QLRO1 and QTRO1, this study reveals that whilst SMEs are willing to invest in basic technology infrastructure and use limited 4IR digital capability to drive their marketing strategies, they are not willing to spend big to capitalize on the advent of the revolutionary 4IR technology citing lack of financial budget, inadequate technology infrastructure to support such setup, cyber security risk, and lack of DM knowledge as the main reasons. This is understandable given the rapid development of technology requiring regular scale-up of technology infrastructure and capabilities of its workers and the COVID-19 pandemic-related issues. Small businesses are also finding it difficult to retain capabilities and offer competitive compensation for such skills. These reactions are supported by reports stating that SMEs are afraid to adopt 4IR as they have a mindset that it would put additional strain on their financial situation (MITI, 2019).

Although the quantitative study triangulated and validated these concerns, it seems that DM knowledge concern and cyber security risk are not considered the most critical due to the effect of financial budget constraints. There are also other alternatives such as outsourcing that would allow SMEs to tap into experienced digital marketing agencies and the latest marketing tools. As outsourced marketing agencies are operating independently outside SMEs' internal domain, such arrangements would safeguard affected SMEs from cybersecurity vulnerabilities and threats. Studies such as Edvardsson, Durst, & Oskarsson, 2020 suggest that SMEs with an outsourcing strategy tend to perform better. However, this solution requires two major considerations. First, digital marketing utilizing 4IR technology whether internally or otherwise requires

substantial funding. SMEs with their limited financial budgets are struggling to keep their operation running much less devoting more financial resources to fund the transformation. Secondly, there is still the market demand consideration that requires an adequate response by way of understanding market trends and producing market-driven innovations. Although certain aspects of marketing strategies can be done externally, such an option is not available for an enterprise to maintain its cutting-edge technology that is either done internally or risk losing confidentiality and market competitiveness.

The need for advanced technological infrastructure set up to support in-house research and development has resulted in a costly digital shift in terms of time and resources (Chavez et al., 2022). In response to the second qualitative objective (QLRO2), these research findings have shown that SMEs with low and moderate DM adoption consider full-scale adoption of 4IR technology as risky, and superfluous in the context of small business marketing strategy. For the majority of these enterprises, they made do with limited 4IR technology capabilities to support their online marketing campaign. However, such an approach is hardly effective in generating a high volume of quality sales leads and establishing an interactive symbiotic relationship with customers that brings value to service improvement, increases product quality, and contributes towards product innovations. As a result, they run the risk of not catching up with corporations that spend heavily on state-of-the-art technology as part of an integral element to create highly effective marketing strategies turning data into above-market growth, driving market-driven products, and improving marketing rate of return. The world is changing and changing rapidly. Younger generations are increasingly using smart devices for interactions and communication.

Gone were the days of traditional marketing when advertising and promotions were carried out offline, and in their place are interactive social networking sites, emails, and mobile apps that are used as the preferred mode of communication. The accelerating pace of technological change is transforming the state of sociocultural forces in customer attitude, behavior, and lifestyle in what is known as the "new norm". Social distancing introduced by the government to curb the spread of the Covid-19 virus has resulted in the manifestation of remote-based arrangements such as work-from-home policy and online education. These arrangements have invariably increased online shopping and e-commerce transactions. However, it is worth noting that SMEs with high DM adoption are reaping the benefits of their investment. The quantitative findings indicate that the identified concerns are relatively less pronounced than their counterparts. By seeing this growing digitalization trend as an opportunity to recast themselves by going digital aggressively, they offer a new set of options to reconnect, entice and develop meaningful relationships with their customers. Perhaps, instead of looking inwards at their challenges, SMEs should strive for a more forward-looking setup collaborating with external parties that could help overcome their conundrum. Options such as collaboration, outsourcing, and right sourcing can be utilized in which parts of digital marketing strategy can be contracted to subject matter experts providing such services. Taking this route alleviates an organization's limitations whilst achieving greater resiliency, better risk, and resource management.

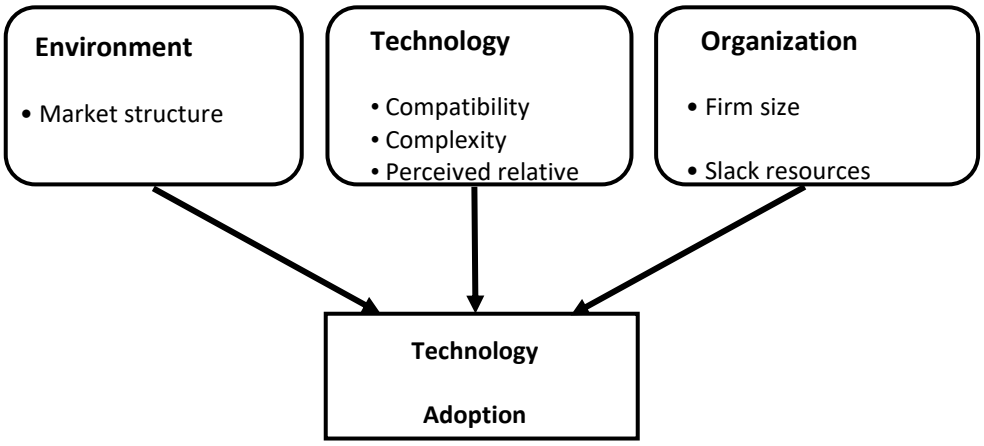
Furthermore, having experts who know how to unlock the power of 4IR functionalities for the fulfillment of 4C's brand-to-customer marketing model would ultimately benefit customers and increase the effectiveness of their marketing strategies. Studies such as Mannix (2018) have posited that with a fit-for-purpose deployment, it is reasonable to assume benefits derived from using emerging technology outweigh the cost of deployment. The final qualitative and quantitative objectives (QLRO3 and QTRO2) are to determine the stages of SME's DM adoption and their effect on customer responsiveness. Although there is no denying the positive outcome, it must not be construed that adopting 4IR technology would automatically lead to customer conversion. This is because advanced technology is merely a tool providing companies the means to make a difference in the way marketing strategy is carried out. Using it as an enabler of strategic change would speed up the decision-making process leading to faster go-to-market deployment, better product innovations, and more intimate customer management. Unless a comprehensive and properly structured approach is put in place by incorporating these advanced technological tools in an enterprise marketing strategy to produce innovative market-driven products, having a DM tool for a basic marketing campaign would not elevate customer responsiveness. It is therefore essential for SMEs adopting DM to link their cyber-physical system to revolutionary marketing strategies such as 4C's brand-to-customer marketing model that harnesses the superiority of the technology. For example, at the Co-creation stage, consumers could be

involved in co-producing prototypes at various value-creating stages using 4IR technology such as simulation and Virtual Reality (VR).

This concept of co-production increases creativity and idealization, reduces obstacles, and improves the model scale of prototypes (Freeman et al., 2018) which allows a business to customize and personalize product features according to its target market community needs. In the Currency component, companies can benefit from the information provided by data collected from their target market. Big data intelligence allows businesses to do optimal pricing for customers that can be set dynamically according to their spending, historical purchase pattern, and proximity of prospects' location to the store. Companies such as PURE saw their online sales increase by 13.52% within three months following the implementation of a predictive machine-learning algorithm that offers discretionary discounts to exiting non-buying customers (Iris pricing solution, 2020). 4IR additive manufacturing and IOT technology can be utilized in Communal activation for peer-to-peer distribution of goods and services. Examples such as enhancing Google Maps and Waze using 3D technologies to facilitate accurate location guides in navigating complex environments such as metropolitan or a store inside a mall. The final Conversation component leverages the proliferation of social media that enables product reviews, feedback, and evaluations by consumers through establishing interactive consumer-to-consumer, and business-to-consumer communication. Having an end-to-end two-way mode of communication serves as a collaborative customer care tool for enterprises to show genuine concern for customers by listening, responding, and following through on terms dictated by both companies and their customers.

Corporation: Where resources are abundant and the information technology budget is huge in absolute term albeit low in relation to revenue, SMEs cannot afford such luxury due to financial constraint that presents a higher risk and greater impact should the venture not turn out in their favor. It is not surprising that the majority of these enterprises opt for a phase adoption strategy. Whilst this approach is more risk-averse, it leads to slow digital transformation (Aqilah, 2021). This phenomenon can be explained via the Technology-Organization-Environment (TOE) framework (Figure 6) which stipulates that the adoption of new technology is influenced by the three elements of Technology, Organization, and Environment and that these elements exert both constraints and opportunities for technological innovation (DePietro, Wiarda, & Fleischer, 1990). Whilst SME management recognizes the superiority of advanced technology in driving competitive advantage (Technology), the combination of financial constraints (Organization) and venture risks arising from the setting up of technology infrastructure (Environment) have led to an unwillingness for a full-scale digital transformation (Technology Adoption Decision).

Figure 6: Technology-Organization-Environment (TOE) framework



Practical Implication: With the government push for digital connectivity, SMEs do not have a choice but to respond adequately to stay relevant in the industry. The Malaysian government in recognition of the financial constraint has started initiatives such as Syarikat Jaminan Pembiayaan Perniagaan Bhd (SJPP) that guarantees up to 70 percent of bank loans extended to SMEs. The government aspires that having a credible guarantor could reduce the borrowing spread rate by 3.5 percent (NSTP, 2019). The Industry4WRD

Intervention Fund has provided SMEs with a matching grant of up to RM500,000 with 30 percent upfront given by the Government to kick start their 4IR migration plan. Furthermore, SMEs can apply for other incentives such as Domestic Investment Strategic Fund and High Impact Fund (MITI, 2021). These are good moves as lowering borrowing costs would bring relief to small businesses intending to take advantage of revolutionary technologies to power their DM campaign. However, it still does not resolve the pain point of building capabilities and mitigating the brain drain that is necessary to sustain innovations in SMEs.

One way out of this conundrum for the government to set up a Digital Center of Excellence (DCOE) not for the sole purpose of startup financing but with a shared area of focus and subject matter expertise that allows SMEs to gain access to a variety of skill sets including data scientists, and algorithm architects that could help small businesses to reengineer processes, build advanced algorithms and integrate workflow to support decision making. Although the Ministry of International Trade and Industry has taken the lead in rolling out a Readiness Assessment Framework to assess the readiness of SMEs to undertake 4IR transformation efforts, it is not enough. There should also be a cultural mindset shift in SMEs to take on the challenge of embracing the future way of doing business. Through the DCOEs, the Government can do more by providing SMEs with the experience of what 4IR can do for their businesses. This relationship of public-private partnership under the concept of Malaysia Incorporated (NST Business, 2019) could pave the way and build the success of the SME industry hastening the Government transformation agenda of National Policy on 4IR.

Suggestion for Future Research: This two-year study was carried out at the onset of the Covid-19 pandemic crisis that upended the global social economy, changing social norms, and transitioning normative practices into a new way of production, and consumption. SMEs unfortunately were drawn into the center of these disruptions placing them in a precarious position due to a sudden drop in demand and production. In many countries, SMEs ended up depending on government emergency liquidity aid for survival. As a result, these enterprises do not have a choice but to change their business model. It would be interesting to understand how these changes are affecting the use of 4IR technology as a digital marketing strategy tool in the new norm. Having this knowledge would facilitate an understanding of SMEs' metacognitive ability in responding to emerging threats by self-assessing and self-correcting to ensure their survival.

Conclusion

In this economic climate, it is critical for SMEs to keep themselves continuously appraised with the rapid change in technology and socio-economic development to stay relevant in the industry. Companies are increasingly reliant on advanced technology to power their business, drive efficiency, and productivity to deliver quality products, and services to an ever-increasing demanding market. With the recovery of the economy, this is a make-or-break time for SMEs to take a giant leap forward in digital marketing transformation.

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Staff Burnout and Leadership Styles towards Job Performance during Critical Period

Aflinda Mokhtar[1] & Noor'ain Mohamad Yunus[2]
[1]Credit Guarantee Corporation Malaysia Berhad, Business Division, Malaysia
[2]Universiti Teknologi MARA, Faculty of Business and Management, Malaysia
*aflinda@cgc.com.my, noorainyunus@uitm.edu.my

Abstract: Recent pandemic of COVID-19 has heightened the need for mental and emotional health and the demands for specific types of leadership styles toward performance. The researcher believes that burnout and leadership styles are interrelated towards the job and the organization's performance during the critical period. Hence, this study aims to investigate the relationship between staff burnout and leadership styles toward job performance during the critical Movement Control Order (MCO) period due to COVID-19 in Malaysia. A questionnaire was used as the main instrument in the data collection process. A total of 180 online surveys in the form of Google Form format were distributed among Credit Guarantee Corporation Malaysia Berhad (CGC) employees through a convenience sampling technique. Multiple regression analysis was used to investigate the relationship between determinants of staff burnout and leadership styles toward job performance. The data collected was analyzed using SmartPLS, one of the most popular software applications for Partial Least Squares Structural Equation Modelling (PLS-SEM). The result indicated a significant relationship between burnout (personal accomplishment) and leadership styles (autocratic, democratic, and laissez-faire) toward job performance. In comparison, burnout (emotional exhaustion and depersonalization) has no significant relationship with job performance. The researcher suggested that future research conduct another study with different populations of respondents by considering the larger sample size, including all levels of employees in an organization from all the companies in the same industries.

Keywords: *Burnout, Leadership Styles, Job Performance, Autocratic, Democratic, Laissez-Faire*

1. Introduction and Background

One of the latest global issues is when the World Health Organisation (WHO) on 11 March 2020 declared the outbreak of Coronavirus Novel 2019 or COVID-19 as a worldwide pandemic. The world has changed due to the COVID-19 pandemic, and the crisis has affected all aspects of everyday life and work and heavily impacted the global economy. The new COVID-19 pandemic in Malaysia has raised public health problems and required a reorganization of health services. Therefore, as a precautionary measure, the Malaysian government has gazetted the Movement Control Order (MCO) implementation on 18 March 2020 (Shah et al., 2020).

Over the past thirty years, burnout and leadership styles have been an object of research. According to Maslach and Jackson (1981), burnout is a symptom of emotional exhaustion and cynicism that frequently happens among individuals who do "people work". Burnout is reported as an occupational condition in the 11th edition of the International Classification of Diseases (ICD-11). Thus, it is not categorized as a health condition. Under ICD-11, burnout is a conceptualized condition because of persistence. Pressure in the workplace has not been adequately controlled. Three dimensions define this as feelings of energy depletion or fatigue, enhanced emotional detachment from one's work, negativity or cynicism relevant to one's job role and decreased professional effectiveness. It is more comprehensive than ICD-10 (World Health Organisation [WHO], 2019).

Over the past years, there has been a dramatic increase in leadership style studies. According to Kelly et al. (2020), an increasing number of studies have considered the protective role of leadership on employee burnout in a healthy organization, recognizing various types of leadership styles that may raise the risk of burnout. The issue of leadership styles has received considerable critical intention during the current crisis of the COVID-19 pandemic. Katerberg & Blau (1983) stated that successful job performance is vital to individuals and organizations at a more general level. Hence, based on the above discussion, this study aims to investigate the relationship between staff burnout and leadership styles toward job performance during the critical period of MCO due to COVID-19 in Malaysia.

2. Literature Review

Job Performance: The worldwide expansion of every organization and the many obstacles they confront in achieving their objectives and competing to be more successful than their competitors are hallmarks of today's competitive climate. Every employee plays an essential role in accomplishing the goals and performance. As a result, "performance" is often used in all management areas to describe an organization's overall performance. Performance is an achievement of a particular job performed against predetermined clear performance targets, completeness, expense, and time. Several published studies describe job performance as a central construct in industrial or organizational psychology (Austin & Villanova, 1992; Campbell, 1990; Murphy & Cleveland, 1995; Schmidt and Hunter, 1992, as cited in Viswesvaran et al., 2000). Setiawan et al. (2016) found that the employee's job performance is a consequence of or a reflection of the values of behavior shown by them while carrying out their duties and obligations.

The performance of human resources must be considered since it can affect the progress of the organization and the objectives that must be achieved (Wuryani et al., 2021). When the leaders give autonomy to the employees, they would be more loyal and motivated to perform efficiently, which would enhance organizational productivity with better outcomes, as stated by Baig et al. (2019). According to Viswesvaran et al. (2000), the current job performance model has linked task performance, contextual performance, and organizational citizenship behavior. As noted by Koopmans et al. (2012), the four primary elements of individual job performance were determined based on the conceptual grouping of individual job performance factors found in the literature, which are the execution of tasks, contextual performance, counterproductive work behavior, and adaptive performance. The researcher observed three dimensions of job performance: task performance, contextual performance, and counterproductive work behavior.

According to Kalia et al. (2019), task performance emphasizes the instrumentality of performance for organizational goals. It refers to those required outcomes and behaviors that directly serve the organization's goals. Gao et al. (2021) mention task performance as the ability to function based on conscientiousness in the "Big Five" personality domains. People with high task performance also tend to have significant conscientiousness. In other words, they are more self-controlled, responsible, and persistent. As a result, they focus well on tasks and earn better grades. Task performance includes self-control, responsibility, and perseverance. Viswesvaran (2000) claimed that task performance is defined as the level of proficiency with which incumbents perform activities formally recognized as part of the routine. Additionally, the activities that contribute to the organization's technical core, either explicitly by incorporating part of its production system or indirectly by providing it with the products or services it needs. Task performance is measured by the number of times incumbents spend on each task. According to Koopmans et al. (2012), mostly all frameworks identified task performance as a critical feature of individual job performance that should be considered. Koopmans et al. (2012) further update that Murphy and Campbell were among the first to describe the domain of individual work performance. By describing the significant features of generic job performance, we may narrow the realm of individual work performance.

As defined by Ling et al. (2020), contextual performance refers to behaviors that improve organizational effectiveness through its effects on the psychological, social, and organizational aspects of the job done by employees. Contextual performance also called organizational citizenship behavior (OCB), was defined as behaviors that, in the aggregate, across time and persons, contribute to organizational effectiveness (Johari et al., 2018). According to Jan Luca (2021), counterproductive work behavior, commonly also referred to as workplace deviance, can be defined as "voluntary behavior that violates significant organizational norms and threatens the well-being of an organization, its members, or both". Mercado et al. (2018) stated that counterproductive work behaviors are scalable actions and behaviors that employees engage in that detract from organizational goals or well-being and include behaviors that bring about undesirable consequences for the organization or its stakeholders. Koopmans et al. (2012) defined counterproductive work behavior as behavior that harms the organization's well-being, which has increased in recent years. Viswesvaran et al. (2000) claimed that counterproductive behaviors have a negative value for organizational effectiveness and have been proposed as constituting a distinct dimension of job performance.

As one of the frontlines under the essential services sector, this study allows the researcher to explore and investigate the implication of staff burnout and leadership style toward job performance during the critical period of MCO due to the COVID-19 pandemic in Malaysia. The researcher attempted to investigate the critical department's functionality during this critical period of the situation in CGC. Amongst the critical departments during this period are the Client Service Centre (CSC), Loan Monitoring and Rehabilitation (LMR), Guarantee and Financing Evaluation (GED and FED), Subrogation and Recovery (SRD), and branches all over Malaysia. Most of these critical departments and branches deal with and manage customer inquiries, moratoriums, loan and financing applications, and internal inquiries. During this critical period, most employees are working from home (WFH) and simultaneously required to perform their tasks and responsibilities. As a part of these team members, the researcher has confidence in the increased workload and inconsistency of working hours, which is more than the actual working hours, i.e., 9 hours per day. Thus, from the researcher's point of view, it can be related to the entire company, where the researcher believes that job and company performance is not stand-alone or independent. Both are interrelated and contribute to achieving the company's vision and mission. To date, several studies have investigated job performance. The researcher attempted to evaluate the impact of staff burnout and leadership styles on job performance during the critical period in CGC.

Burnout: Lubbadeh (2020) described job burnout as a condition precipitated by prolonged susceptibility to stress at work. It has many costs for the organization and the employees themselves. The value of job burnout is outlined by its association with various types of unfavorable organizational outcomes. Monique (2016, November) found that stress is perceived because of professional life, but severe and uncompromising stress could lead to a dangerous condition known as "burnout." For many years, burnout has become a common issue or experience. It has encouraged many researchers to keep on the study and investigate in depth what is behind it and why it seems to occur even though massive studies have continuously been done. In Freudenberger's original 1974 journal, he defines burnout as the condition of being tired due to exerting a significant burden on one's energy, strength, or resources in one's place of work (Freudenberger, 1974). He further claimed that physical signs of burnout include tiredness, fatigue, recurrent headaches and gastrointestinal issues, insomnia, and shortness of breath, among other things. Maslach (1982) revealed that employees who work in "people work" are almost always at risk of developing burnout, with the most precise definition of burnout to be defined as a syndrome of emotional exhaustion, depersonalization, and diminished personal accomplishment that can occur among people who work in "people work" of any kind.

The Maslach Burnout Inventory (MBI) developed by Maslach and Jackson (1981) has been used most widely by researchers to determine the three components syndrome of burnout. The scale has had the most substantial psychometric properties. Monique (2016, November) claimed that because of the pioneering research of psychologist Christina Maslach and several collaborators, the research field had made to know that burnout has three components syndrome that responds to a chronic stressor on the job. Emotional exhaustion is the main symptom of burnout, known as the first element. This causes massive physical, cognitive, and mental fatigue that affects the ability of people to work effectively and to feel happy about what they are doing. This could continuously occur due to the constant demand on organizational culture, time pressure or enormous workload. Wright et al. (1997) referred to experiencing sensations of being overextended and weary due to the emotional demands of one's job, defined as emotional exhaustion. The second element of burnout is depersonalization which represents the destruction of engagement. It usually is a mode of emotional distance away from work. Depersonalization can primarily result from work overload, but it can also likely happen in unfairness or conflict. Gorji (2011) claimed that depersonalization is associated with more or more minor adverse reactions of individuals to various working conditions, resulting in negative perceptions and the feeling of being unaccepted, and ultimately the appearance of a disconnect between them the individuals and their job prospects.

Diminished personal accomplishment is the third element of burnout syndrome. It is about the sense of ineffectiveness and lack of efficiency and achievement. Several studies by Wright et al. (1997), Maslach et al. (2001), Sonnentag (2005) and Abdullah & Yuen (2011) have been distinguished to cope with the emotional strain of one's job and also an immediate reaction to exhaustion. Depersonalization is an attempt to put spacing between oneself and the patient's cognition and emotions by continuing to develop an insensitivity

or suspicious behavior and mentally detaching oneself from overpowering job requirements. Previous research has established a correlation between burnout and job performance.

Leadership Styles

A leader is a person in charge who convinces others to participate. A true leader encourages faith in humanity and drives them to motion. A leader can motivate their followers with their leadership style. A leader with a good practice of leadership styles always has enormous followers. Veliu et al. (2017) claimed that a leader's style is as varied as how they may lead in every organization. People are more likely to follow great leaders because they are honest, have a clear vision for the future, encourage others, effectively manage projects, and interact with others on their teams. In addition, it should be selected and adapted to fit organizations, situations, groups, and individuals.

Autocratic Leadership Styles: Erdem (2021) stated that in the autocratic leadership style, a frequently seen type of leadership in organizations and societies, the authority to manage and leaders are the only ones who have the right to make decisions. According to Iqbal et al. (2015), the autocratic leadership style is considered the philosophy of "I tell", in which the leader will instruct subordinates on what to do. The authoritarian leader typically decides without any advice or guidance from anyone. They seem to do it on their own. Autocratic leaders also often create an atmosphere which very structured and hierarchal. In this situation, less communication and interaction are expected between leaders and subordinates. Generally, autocratic leaders are firm when a decision has been made. This type of leader has the assumption that they think that the employees have little guidance and need to observe and closely monitor. Therefore, it would lead to the weaknesses of this leadership style, which are a decrease in the employee's morale level, an increase in turnover rate, the disaffection of employees, and commitment. Note from the explanation, the researcher believes that confident leaders still implement this autocratic leadership style in specific organizations today. Whether it is good to be practiced depends on the environment and current situation.

Democratic Leadership Styles: Consequently, another type of leadership style is referred to as democratic leadership. Leaders practicing democratic leadership styles generally recognize every employee's value and esteem. Veliu et al. (2017) identified the democratic leadership style as an “I share" philosophy where decisions are made among team members, with each member having equal involvement. The leader decides after communicating and discussing with their team members. All ideas are counted and appreciated. Democratic leadership is conceptually distinct from positions of authority; instead, it is defined as the performance of three functions: distributing responsibility among the membership, empowering group members, and aiding the group’s decision-making process (Fakhri et al., 2021). According to Mawoli et al. (2013), there is evidence from previous literature that in democratic leadership styles, leaders consult with subordinates on proposed actions and decisions. They also encourage participation from the subordinates. In addition, this has confirmed the possibility that the leader can conquer their team members’ cooperation and motivate them positively and effectively. This style also enables employees to provide commentaries and recommendations on central issues. Subordinates are given full authority and accountability, encouraging them to become competent and active in their leadership development. However, there is some argument on the effectiveness of democratic leadership styles where NawoseIng'ollan et al. (2017), on their point view that democratic leadership has several drawbacks that must be overcome to ensure its effectiveness in organizations. Apart from that disagreement, most studies have developed the effectiveness of democratic leadership styles. Mawoli et al. (2013) stated that democratic leadership works best when the leaders have part of the information and the employees have another part. Therefore, the leader is not to expect to know everything. Using this leadership style is a mutual benefit, especially when it allows the employees to become a part of the team and allows the leader to make better decisions. As a result, when a job is well-structured, and the leader and their employees have a solid working connection, their effectiveness is high.

Laissez-Faire Leadership Styles: Veliu et al. (2017) claimed that the laissez-faire leadership style is the style of leadership where authority and power are given to employees to determine the objectives. The leader provides less or no direction to the employees. Under a laissez-faire leadership style, leaders will give freedom to their subordinates. According to Mintzberg (cited in Mawoli et al., 2013), laissez-faire leadership is a "free-rein leader" who does not lead but leaves the group entirely to itself. In other words, the leader has

little control and less supervision over subordinates. However, some research criticized the laissez-faire leadership style, which they found would have an adverse effect on the organization. According to Ronald (2011), a laissez-faire leader could lead the team members to anarchy, chaos, and inefficiency, leading to layoffs and being labeled as impractical.

According to a recent survey from a professional feedback platform, Rachel (2020, May 12) has stated that more than seven out of ten professionals today suffer from burnout due to the COVID-19 epidemic. The inability of employees to maintain a clear distinction between their professional and personal lives is a significant source of frustration. Previous studies (Mirkamali et al., 2019, Wafaa, 2019, Abdullah & Yuen, 2011) have specified that burnout is generally assumed to be related to lowered job performance. Organizations need to concentrate on employees' emotions interrelated to the critical period to maintain productivity and improve job performance. If burnout is left unsupervised, such sentiments will disrupt the morale and commitment of the employees, lead to reduced quality of performance and failures, and eventually impact the capacity of the company to thrive in this critical period.

The organization must deliver a clear objective and always provide regular updates, which will help employees remain focused and energetic and have a sense of purpose. Several studies thus far have linked burnout and job performance. There is a positive relationship between staff burnout and job performance in some aspects of burnout and job performance (Akca et al., 2019; Karatepe et al., 2008; Ashtari et al., 2009; Abdullah & Yuen, 2011 and Gorji, 2011). Detailed examination of burnout and job performance has shown that the employee's performance decreases due to increased emotional exhaustion and depersonalization. Still, the studies clearly stated that the lack of personal accomplishment has no relation or low correlation with employee performance. Unlike Akca et al., (2019), Karatepe et al., (2008), Ashtari et al., (2009); Abdullah & Yuen, (2011), Gorji, (2011) & Wright et al., (1997) argued that a negative relationship was established between some aspects of burnout and job performance. The studies presented thus far provide evidence that there is no consistent relationship between burnout and job performance. Because of that, the researcher will study the correlation of the three elements in burnout toward job performance during the critical period.

Previous studies show that staff burnout (emotional exhaustion) relates to job performance. This statement has been supported by Abdullah & Yuen. (2011), in their studies with regards to the impact of burnout on job performance among nurses, disclosed that there was a significant relationship between some of the burnout's elements, such as emotional exhaustion, depersonalization and personal accomplishment towards job performance.
H1: Burnout (emotional exhaustion) has a significant relationship with job performance during the critical period of MCO due to COVID-19 in Malaysia.

Previous studies show a positive relationship between staff burnout (depersonalization) and job performance. This statement has been supported by Abdullah & Yuen. (2011) in their studies on the impact of burnout on job performance among nurses, which disclosed that there was a significant relationship between some of the burnout's elements, such as emotional exhaustion, depersonalization and personal accomplishment towards job performance.
H2: Burnout (depersonalization) significantly correlates with job performance during the critical period of MCO due to COVID-19 in Malaysia.

Ashtari et al., (2009) in their previous studies have proven a relationship between staff burnout (personal accomplishment) and job performance. This study disclosed the significant relationship between some burnout elements, such as emotional exhaustion, depersonalization, and personal accomplishment toward job performance.
H3: Burnout (personal accomplishment) has a significant relationship with job performance during the critical period of MCO due to COVID-19 in Malaysia.

The current crisis of the COVID-19 pandemic calls for different forms of leadership, and not just one method might perform. Despite tremendous pressure on physical and mental well-being, leaders need to lean into their strengths to ensure their teams are manageable and perform well during this critical period. The

intensity and complexity of the COVID-19 pandemic create unprecedented obstacles for the leaders of today's crucial institutions. Leadership is being tested in situations of uncertainty, not dominance, and COVID-19 has brought much pressure on organizations. It is supposed to pressure leaders as they have not been before. The new circumstances regarding the COVID-19 pandemic are distinct from everything we have experienced in over a century and seem to be a protracted and potentially fatal obstacle for organizations. During this critical period, responsive leaders must adapt and respond to changing organizational situations daily and hourly. Whenever there is a continuous transition to the new regular and conscientious, reflective leaders must brace for a significant change in organizational objectives. As a leader who must make a tough decision with potentially drastic consequences during the day, consistently evaluating the risks and benefits of various alternatives is progressively challenging. Outstanding leadership in the present crisis effectively focuses on the psychological well-being and the subordinates while looking forward to maintaining the performance. When the pandemic occurs, the leader must assume a more significant role in decision-making or risk a sense of confusion and uncertainty irresistible to the community, shaking its group efficacy.

In 1939, Lewin, Lippit and White led early research regarding leadership styles. They also found that each of the three styles mainly affects an organization. During their research, a few leadership styles were identified, which are autocratic, democratic, and laissez-faire. A study by Mawoli et al., 2013 affirms that autocratic, democratic, and laissez-faire styles of leadership all produce different job performance under different situations. Numerous studies have attempted to explain that different leadership styles produce different job performance under different situations (Agarwal et al., 2020; Dastane, 2020). In an outbreak, ineffective leadership may have potentially catastrophic implications for the organizations they lead (Arifah et al., 2018). In addition, although leaders can be directly involved, maintaining their sense of leadership style is the quality that will help continue the sustainability of organizations and achieve the desired outcomes. Almost every research that has been written on leadership styles agrees that there is a significant relationship between leadership styles and job performance. This has been decided by Veliu et al. (2017) and Mawoli et al. (2013), where autocratic and democratic leadership styles positively impact job performance, while laissez-faire leadership styles do not correlate with job performance. Together these studies provide important insights for the researcher to investigate the leadership styles related to job performance during the critical period.

Previous studies by Olayisade and Awolusi (2021), Solihah et al. (2021) and Veliu et al. (2017) found a relationship between autocratic leadership styles towards job performance. Therefore, the researcher assumes a possible explanation for this result which might be that during certain situations, respondents believe that it is valuable for the company to practice the autocratic leadership style when the business is facing a crisis, or any problem arises which requires an immediate response.
H4: Autocratic leadership styles have a significant relationship with job performance during the critical period of MCO due to the COVID-19 pandemic in Malaysia.

The statement by Firas et al. (2022), Diana et al. (2021) and Veliu et al. (2017) supported a relationship between democratic leadership styles towards job performance. The similarities between democratic leadership styles and job performance in this study which these studies reported that democratic leadership styles match with well-organized and skilled employees who are eager to share their knowledge and are suitable for a long-term period which contributes to the employee's performance.
H5: Democratic leadership styles have a significant relationship with job performance during the critical period of MCO due to the COVID-19 pandemic in Malaysia.

Beauty et al. (2022), Addow (2022), and Veliu et al. (2017) found a relationship between laissez-faire leadership styles towards job performance where the employees feel confident with the power they have in delivering their tasks. These findings further support the idea of Mawoli et al. (2013) that when the employer sets goals for the employees to achieve, they should perform momentously without supervision, which this scholar believes is enough for the employer to be a meaningful guide for optimal performance.
H6: Laissez_Faire leadership styles have a significant relationship with job performance during the critical period of MCO due to the COVID-19 pandemic

3. Research Methodology

This study was carried out at one of the Financial Institutions under Bank Negara Malaysia (BNM), CGC. The population of this study contains the employees under the essential service sector from CGC who has been working during the critical period of MCO due to the COVID-19 pandemic in Malaysia. From the information obtained, the total population of the employees from CGC is 563. The sampling technique applied in this study is convenience sampling. Based on 563 of the total population in CGC, the researcher divides the sample size based on the number of departments and branches.

The researcher had chosen the sample size based on the most critical business function in CGC during the critical period of MCO due to the COVID-19 pandemic in Malaysia. Sekaran (2006) described that sample size is the total number of subjects specified as a sample that reflects population characteristics. The sample size for this study was determined by using G*Power software. For this study, the setting measured was effect size f2: 0.15, α=0.05 and the number of predictors=6 (Burnout: emotional exhaustion, depersonalization, and personal accomplishment; Leadership Styles: autocratic, democratic, and laissez-faire). The power was set at 95%. Therefore, for this study, the sample size required was 147. Pilot testing was conducted on 50 participants to ensure the validity and reliability of the constructs in the study. The study's reliability test through Cronbach Alpha coefficient exceeded the minimum threshold of 0.7 for all elements under dependent variables, i.e. job performance (0.865, 0.916 and 0.841 for task performance, contextual performance, and counterproductive work behavior) and independent variables, i.e. burnout (0.909, 0.856 and 0.899 for emotional exhaustion, depersonalization, and personal accomplishment) and leadership styles (0.767, 0.870 and 0.770 for autocratic leader, democratic leader and laissez-faire).

The researcher adopted the Maslach Burnout Inventory (MBI) questionnaire to measure staff burnout. The questionnaire measures the three elements of burnout: emotional exhaustion, depersonalization, and personal achievement. The questionnaire for leadership styles was adopted from the Leadership Styles Questionnaire (LSQ) developed by Northouse (2011) to measure the leadership styles of autocratic leadership, democratic leadership, and laissez-faire leadership. Apart from that, the researcher also adopted the Individual Work Performance Questionnaire (IWPQ) developed by Koopmans (2014) to measure job performance. The questionnaire is alienated into task performance, conceptual performance, and counterproductive work behavior. The researcher used 5 points Likert Scale to measure the items for job performance, burnout, and leadership styles.

4. Results

In this study, the population was 147 employees consisting of four Head of Section, 32 Senior Executive, 104 Executives and seven non-executives in CGC. A total of 180 surveys via Google Forms were distributed to the respondents via email and WhatsApp, and only 147 questionnaires were returned. Table 1 presents the characteristics of the total sample of employees who participated in the study.

Table 1: Demographic and Geographic Information Pertaining to Respondents (n=147)

Variables	Frequency	Percentage
Gender		
Male	56	38.1%
Female	91	61.9%
Total	**147**	**100%**
Age		
18 – 20 years old	0	0%
21 – 30 years old	29	19.7%
31 – 40 years old	85	57.8%
41 – 50 years old	27	18.4%
51 years old and above	6	4.1%
Total	**147**	**100%**

Department		
Client Service Centre	13	8.8%
Loan Monitoring and Rehabilitation Subrogation	27	18.4%
and Recovery	21	14.3%
Guarantee Evaluation	14	9.5%
Financing Evaluation	13	8.8%
Branches	59	40.1%
Total	**147**	**100%**
Position		
Head of Section	4	2.7%
Senior Executive	32	21.8%
Executive	104	70.7%
Non-Executive	7	4.80%
Total	**147**	**100%**
Working Experience		
0 – 5 years	5	3.4%
6 – 10 years	44	30%
11 – 15 years	71	48.3%
16 – 20 years	22	15%
20 years and above	5	3.4%
Total	**147**	**100%**

After obtaining the necessary data, the researcher conducted statistical analysis tests and obtained the following result:

Table 2: Hypothesis Test Result

Path	Path Coefficient (β)	Standard Error (SE)	t Values	p Values	CIBC		ct Size (f2)
					5.00%	95.00%	
H1: EE -> JP	-0.123	0.121	1.013	0.156	-0.321	0.078	0.009
H2: DP -> JP	0.129	0.149	0.869	0.192	-0.093	0.368	0.009
H3: PA -> JP	0.457	0.084	5.439	0.000	0.325	0.591	0.299
H4: AL -> JP	0.257	0.107	2.411	0.008	0.088	0.427	0.081
H5: DL -> JP	0.123	0.086	1.428	0.077	-0.023	0.264	0.019
H6: LF -> JP	0.152	0.073	2.083	0.019	0.039	0.281	0.034

A structural analysis was run to test the hypothesis to answer all the Research Questions. The result of the hypothesis testing is summarised in Table 2. Hair et al. (2017) point out that the level of acceptance for one tail path coefficient is ($p < 0.01$, $t > 2.33$), ($p < 0.05$, $t > 1.645$) and ($p < 0.10$, $t > 1.28$). The most surprising aspect of the data is that there is no significant relationship between emotional exhaustion and job performance during the critical period of the COVID-19 pandemic ($\beta = -0.123$, $p > 0.05$). The effect size (f2) is 0.009, suggesting a weak effect size. Thus, H1 was not supported for this study. There was also no significant relationship between depersonalization and job performance ($\beta = 0.129$, $p > 0.05$), with an effect size is 0.009, which also suggested a weak effect size. Therefore, H2 also is not supported. As Table 2 shows, there is a significant relationship between personal accomplishment and job performance ($\beta = 0.457$, $p < 0.01$). The effect is 0.299, which is suggested as a moderate effect size. Hence, H3 is supported.

A positive correlation was found between leadership style and job performance. There is a significant relationship between autocratic leaders and job performance ($\beta = 0.257$, $p < 0.01$) with an effect size of 0.081, which is suggested as a moderate effect size. Then it can be concluded that H4 was supported in this study. Democratic leader and job performance have a significant relationship ($\beta = 0.123$, $p < 0.10$). The effect size is 0.019, which is suggested as weak. H5 was supported. There is also a significant relationship between laissez-faire leaders and job performance ($\beta = 0.152$, $p < 0.05$), with a 0.034 effect size suggested as a moderate effect size. Therefore, it was quantified that H6 was supported.

Table 3: R Square

	R Square
CP	0.856
CWB	0.133
JP	**0.459**
TP	0.568

The R Square, as per Table 3, specifies the variance of the dependent variable of job performance is 0.459, which suggests 45.9% of the variance in job performance is explained by burnout, i.e., emotional exhaustion, depersonalization, personal accomplishment and leadership styles, i.e., autocratic leader, democratic leader and laissez-faire leader who are the independent variables for these studies. With regards to the strength of the relationship, it was distinguished that the relationship between personal accomplishment and job performance is the sturdiest with $\beta = 0.457$.

Discussion: This study has been established, and there was no relationship between staff burnout (emotional exhaustion and depersonalization) with job performance. The result did not support the hypothesis, and the researcher concluded that there was no correlation between the variables and the relationship was proven weak. Over the year, several studies thus far have linked burnout with job performance (Wafaa, 2019; Mirkamali et al., 2019; Gorji, 2011; Ashtari et al., 2009). However, this is the most exciting finding where this current study does not support the previous research. The reason for this is not apparent, but it may have something to do with the resilience toward staff burnout (emotional exhaustion and depersonalization). Moroney et al. (2021) identified resilience in generic terms as adjusting effectively while suffering, stress, or tragedy. It may be regarded as a character attribute that individuals apply to establish techniques for bouncing back in adverse situations.

From this study, the result of burnout (emotional exhaustion) may be explained by the fact that the perception of the respondents in dealing with their job while working from home during the period of MCO. Respondents might have strong beliefs in their abilities while performing their job effectively, even if their emotions were drained. They trust that at least they can maintain their job performance as they work from home without confronting their superiors or colleagues compared to working from the office. In view of burnout (depersonalization), respondents might perceive that they succeed in estrangement themselves to the extent that will help them deal with stress. Consequently, they can maintain their job performance. In 2020, Bunga et al. published a paper describing a significant relationship between burnout and resilience. This also implies that as the level of resilience increased, so did burnout and vice versa. The result from this study has concluded that there was a relationship between staff burnout (personal accomplishment) and job performance during the critical period of MCO. Thus, the result obtained supported the hypothesis. In contrast to the earlier findings for staff burnout (emotional exhaustion and depersonalization), these findings match those observed in earlier studies. The present findings seem consistent with other research, which found a significant relationship between burnout (personal accomplishment) and job performance.

These findings further support the idea of Wafaa (2019), who found that the relationships between personal accomplishment with job performance are significant when employees have a feeling of doubt about their capabilities and fear that it might not help them to complete their task-based as per expectation as every employee wants to feel a sense of accomplishment in their workplace. During MCO, employees are required to work from home, which will contribute to the limitation in terms of communication when dealing with their job. The Malaysian culture may explain this result in high collectivism, where people typically highly bond to group members and prefer to work in a team. The study by Karatepe (2008) is consistent with our predictions. Diminished personal accomplishment has a positive relationship with job performance. Both studies agree with Ashtari et al. (2009) findings which show a significant relationship between personal accomplishment and job performance where there is a feeling of failure in individual achievement.

This study has been recommended to explore the relationship between autocratic leadership style and job performance during the critical period of MCO due to the COVID-19 pandemic in Malaysia. This study's findings have revealed a relationship between autocratic leadership style and job performance. Therefore, the

result obtained supported the hypothesis. In this study, the researcher found that autocratic leadership styles were the most influential effect on job performance. During the period of MCO due to COVID-19, every organization will investigate how they respond to the crisis immediately, not only for the management of CGC. Therefore, the researcher assumes a possible explanation for this result: respondents believe that during certain situations, it is valuable for the company to practice the autocratic leadership style when the business is facing a crisis or any problem that requires an immediate response. These findings are consistent with the previous study by Iqbal et al. (2015), who specified that autocratic leadership has a significant relationship with job performance where all decision-making is centralized. This style of leadership allows a quick decision-making process. These findings agree with Veliu et al. (2017), which stated that autocratic leadership styles positively correlate to job performance where autocratic leaders are more efficient.

The researcher also investigates the relationship between democratic leadership styles and job performance in this study. The findings show a relationship between democratic leadership styles and job performance. Hence, the result of these studies supports the hypothesis. Although from the findings, the researcher can conclude that there was a correlation between the variables, the relationship was weak. There are similarities between democratic leadership styles and job performance in this study and those described by Veliu et al. (2017). This study reported that democratic leadership styles match well-organized and skilled employees who are eager to share their knowledge and are suitable for a long-term period, contributing to the employee's performance. This study was also supported by Agarwal et al. (2020), Belete (2020) and Iqbal et al. (2015), where democratic leadership styles have a positive relationship with job performance. NawoseIng'ollan et al. (2017) highlighted the result of the studies that democratic leadership style has a significant relationship with job performance. This is on the account that democratic leadership has contributed to improved job performance; even though the result of this study shows a weak relationship between variables, researchers believe that the combination of democratic leadership style with other leadership styles might also contribute to the employee's job performance.

This study also investigates the relationship between laissez-faire leadership style and job performance during the critical period of MCO due to COVID-19 in Malaysia. The findings show a relationship between laissez-faire leadership styles and job performance. Thus, the result supports the hypothesis. The table in the previous chapter shows the moderate relationship between laissez-faire leadership styles and job performance. In accordance with the present result, previous studies have demonstrated the same impact. Iqbal et al. (2015) have confirmed that the laissez-faire leadership style has a more significant positive relationship with job performance, where the employees feel confident with their power in delivering their tasks. These findings further support the idea of Mawoli et al. (2013) that when the employer sets goals for the employees to achieve, they should perform momentously without supervision, which this scholar believes is enough for the employer to be a meaningful guide for optimal performance. This study supported previous studies where laissez-faire leadership style positively and significantly impacts job performance. The laissez-faire style leads to increased job satisfaction and better employee performance, which may be damaging for employees if the team in charge does not manage their time well or they are not self-motivated to do their work efficiently (Dastane, 2020).

The researcher also intended to investigate the most significant determinants of staff burnout and leadership styles toward job performance during the critical period of MCO due to COVID-19 in Malaysia. Therefore, based on the findings, the researcher found that burnout (personal accomplishment) and autocratic leadership styles were the most influential determinants of job performance. The data has been interpreted and shown in the table from the previous chapter. This variable has the highest β values among the variables. Thus, it can be assumed that burnout (personal accomplishment), autocratic leadership styles and job performance were related to each other during the critical period of MCO due to COVID-19 in Malaysia. The present findings seem consistent with other research (Wafaa, 2019, Mirkamali et al., 2019; Abdullah & Yuen, 2011), which also aligns with this study. They found that the feeling of inefficacy or reduced personal accomplishment is assumed to be related to job performance.

In contrast to earlier findings, however, no evidence of burnout (personal accomplishment) as a factor related to job performance is explained by Karatepe (2008). The studies do not support the findings of previous research. The study cannot explore the significant relationship between burnout (personal accomplishment)

and job performance. The autocratic leadership style is founded on the current situation where all actions and decisions must be instantly decided during the critical period. As such, the researcher would like to reiterate Veliu et al. (2017) findings that autocratic leadership styles positively correlate to job performance where autocratic leaders are more efficient.

5. Conclusion and Recommendations

This study has been established, and there was no relationship between staff burnout (emotional exhaustion and depersonalization) with job performance. The result did not support the hypothesis, and the researcher concluded that there was no correlation between the variables and the relationship was proven weak. However, this is the most exciting finding where this current study does not support the previous research. The reason for this is not apparent, but it may have something to do with the resilience toward staff burnout (emotional exhaustion and depersonalization). The result from this study has concluded that there was a relationship between staff burnout (personal accomplishment) and job performance during the critical period of MCO. Thus, the result obtained supported the hypothesis. This study's findings have revealed a relationship between autocratic leadership style and job performance. Therefore, the result obtained supported the hypothesis. In this study, the researcher found that autocratic leadership styles were the most influential effect on job performance. During the period of MCO due to COVID-19, every organization will investigate how they respond to the crisis immediately, not only for the management of CGC.

With that, the researcher has several recommendations to provide for the improvement of future research. The researcher believes that the recommendation of this study can be used as a guideline and benefit CGC or every organization to ensure the effectiveness of their employee's performance and the organization. The management of the organizations needs to understand that negative feelings toward the job always hinder the performance of the employees at the workplace, whereas a satisfied workforce performs well. The organization should constantly influence leadership behavior to maximize employee productivity. This can be achieved through policy formulation, recruitment, training, and promotion, as well as by enforcing the appropriate organizational behaviors. It is recommended that the organization review its leadership training and selection processes to maximize its leadership pool to maximize employee productivity. Regular pulse checks should be conducted to ascertain the current leadership style in the organization and interventions implemented to ensure the desired leadership style is maintained.

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The Utilization of Camel Framework in Analyzing the Financial Soundness of Commercial Banks in Malaysia: Pre and in the Time of Covid 19

*Nurhuda Nizar[1], Ahmad Danial Zainudin[2], Siti Zaitun Saddam[3], Muhammad Ridzuan Abdul Aziz[4]
[1,3,4]Universiti Teknologi MARA, Puncak Alam, Malaysia
[2]CIMB Investment Bank, Malaysia
hudanizar@uitm.edu.my*

Abstract: The COVID-19 pandemic has impacted many aspects of the economy, including commercial banking. This research aims to analyze the health of Malaysia's commercial banks before and during the COVID-19 pandemic. To accomplish this, the authors employed the CAMEL framework, widely recognized as one of the best tools for evaluating a bank's health. The study aims to comprehend the pandemic's impact on the financial health of banks during the pandemic. Secondary data was gathered from the financial statements of eight local commercial banks from 2017 to 2021. Results from this study suggest that the performance of commercial banks in Malaysia was generally stable and well-capitalized, with low non-performing loans and strong profitability before and during COVID-19. This study offers a new understanding of the effect of the pandemic on banking operations in Malaysia, a country whose financial system depends mainly on banks.

Keywords: *Bank performance, financial soundness, CAMEL framework, COVID-19 pandemic, Malaysia banking sector.*

1. Introduction

A negative impact of the COVID-19 pandemic was felt across almost all economic sectors (Albada & Nizar, 2022; Shen et al., 2020). There was no exception for the financial industry (Elnahass et al., 2021; Neef & Schandlbauer, 2021). The pandemic adversely affected the banking system in many ways. For example, the closure of business activities during the Movement Control Order (MCO) led to many businesses and individuals experiencing financial difficulties (Tajudin et al., 2021). Firms that stopped working during the MCO started missing out on revenues and could not pay their loans (Xiazi & Shabir, 2022). At the same time, individuals who lost their jobs during the crisis were furloughed or had less income and, as a result, could not repay their loans. Such a situation created a possibility of an increase in non-performing loans and adversely affected the performance of banks (Xiazi & Shabir, 2022). During the pandemic, central banks worldwide, including Malaysia, cut interest rates to stimulate economic growth (BNM, 2020). This move reduced banks' profitability as lower interest rates meant lower returns on loans and investments. Banks were also negatively affected when bonds and other traded financial instruments lost value, resulting in further losses. This situation had a detrimental impact on profits and banking capital, necessitating the need for extra provisions. The outbreak forced financial institutions, notably banks, to be ready for extremely difficult and diverse future challenges that could result from an immediate exogenous shock (Couppey-Soubeyran et al., 2020).

Considering the COVID-19 pandemic, the authors examined the capital, assets, management, earnings, and liquidity ratios of local commercial banks in Malaysia. This study is significant because the banking industry is one of the primary components of the financial system and contributes significantly to economic health and productivity (Agovino et al., 2022). To ensure a healthy, solid, and stable banking sector, the banks must be analyzed and evaluated to allow the smooth correction and removal of potential vulnerabilities. Additionally, financial services disruption is costly, so it is essential to address the issue of banking soundness.

A growing body of literature has observed the potential impact of the COVID-19 pandemic on the financial performance of banks (Demirgüç-Kunt et al., 2021; Elnahass et al., 2021). The present study differs as it used the CAMEL approach. The CAMEL approach is a widely accepted and internationally acclaimed system of banks and financial institutions (Kumar & Bindu, 2022). The CAMEL approach was proposed in 1988 by the Basel Committee on Banking Supervision of the Bank of International Settlements (BIS). Secondly, the study focused on Malaysian banks. As COVID-19 spreads globally, the impact of it on the banks' performance varies with institutional quality and the level of financial development. In other words, different countries may react differently in response to the pandemic. Therefore, the current paper's outcomes are helpful to Malaysian

banks and government bodies in implementing corrective measures in response to an economic crisis such as COVID-19.

The findings illustrate that the performance of banks remains stable before and during COVID-19. CAMEL ratios, on the other hand, significantly decreased during COVID-19. Furthermore, the effects of the COVID-19 epidemic on the bank's performance vary from one bank to another. This study contributes to the field by offering a new understanding of the effect of the pandemic on banking performance in Malaysia, a country whose financial system depends mainly on banks.

The study is organized as follows: Part two comprises a brief overview of the literature, part three is devoted to the data and methodology employed, part four is dedicated to the analysis and discussion of the selected banks' soundness, and part five is devoted to the concluding observations.

2. Literature Review

CAMEL is an acronym for six key performance parameters. C stands for capital adequacy, A for asset quality, M for management efficiency, E for earnings sufficiency, and L for liquidity position. The parameters are derived from published annual reports' balance sheets and income statements. Several existing studies used the CAMEL approach (Abdul Rahman & Masngut, 2014; Roman & Şargu, 2013; Rostami, 2015; Sarker, 2005) to examine the bank's performance.

The CAMEL approach is usually used as an internal instrument to identify the strengths and weaknesses of the bank's overall condition (Kamaruddin & Mohd, 2013). Using this approach indicates banking soundness and the solvency status of banks (Uhde & Heimeshoff, 2009). CAMEL ratios are also crucial for the investor and the financial regulator as a guideline to monitor a bank's performance. Studies done by Louzis et al. (2012) and Salas and Saurina (2002) show that the variables that relate to the bank-specific factors are considered early warning signals for future changes in banking stability. However, the findings are mixed (different), depending on the definition and interpretation of the measurement of the bank's ratio chosen for the studies.

Even though the CAMEL approach has a drawback, such as it is an internal instrument used to analyze the bank's overall condition based on its financial, operational, and managerial characteristics, this approach provides valuable information for assessing a bank's current situation. Many studies have been conducted to evaluate the performance of the banking sector in different countries using the CAMEL framework. For instance, Rafiq (2016) measured the performance of banks in Bangladesh, and Nurazi & Evans (2005) did the same in Indonesia. Another study conducted by Baselga-Pascual et al. (2015) indicated that bank-specific variables (i.e., asset structure, capitalization, profitability, liquidity, and revenue diversification) were the factors that influence banking stability. Previous studies (Abdul Rahman & Masngut, 2014; Kabir & Dey, 2012; Muhmad & Hashim, 2015; Roman & Şargu, 2013) documented that the CAMEL is among the most popular methods for predicting the failure and closures of banking institutions.

3. Data and Methodology

The sample period of this study was from 2017 to 2021. The study period ended in 2021 simply because 2021 was the latest date the study could cover. The sample comprised eight local commercial banks operating in Malaysia, as reported in Table 1. All data used in this study were produced annually and extracted from each bank's annual reports. The authors chose the CAMEL framework to evaluate and analyze the soundness of Malaysia's commercial banks.

Table 1: Local commercial banks

No.	Banks	Acronym
1.	Malayan Banking Berhad	MBB
2.	CIMB Bank Berhad	CIMB
3.	Public Bank Berhad	PB
4.	Hong Leong Bank Berhad	HLB
5.	RHB Bank Berhad	RHB
6.	Affin Bank Berhad	Affin
7.	Alliance Bank Malaysia Berhad	Alliance
8.	AmBank (M) Berhad	Ambank

a. Capital Adequacy Ratio

Capital adequacy is a crucial factor in determining banking activities. Achieving and maintaining a minimum capital adequacy requirement (CAR) is necessary to prevent banks' failure. The current study measured capital adequacy using the Common Equity Tier 1 (CET 1 Capital Ratio) and Tier 1 capital ratio. These measurements are parallel to BASEL I, II, and III requirements. Based on the definitions of capital used in the Basel Capital Account, the CET 1 Capital Ratio measures the bank's capital adequacy by determining the degree of robustness of banking institutions to withstand shocks to their balance sheets.

In contrast, the Tier 1 Capital ratio measures a bank's capital adequacy based on the core capital concept of the Basel Committee on Banking Supervision (BCBS). A higher ratio indicates a higher level of capital adequacy. According to Gersl & Hermanek (2010), this ratio measures the banks' ability to absorb unexpected losses. Past literature has indicated that the capital adequacy ratio is essential in maintaining a bank's stability (Abdul Rahman & Masngut, 2014; Bourkhis & Nabi, 2013; Kamaruddin & Mohd, 2013).

b. Asset Quality Ratio

This study used the gross impaired loan (GIL) to represent the asset quality ratio. GIL is directly associated with the exposure of banking vulnerabilities (Gersl & Hermanek, 2010). An increasing GIL ratio signals a deterioration of the quality of the credit portfolio, which may affect the bank's stability (Albulescu, 2010). This ratio could also portray how banks face their financial problems and the prediction of distress (Rahim & Zakaria, 2013). Hence, the level of gross impaired loans is an essential indicator of a bank's asset quality and credit risk.

$$GIL = \frac{\text{Gross Impaired Loan}}{\text{Gross Loan}}$$

c. Management Efficiency Ratio

The management efficiency ratio is a financial metric used to measure how effectively a bank's management uses its resources to generate revenue. In this study, the cost-to-income ratio was used to measure banks' management effectiveness, as reported in previous studies (De Jonghe, 2010; Kabir et al., 2015; Muhmad & Hashim, 2015). The total cost includes all the costs of running the bank, such as salaries and wages, rent, and utilities as a percentage of the generated income. The growth and success of banking institutions depend on efficient management practices to detect, monitor, and control risk exposures, thereby ensuring the safety and efficiency of the banks' activities (De Jonghe, 2010). A low management efficiency ratio indicates that a bank's management uses its resources effectively to generate revenue. On the other hand, a high ratio suggests that a bank's management is not using its resources efficiently, which can lead to reduced profitability and lower returns for investors.

The formula for calculating the management efficiency ratio is as follows:

$$CIR = \frac{\text{Total cost}}{\text{Net operating income}}$$

c. Earnings Ratio

The earnings ratio assesses the bank's profitability relative to its total assets or equity (Cheang & Choy, 2011). Earnings ratios can be further categorized into return on assets (ROA) and return on equity (ROE). The ROA describes the ability of banks to generate profit based on their assets (Morales & Estrada, 2010). The ROA is calculated by dividing net income by the average value of total assets. The higher the ROA, the more efficiently a bank profits from its assets (Albulescu, 2010). The ROE ratio measures the bank's efficiency in using its capital (Gersl & Hermanek, 2010). In other words, it shows the ability of banks to absorb losses by using their resources and fund effectively. The ROE is calculated by dividing net income by the average value of capital (IMF, 2006). As with the ROA, the higher the indicator, the more effectively the bank generates profits (Sarker, 2005).

$$ROA = \frac{\text{Net Income}}{\text{Total Asset}} \qquad ROE = \frac{\text{Net Income}}{\text{Equity}}$$

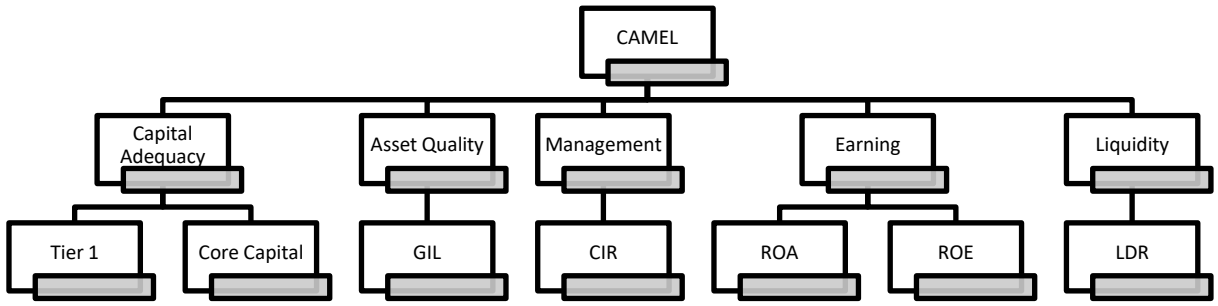
d. Liquidity Ratio

The loan-to-deposit ratio (LDR) is the liquidity ratio. Banks' liquidity ratios indicate their ability to meet their current obligations when they are due. The liquidity level suggests the banking sector's ability to withstand fund shocks without experiencing liquidity problems (Muhmad & Hashim, 2015). Withdrawal of current accounts and saving deposits may present the bank with formidable obstacles. In other words, in the case of severe maturity mismatches, insufficient liquidity may threaten the stability of a bank.

$$LDR = \frac{\text{Total Loans}}{\text{Total Deposits}}$$

Below is the summary of the CAMEL ratio used in this study.

Figure 1: CAMEL indicator



4. Results

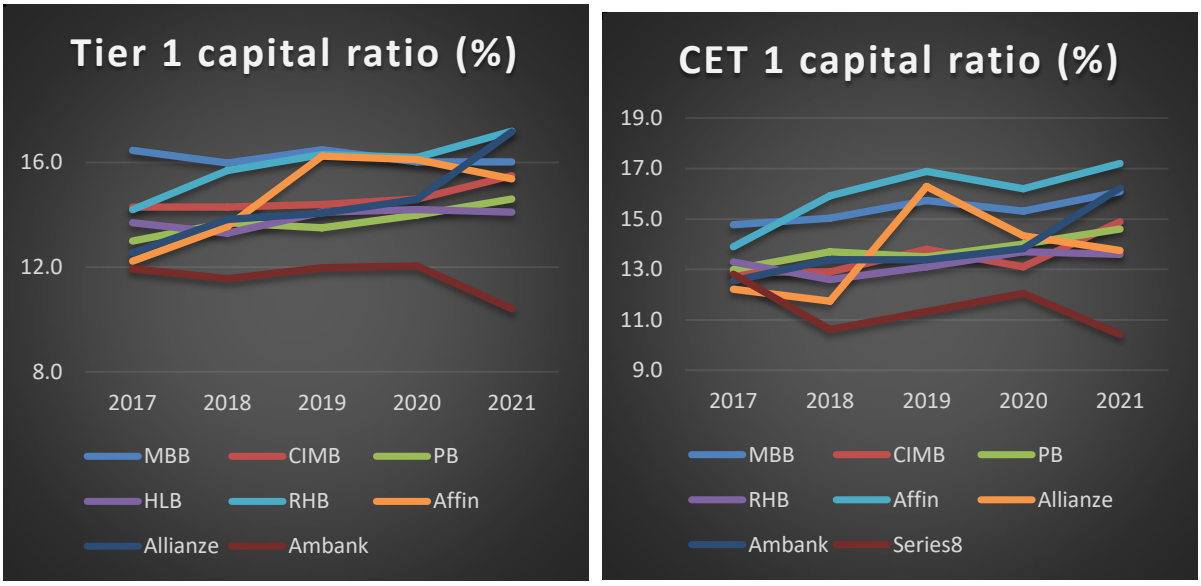
This section analyzes the result of the CAMEL ratio calculation for eight local commercial banks.

Capital Adequacy Ratio

Table 2: Capital Adequacy Ratio (authors' calculation)

	Tier 1 capital ratio (%)					CET 1 capital ratio (%)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
MBB	16.5	16.0	16.5	16.0	16.0	14.8	15.0	15.7	15.3	16.1
CIMB	14.3	14.3	14.4	14.6	15.5	12.9	12.9	13.8	13.1	14.9
PB	13.0	13.7	13.5	14.0	14.6	13.0	13.7	13.5	14.0	14.6
HLB	13.7	13.3	14.1	14.2	14.1	13.3	12.6	13.1	13.7	13.6

RHB	14.2	15.7	16.3	16.2	17.2	13.9	15.9	16.9	16.2	17.2
Affin	12.2	13.6	16.2	16.1	15.4	12.2	11.7	16.3	14.3	13.8
Alliance	12.6	13.8	14.1	14.6	17.2	12.6	13.4	13.4	13.8	16.2
Ambank	11.9	11.6	12.0	12.0	10.4	12.8	10.6	11.3	12.0	10.4
Average	13.5	14.0	14.6	14.7	15.0	13.2	13.2	14.3	14.1	14.6



Graph 1: Tier 1 Capital ratio and CET 1 capital ratio.

A bank must maintain a minimum amount of capital to prevent unforeseen losses or adverse shocks (Abdul Karim et al., 2014). The bank's goals in capital management are to 1) meet the capital requirements set by the banking markets, 2) ensure the bank can continue as a going concern, generating returns for shareholders and benefits for other stakeholders, and 3) maintain a strong capital base to support the development of its business. Table 2 presents the capital adequacy ratio for eight local commercial banks in Malaysia. The capital adequacy ratios are computed following BNM's Capital Adequacy Framework (Capital Components) under the Basel Framework. The minimum regulatory capital adequacy requirements for CET1 and Tier 1 are 4.5% and 6.0% of total Risk-Weighted Assets (RWA).

The line graph above illustrates the Tier 1 capital ratio and CET1 ratio in all local commercial banks in Malaysia between 2017 and 2021. As of 2021, Ambank's Tier 1 capital ratio was 10.4%, HLB's was 14.1%, PB's was 14.6%, Affin's was 15.4%, CIMB's was 15.5%, and MBB's was 16%. Alliance and RHB had the highest industry Tier 1 capital ratio at 17.2%. For the CET 1 ratio, Ambank was 10.4%, HLB was 13.6%, Affin was 13.8%, PB was 14.6%, CIMB was 14.9%, MBB was 16.1%, Alliance was 16.2%, and the highest CET1 ratio was Alliance at 16.2%. Both ratios showed a steady but significant rise over the period, while the percentage of both ratios for Ambank experienced a downward trend.

Before the Covid-19 pandemic, all local commercial banks gradually strengthened their CAR in the years before in response to regulatory reforms such as Basel III. The average CAR for banks was around 14%, and most banks had a CAR above the minimum regulatory requirement.

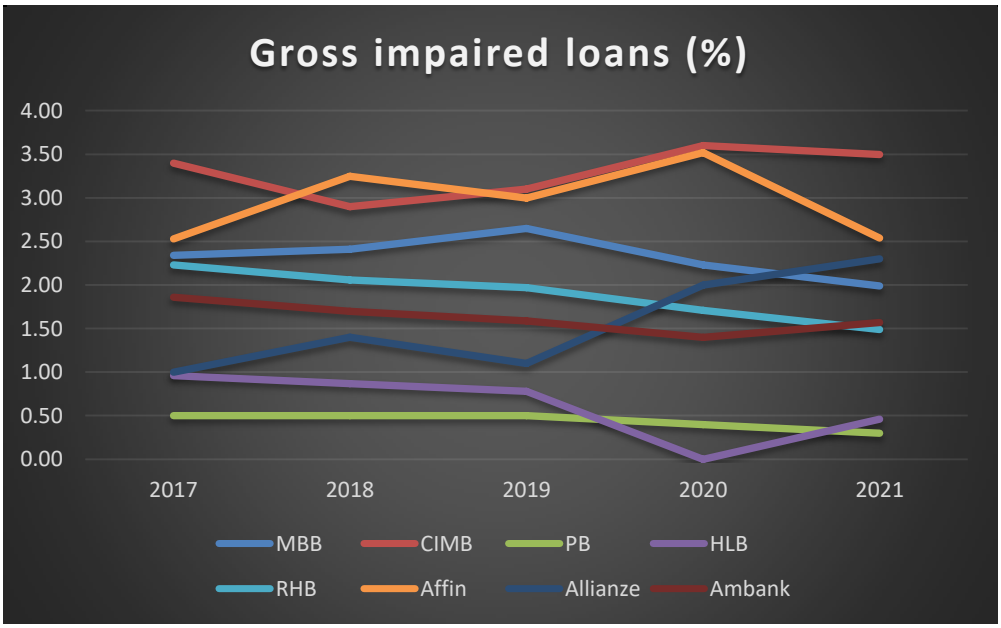
During the COVID-19 pandemic, the pandemic pressured banks' CAR, causing many banks to increase their provisioning for loan losses, thereby reducing their capital and affecting their CAR. Regulators implemented relief measures to assist banks in the short term in maintaining their CAR. Despite the challenges posed by the pandemic, it can be concluded that all local commercial banks in Malaysia have remained well-capitalized and maintained a CAR above the minimum regulatory requirement to withstand major economic shocks and absorb potential losses, particularly during the COVID-19 pandemic. The impact of the COVID-19 pandemic

has shown the importance of ample balance sheet capacity to handle a significant drawdown of corporate lines during the pandemic.

Asset Quality Ratio

Table 3: Asset Quality Ratio (authors' calculation)

	Gross impaired loans (%)				
	2017	**2018**	**2019**	**2020**	**2021**
MBB	2.34	2.41	2.65	2.23	1.99
CIMB	3.40	2.90	3.10	3.60	3.50
PB	0.50	0.50	0.50	0.40	0.30
HLB	0.96	0.87	0.78	0.61	0.46
RHB	2.23	2.06	1.97	1.71	1.49
Affin	2.53	3.25	3.00	3.52	2.54
Alliance	1.00	1.40	1.10	2.00	2.30
Ambank	1.86	1.70	1.59	1.40	1.57
Average	1.9	1.9	1.8	2.1	1.8



Graph 2: Gross Impaired Loan.

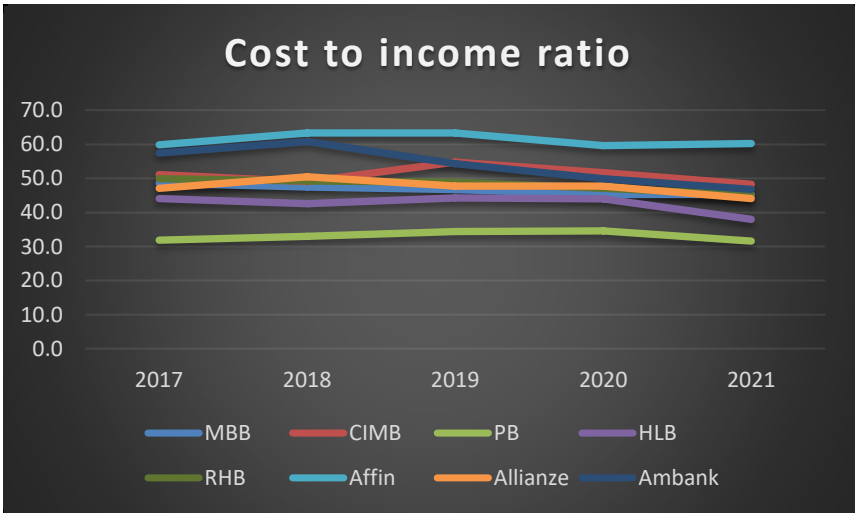
The asset quality ratio, represented by GIL, is the crucial indicator for identifying problems with the loan portfolio quality. A loan is deemed impaired when it is probable that not all principal and interest payments will be collected. The lower the ratio, the better the bank's asset quality (Wasiuzzaman & Gunasegavan, 2013). As of 2022, the GIL ratio for all local commercial banks was lower in 2021 than in 2020, except for Alliance and Ambank. Alliance's GIL increased marginally to 2.30% for the year under review compared to 2.00% last year. The same applies to Ambank, where the pandemic impacted the GIL ratio from 1.40% in 2020 to 1.57% in 2021. The GIL ratio for MBB is 1.99%, which was noticeably lower than its GIL in 2020, 2.23%. The GIL for CIMB improved to 3.50% in 2021 from 3.60% in 2020. The PB's GIL was 0.30%, and HLB was 0.46%. RHB's GIL remained low at 1.49%, as reported in Table 3. Last year, Affin recorded total impaired loans of 1.89%, reducing 98 basis points compared to the previous year's 3.52%. Overall, the GIL ratio remained stable for all local commercial banks in Malaysia, driven by the resumption of loan repayments amid the gradual reopening of the economy. Given the COVID-19 pandemic, extending repayment assistance measures provided much-needed temporary relief to affected borrowers. Strict credit underwriting procedures, close monitoring, and proactive collection efforts are needed to ensure that asset quality remains stable.

In assessing the performance of banks, there are various reasons why banks should concentrate on loan impairment. Firstly, loan impairment can significantly impact a bank's financial performance and profitability. A high level of loan impairment can lead to increased provisions and a reduction in net income. Secondly, the level of loan impairment can indicate a bank's credit risk management practices. Banks with substantial credit risk management practices are less likely to experience high loan impairment levels.

Management Ratio

Table 4: Management Ratio (authors' calculation)

	Cost-to-income				
	2017	**2018**	**2019**	**2020**	**2021**
MBB	48.6	47.5	46.7	45.3	45.3
CIMB	51.1	49.1	54.8	51.7	48.3
PB	31.9	33.0	34.4	34.6	31.6
HLB	44.1	42.6	44.3	44.0	38.0
RHB	49.9	49.3	48.9	47.1	45.2
Affin	59.9	63.4	63.4	59.7	60.3
Alliance	47. 1	50.5	47.8	47.8	44.1
Ambank	57.4	60.8	54.3	49.9	46.8
Average	49.0	49.5	49.3	47.5	44.9



Graph 3: Cost-to-income ratio.

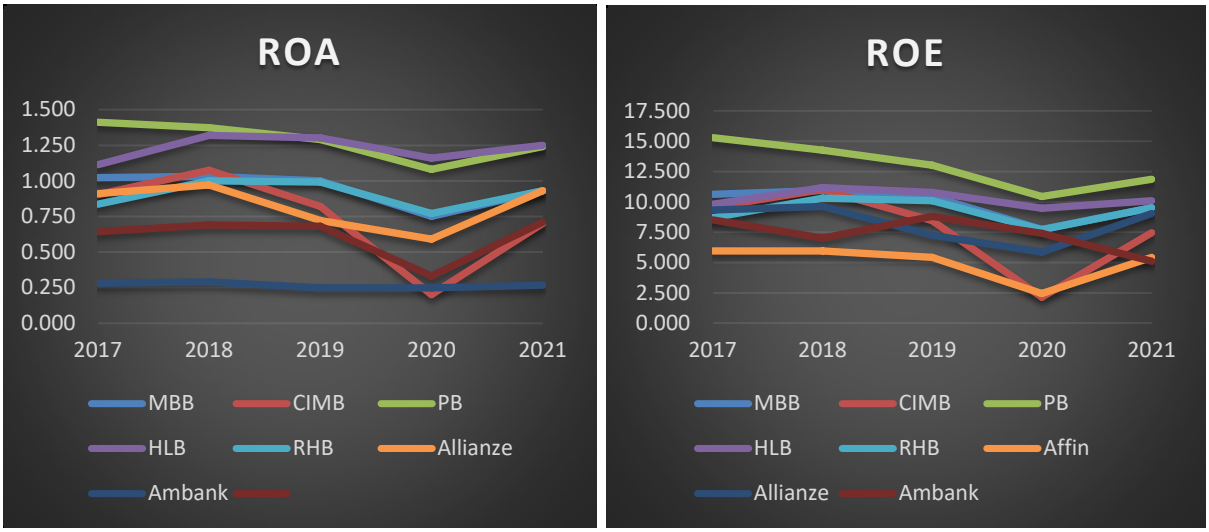
An essential financial indicator for assessing the efficiency of banks is the cost-to-income ratio (CIR). CIR shows how a bank's operating expenses relate to its operating income. The measurement compares a bank's operating income to the operations' cost. Higher ratios suggest that the bank's operating expenses are too high, while lower ratios indicate that the bank is functioning more profitably. Following Muhmad and Hashim (2015), management efficiency was measured by the cost-to-income ratio. The cost-to-income ratio is computed using total cost over the net operating income. Despite the challenges during the COVID-19 pandemic, the CIR remained unchanged for MBB at 4.53%. Meanwhile, the CIR for CIMB, PB, HLB, RHB, Alliance, and Ambank decreased for the previous year. The reasons are due to the cost optimization initiatives of each bank in managing marketing, administrative, and compensation costs. Only Affin's CIR deteriorated slightly to 60.25 from 59.65% in 2020. The reduction in the CIR ratio was attributed to an increase in operating expenses. The banks had to invest in technology and digital transformation initiatives at an accelerated pace in response to changing customer needs and preferences. Overall, all local commercial

banks in Malaysia maintained a relatively strong management ratio due to their focus on digital transformation and operational efficiency.

Earnings Ratio

Table 5: Earning Quality Ratio (authors' calculation)

	ROA					ROE				
	2017	**2018**	**2019**	**2020**	**2021**	**2017**	**2018**	**2019**	**2020**	**2021**
MBB	1.022	1.032	1.000	0.750	0.930	10.629	10.940	10.449	7.730	9.509
CIMB	0.902	1.073	0.820	0.200	0.700	9.567	11.03	8.460	2.140	7.459
PB	1.411	1.372	1.290	1.080	1.240	15.284	14.273	13.029	10.440	11.859
HLB	1.113	1.318	1.300	1.159	1.250	9.794	11.169	10.790	9.470	10.089
RHB	0.835	1.000	0.990	0.770	0.930	8.688	10.300	10.099	7.700	9.519
Affin	0.642	0.689	0.680	0.330	0.710	5.938	5.939	5.419	2.439	5.419
Alliance	0.910	0.970	0.720	0.590	0.930	9.330	9.610	7.240	5.860	9.040
Ambank	0.279	0.289	0.247	0.250	0.268	8.500	7.000	8.800	7.400	5.100
Average	88.93	96.78	88.09	64.11	86.97	971.63	1003.26	928.58	664.74	849.93



Graph 4: ROA and ROE

An institution's profitability is contingent on the bank's effectiveness and efficiency in managing assets and liabilities. The increase in profitability should inspire confidence among depositors, investors, creditors, and the public. The ability to support current and future bank operations is contingent on the earnings and profitability profile (Shar, Shah, & Jamali, 2010). Therefore, earnings quality is crucial in describing banks' financial performance. In assessing the earning quality of banks, this study focuses on the ROA and the ROE ratios. Table 5 above shows the ROA for all the commercial banks ranged from 0.7% to 0.93%, with a significant increase in 2021. It clearly shows the fluctuating trend of profitability of each of the commercial banks before the pandemic (2019) to during the pandemic (2020). In other words, all commercial banks experienced a significant adverse impact on their profits at the onset of the pandemic as economic activity stopped.

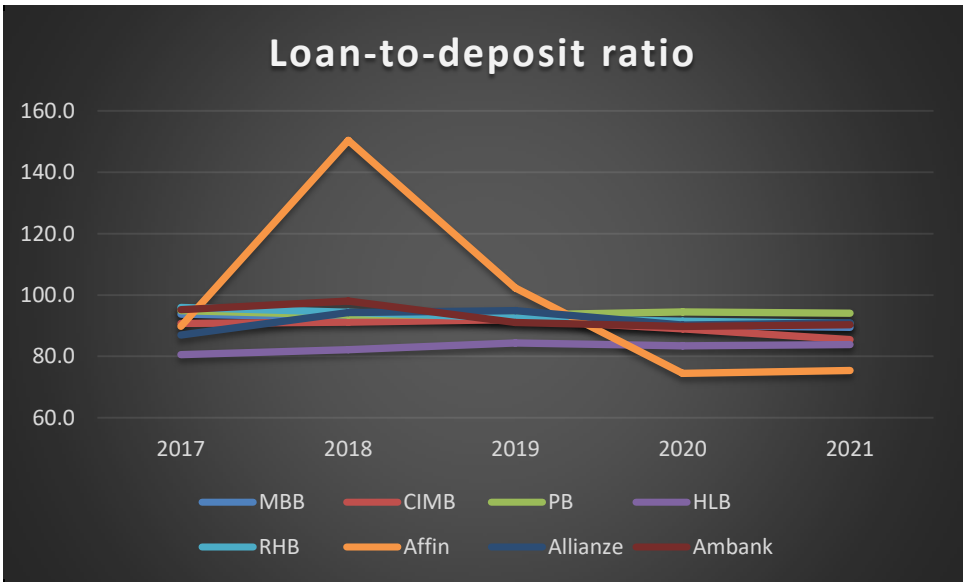
The trend of the ROE ratio for all commercial banks tends to be similar to the ROA ratio before and during the pandemic. At the end of the first year of the pandemic (2020), the return on equity (ROE) of the CIMB fell to 2.140 from 8.460 in the year 2019. This decline in profitability was observed in all banks. Compared to other

banks, CIMB is the most affected by ROE changes (-6.32%), followed by ROE changes for Maybank (-2.719%) and Public Bank (-2.589). This may have occurred as a result of the repeated lockdown of the economy, affected banks' lending activity, and consequently reduced banks' net interest income significantly, which is a major source of earnings for banks.

Liquidity Ratio

Table 6: Liquidity Ratio (authors' calculation)

	Loan-to-deposit ratio				
	2017	**2018**	**2019**	**2020**	**2021**
MBB	93.8	92.7	92.4	90.1	89.5
CIMB	90.8	91.2	92.0	89.0	85.5
PB	94.9	93.6	93.5	94.5	94.1
HLB	80.6	82.2	84.4	83.5	83.9
RHB	96.0	94.4	92.5	91.5	90.8
Affin	89.8	150.4	102.3	74.5	75.4
Alliance	87.0	94.3	94.9	90.2	91 .0
Ambank	95.3	98.1	91.1	89.8	90.4
Average	91.0	99.6	92.9	87.9	87.1



Graph 5: Loan to deposit ratio

A bank's liquidity can be evaluated using the LDR, calculated by dividing the total loans by the total deposits during a given time frame. The LDR is a percentage reflecting a bank's ability to fund its loan portfolio with customer deposits. A lower LDR indicates a greater reliance on alternative sources of financing. The table above shows the LDR trend for all eight commercial banks within five years. As of 2022, the LDR ratio of commercial banks was lower in 2021 than in 2020, except for HLB, Affin Bank, Alliance and Ambank. HLB's LDR increased by 0.04% for the year under review compared to 83.5% last year. The same applies to Affin Bank, the LDR ratio increased from 74.5 % to 75.4 %; Alliance's LDR ratio is 91.0% higher than its LDR in 2020, 90.2%. The LDR ratio for Ambank improved to 90.4% in 2021 from 89.8% in 2020. Financial markets experienced significant volatility due to the pandemic, and many banks experienced increased customer liquidity demand. However, due to their access to central bank funding facilities and other liquidity sources,

all banks could maintain a relatively stable LDR ratio and the liquidity buffers at the current levels are strong enough to cope with the Covid-19 pandemic.

5. Conclusion

This study evaluated the performance of local commercial banks operating in Malaysia. The study used the CAMEL approach to analyze the financial performance of banks. This framework is the best technique for evaluating banks' performance. Results from this study suggested that banks' performance was significantly impacted during the COVID-19 pandemic. Even though some of the ratios under the CAMEL approach showed a declining trend, the local commercial banks in Malaysia were generally stable and well-capitalized, with low non-performing loans and strong profitability. Moreover, the effects of the COVID-19 epidemic on the bank's performance varied from one bank to another.

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Disabled Entrepreneur Empowerment through Leadership Entrepreneurship Acceleration and Development League (SAYLEAD)

Saadiah Juliana Saadun[1]*, Roslinda Alias[1], Muaz Mohd Norman[2]
[1]Disability Services Unit, Universiti Teknologi MARA, Shah Alam, Selangor, *Malaysia*

[2]Selangor Youth Community, Yayasan Raja Muda Selangor, Shah Alam, Selangor, *Malaysia*

*saadiah2861@uitm.edu.my

Abstract: People with disabilities are highly underrepresented in the labor sector and often encounter discrimination from employers. They are frequently facing challenges to secure jobs although the government has set one-percent employment of Persons with Disabilities (OKU) policy in the public sector. Additionally, many individuals with disabilities face discrimination and/or fear of becoming a burden by business owners. The Malaysian Family Empowerment AGENDA which is the Sixth Focus of the 12th Malaysia Plan (12th Plan) promotes the development of people with disabilities (OKU) in various fields, including entrepreneurship and employment to overcome these obstacles and promote empowerment and facilitate the economic independence of individuals with impairments. The Selangor Youth Community sponsored by Exco Keusahawanan and Yayasan Hasanah and strategic partnership with University Technology MARA through Disability Services Unit (DSU) created Leadership Entrepreneurship Acceleration and Development League (SAYLEAD) aims to identify gaps in the existing entrepreneurship ecosystem and build a linkage to accelerate entrepreneurs and become global champions. The model includes 3 modules inclusive of 7 stages and to name a few: entrepreneur profiling, setting up business, financial and operation management, sales and marketing, business innovation and stakeholder management. Throughout the SAYLEAD program, the focus of attention shifts from the limitations of the individual to the limitations of the context in which the person operates. In-depth case studies are offered to illustrate the process of entrepreneur empowerment and the impact of the entrepreneurship program on the lives of the entrepreneurs who have participated thus far.

Keywords: *Entrepreneurship; Entrepreneur; Disability; Empowerment; Employment*

1. Global Economics and Its Impact on Malaysia

Economic inequality around the world has been steadily getting worse over the last few decades, and the numbers are scary. In a recent talk, according to a paper from Oxfam International, the 85 richest people in the world possess more money than the poorest 3 billion people on the planet (Ricardo et al., 2014). To add, 70% of the people globally live in countries where the gap between rich and poor has grown in the last thirty years. Among the members of the Organization for Economic (OECD) member countries from 2007 to 2010, inequality in income grew faster during those three years than it had in the 12 years before (OECD, 2013). This worrying trend of more economic growth inequality is not just a problem in developing countries or politically unstable nations but affected the world's wealthiest countries as well. Besides, United Nations (2014) in their report highlighted that since the global recession of 2007; it has been getting worse and known as some financial institutional collapse (Helleiner, 2011). As the gap between rich and poor in industrialized countries continues to grow, economic policies make things worse for the middle class, the poor, and those on the margins. Malaysia also felt the heat and a report by Goh and Michael (2010) stated that the eruption of the global crisis in late 2007 has led to the higher risk.

Individuals and households are able to manage their finances in the face of global uncertainties and the higher demand for protective savings due to the receding role of the government in the provision of public goods (Malaysian Institute of Economic Research (MIER), 1999). Among the stimulus package announced by the government and claimed to give multiple impacts on the economy are: RM1.2 billion to build more low- and medium-cost houses and RM500 million to upgrade, repair and maintain police stations and living quarters, and army camps and quarters. In other economic research, the stimulus package offered is questionable and not proactively solving the situation (Quah, 2009). In fact, from a labor and employment perspective, one of the main challenges faced by Malaysia is being trapped in a middle-income trap and falling

further behind its competitors as a low-cost producer to neighbors like Vietnam, Indonesia and Thailand (World Bank, 2009). To add to the burden, the report further highlights Malaysia is unable to catch up the technological advancement and so to become a high-end producer. In effect, reports by Malaysia Economic Monitor (World Bank, 2009) which review Malaysia's economic development suggest the government to improve the skills of the workforce by exploring.

IT skills to be at par with technological ladder thus, able to diversify the export capability by developing a new range of products and services. Otherwise, it will continuously have a huge impact on the employment rate in Malaysia. As the report critically investigated and monitored Malaysia's progress, other than to enrich workforce skills, making growth more inclusive was another element that will help develop the economy. Although the unemployment rate slightly increased from 3.34% in 2008 to 3.67% in 2009, the inclusiveness policies will assist the household to cope with poverty, therefore, giving new insight into entrepreneurship and risk-taking. With the greater effect of the income gap, lack of skilled labor and IT advancement, people with disabilities continue to be among the most vulnerable group to economic inequality. Although during the 2022 national budget presentation, opportunities were made available for young disabled persons to be hired through the MyStep (Malaysia short-term employment program) scheme which offers 80,000 job opportunities on a contract basis – 50,000 jobs in the public sector and 30,000 in government-linked companies, Senator Ras Adiba Radzi reported to the Bernama, an individual with disability experiencing discrimination to secure right job and employer low readiness to hire them are still at high (BERNAMA, 2020). To explain, in May 2015, only 2,985 PWDs are working in the public sector (The Ministry of Human Resources, 2019) and looking at the statistic for 2020, there are 586,558 registered PWDs and Selangor rated as the highest at 95,101 persons with disabilities (Jabatan Kebajikan Masyarakat, 2022). Although the number of PWDs getting hired might be increased in recent years.

However, unfortunately, people with disabilities participation in employment has not reached the basic target of 1% imposed by the government ("Disabled in Workplace yet to Reach 1%," 2014) and equal opportunities and remuneration as stipulated by the Convention on the Rights of Persons with Disabilities (United Nations, 2008) are not yet achieved. Thus, the country will suffer significant losses and waste resources should the problem be left unattended. In a review of employer attitudes on hiring disabled workers, despite many policies designed to cater the disabled employment issues, employer attitudes in hiring PWDs contributed to the biggest challenges (Marrone & Golowka, 1999; Roessler, 2002; Satcher & Hendren, 1992; Unger, 2002) which has led to biggest concern of enabling policies (mechanism to handle and environment for disabled such as education and transportation) (Tiun et al., 2011). Inequalities still exist in the workplaces of individuals with disabilities, particularly with regard to employment rates (Judge et al., 2010), labor rights (Kristof-Brown et al., 2005), pay and potential career options (Visier, 1998). Few studies also reported on obstacles during employment (discrimination) and the hiring process (exploitation at work) (Tiun & Khoo, 2013) and the lack of relevant assistive technology (Selvi, 2018). Over decades, these situations remain unchanged and are not unique in the majority of industries and across international borders. As a result, they have a significant influence on the lives of people with disabilities who are either looking for work or who are already employed (Yamaki & Fujiura, 2002). In reaction to the current trend, self-employment and entrepreneurship is one alternative approach to deal with the complicated problems preventing people with disabilities from becoming economically independent.

Since the writings of Marshall (1890) highlighted the concept of entrepreneurship as a key determinant of economic success and a crucial factor in shaping the distribution of economic activities on the national (Nikolaj et al., 2009), this article is to describe the details of an intervention approach designed to promote and support entrepreneurship among individuals with disabilities who are interested in starting and have launched their small businesses. Schumpeter (2003) in his study emphasizes entrepreneurs are not only accountable for the establishment of new businesses or innovation; they are also able to create job opportunities not only for themselves but for other individuals and wage growth (Nikolaj et al., 2009). Thus, entrepreneurship can be a platform for disabled people and are the engine that drives their economic growth (Irisalva et al., 2020), and the levels of entrepreneurial activity that vary across countries and regions play substantial implications for the socioeconomic differences that exist in those areas (Anderson & Galloway, 2012). The goal of this article is to present the specifics of an intervention strategy meant to promote and support entrepreneurship among individuals with disabilities who have launched their small businesses and

are interested in doing so. This paper will provide an outline of the SAYLEAD program and members of the strategic partnership, as well as a few examples of successful entrepreneurs that participated. The Majlis Tindakan OKU Selangor (MTOS) supported this initiative with the aim of re-connecting demand from small businesses with the underutilized labor supply of PWDs. SAYLEAD provides potential and aspiring entrepreneurs with disabilities with resources and support (learning tools and a mentor) to assist them in expanding or launching their firms.

Self-Employment and Entrepreneurship: In the Malaysian Labour Force Survey Report (Laporan Survei Tenaga Buruh) which is published annually by the Department of Statistics (DOSM) (2019), a self-employed also known as own account worker define as a person who operates his or her farm, business or trade without employing any paid workers assisting in the conduct of the enterprise. In fact, own-account workers form a significant component of the Malaysian workforce and account for almost 2,859,200 (20%) of the currently active working population in Malaysia. Syahida and Amran (2008) affirm, in a developing country like Malaysia, entrepreneurial activities through the creation of new ventures are seen as a mechanism to improve the distribution of income. It is vital to stimulate economic growth and to reshape an economic structure that has been highly dependent on the activities of large firms as a primary driver of economic growth in Malaysia. The government of Malaysia inclusive of its constitutional bodies has been playing a significant role in the process of promoting and supporting domestic entrepreneurs to start their businesses.

Not surprisingly, the Malaysian government has provided an RM40 billion financing package for 2022 as part of the "Semarak Niaga Keluarga Malaysia" initiative. The financing schemes include direct loans, financing guarantees and equity injections, which aim to benefit every group of entrepreneurs regardless of micro-enterprises or public-listed companies. Particular emphasis is on restoring business capability as a first strategy by maximizing access to funding in the business sector, especially for small and medium enterprises (SMEs) and the informal sector. Other than Semarak Niaga, the government will provide additional financing worth RM1.8 billion through various agencies such as National Entrepreneurial Group Economic Fund (Tekun), Bank Simpanan Nasional, Agrobank, Bank Rakyat and Bank Negara Malaysia (Ministry of Finance Malaysia, 2022). However, if a start-up is unable to comprehend the essential components and parts of entrepreneurship, it may fail and be unable to sustain itself for an extended period of time, regardless of the amount of assistance supplied (Gage, 2012).

According to the Social Welfare Department of Malaysia (Jabatan Kebajikan Malaysia, 2022), there were a total of 586,558 registered individuals with disabilities in Malaysia. The state of Selangor had the greatest total number of PWDs, which were 95,101. According to the report, there are seven different types of disabilities, including physical disabilities, learning disabilities, visual impairments, mental problems, hearing impairments, multiple disabilities, and speech problems. Multiple disabilities were also noted. The report examines the registration of PWD further by age group, and it finds that the cumulative number of people with a learning impairment in the age range of 23-34 is the largest with 52,741 individuals, while the number of young people with physical problems is 28,991 individuals. Next in line are those who are deaf, mentally challenged, visually impaired, have multiple disabilities, or have trouble speaking, with 7933, 7821, 7658, 5,383, and 453 people respectively (Social Welfare Department, 2022). The information presented thus far indicates that there will be a major loss suffered by the economy if there is no specific program aimed to assist young people in finding employment.

2. SAYLEAD to Support Government Initiatives and Its Intervention

The first of its kind, SAYLEAD is Selangor Youth Community's project under Entrepreneurship Selangor that aims at improving the capacity and connecting the gap within the entrepreneurship ecosystem for EWDs. The SAYLEAD initiative funded by Yayasan Hasanah for SAYLEAD 2.0 and Exco Keusahawanan Selangor during SAYLEAD 3.0 & 4.0 through a grant to the Selangor Youth Community (SAY), set out to minimize challenges faced by EWDs which identified from the previous Geran Pelancaran program for EWDs to start up their businesses. Those gaps are i) highly dependent on handouts, ii) lack of business compliance to the authorities by the entrepreneurs and iii) lack of commercialization opportunities due to consumer's low confidence in the product (Selangor Youth Community, 2021). Modules in SAYLEAD are an extension of existing practices in the entrepreneurship program and from experience with international micro-business development. The

strategic partners believe entrepreneurship can be developed through inclusive education, support, encouragement, and assistance in overcoming universal barriers, like access to capital to start the business and networking.

As a gateway to paid employment, marketing promotional activities are constantly carried out, and support is received from the current partners through the utilization of the SAYLEAD official application poster. Everyone who is qualified to apply and satisfies the standards that have been established will be referred to as a SAYLEAD participant. Candidates are expected to have at least one concept for a potential business. Some of the candidates had previous business experience before they became disabled, and now they wish to pursue entrepreneurship in a field that is connected to their previous employment or company expertise. Many people who have impairments are drawn to the idea of starting their businesses since doing so gives them more control over their working lives and makes it easier for them to make accommodations for their conditions. People who are self-employed or who are paid a wage or salary typically have more say over the specifics of their work, including its nature, its location, and its timetable. Table 1 below explains the eligibility criteria for the SAYLEAD application.

Table 1: Information below Illustrate the Requirements for Interested Participants Prior Application

Citizenship and Age	Born in Selangor, or Currently living in Selangor for at least 5 years. Age 14 to 40 years old.
Eligible Entrepreneurs	Registered with the Department of Social Welfare (Jabatan Kebajikan Masyarakat) as differently-abled people. Currently receiving Disability Worker Allowance (Elaun Pekerja Cacat, EPC)
Type of Business	Any categories of business. Registered or not with Suruhanjaya Syarikat Malaysia (SSM).

Source: Adopted from https://entrepreneurshipselangor.com.my/saylead

Disabled Entrepreneur Profiling: Understanding the importance of profiling, the 1st module allows entrepreneurs to get to know mentors and brainstorm ideas regarding their entrepreneurship ideas. The SAYLEAD candidates will learn to project their value proposition using business model canvas (BMC) and be financially driven. The module allows the participants to truly understand the nature of the business and learn about the business ecosystem. Participants who complete their BMC submit their creative work to the mentors assigned where they are reviewed by a mentor and coach. Table 2 below illustrates three (3) case studies of successful entrepreneurs undergoing 6 months of training and development at SAYLEAD and having successfully completed all the modules that have been set with excellence.

Table 2: Three Successful Stories of Entrepreneurs with Disability

Case	Story
1	Yusairi, who is 31 years old and has a physical disability (nerve damage in the hand and right leg), owns a business in Medan Selera Pasar Modern MPSJ in Subang Jaya with only RM3,000 in the capital. He identified a gap in the market by observing that the traditional dish "Putu Piring," which is typically classified as a form of street cuisine, has never been commercialized. As a result, he decided to become a mentee of SAYLEAD to help him monetize the Putu Piring Warisan Nenek business. Throughout the entire training program, coaches and mentors provided one-on-one guidance to Yusairi, assisting him in developing his unique selling proposition as well as his future business plan. He was successfully completed and employed the module, and able to produce an income of RM30,000 per month and RM234,000 annually. He was awarded the title of the first winner of the SAYLEAD 2021, a business grant worth RM3,000 and personalized coaching for 1 year. At this point, Yusairi is in a position to hire six assistants, and he has also expanded his business and launched the third outlet into the food court of a hypermarket.
2	Zaim Zazami Ibrahim, 35 years old A Spinal Cord Injury patient due to a road accident in 2011, Zaim's business was hardly impacted during the pandemic Covid-19 last year. He had to close his physical tailor shop and lay off 3 workers. Since he joined SAY LEAD, he changed his business model to an online sewing class, launched a new sewing book and managed to increase revenue by 268%.
3	Nooraihan Che Li is known as a home appliance entrepreneur. She began the business in 2017. She has been involved in the professional business platform as a sole authorized distributor of Desini

Malaysia for more than a year. She has a physical disability and her professional working experience was Investigative officer of the anti-corruption agency and owns a certificate of the law of the anti-corruption body. She is always in demand and invited to provide digital platform training for disabled entrepreneurs. She started a company that focuses on distributing home appliances and was awarded Hall of Fame Shopee in 2021. She was crowned as the best-disabled entrepreneur and won a business grant worth RM3,000 and one year of personalized coaching. She had achieved sales revenue of up to RM300,000 online only at Shoppe and Lazada platforms while following the SAYLEAD program. Latest, she successfully opened a western restaurant branch as a side income. She has created at least 300 e-commerce entrepreneurs through her business platform.

3. Business Startup

Since 2019, 40 individuals signed up for the SAYLEAD program, 20 participants completed the course and went through to the final stage, and the top 3 of these 2 cohorts were approved for a business grant and a one-year bridging program focusing on empowering SAYLEAD winners to become financially sustainable and eligible for SAY ASPIRE export-ready program. Grants of up to RM3,000 were awarded through SAYLEAD, which are used merely for business development purposes. SAYLEAD encouraged their mentees to establish the business and keep the four focus areas as a priority which are management, technology and digitalization, engagement and innovation.

Strategy Development: SAYLEAD is an outcome-based and developmental project. Strategies have progressed during the second and third cohorts. SAYLEAD management uses a business model developed by SAY itself to assess mentee progress. As a result of the experiences gained in 2019, SAYLEAD is enhancing its program for aspiring business owners. The committee discontinues or reconfigures tactical approaches that fail to produce expected results and proactively improvises the intervention. Those are:

- As an intervention to respond to the participants' emotional needs and overall welfare, SAYLEAD is providing counseling as a class that may be taken by participants.
- The participants in the communication class have been studying how to give excellent presentations by taking inclusive criteria into mind. The class has been levelled up.
- Following that some entrepreneurs do not have the equipment for online learning, they are also lent a laptop to facilitate the learning session.
- Transport allowance is also given to participants who use public transport and own vehicles.
- Due to the Covid-19 pandemic, SAYLEAD cohorts 2 and 3 were held online. Understanding the challenges that participants go through, SAYLEAD cohort 4 is currently conducted face-to-face and the facility chosen was PWDs-friendly.
- The mentors need to accompany their mentees during site visits with local authorities such as Perbadanan Kemajuan Negeri Selangor (PKNS) (business facilities), Majlis Bandaraya Shah Alam (MBSA) (license), Hijrah Selangor (finance), and Senang PKS (insurance).
- The participants will consult with their respective mentors after attending the business development coaching sessions and receiving proper guidance until the completion of the assignments.
- Mentors are required to attend training specifically developed to expose them to the universal design of instructions prior to mentoring the participants.
- The Disability Services Unit has presented its pilot initiatives at professional conferences, which strengthens the capacity of other agencies and academic institutions around Malaysia to explore changing their practices to the one being proposed by the Disability Services Unit. As these efforts go through the evaluation process, the outcomes will be shared with the SAY as examples of best practices for national distribution.
- For monitoring purposes, each mentor is asked to make periodic evaluations and ensure that each task given is able to be completed according to the time that has been set. The mentor should be a facilitator and make a reasonable assessment according to the participant's ability.
- Mentors are asked to participate in every visit to their mentee's business premises to get direct input on how their mentee manages the business and the challenges that can be overcome so that it can be improved in future work.

- SAYLEAD strongly encourages mentees to always communicate with other mentees so as not to feel alone and burdened by the current situation.
- For marketing purposes, mentees are encouraged to use self-marketing techniques to increase self-confidence in the products and services offered.
- The mentors are encouraged to promote and assist the participants in connecting with any stakeholders relevant to the participants' area of business, which will increase the participants' chances of establishing a connection.

Sales Turnover and Outcome: With constant improvement and drive for a quality entrepreneurship program, SAYLEAD has benefited many. The data results from Table 3 depicted the achievements of the SAYLEAD program in both monetary and non-monetary forms. A total of 9 districts were involved in both the 2nd and 3rd cohorts. Meanwhile, the press release value for the 2nd cohort is RM521,324.00 and RM278,391.00 for the 3rd. Looking at the sales factor, the sales turnover for the last 10 participants was encouraging valued at RM669,615.00 and RM700,710.00 in the 2nd and 3rd cohorts respectively. In terms of partners, the positive impact of the program has pulled more partners to tap into cohort 3, from 8 agencies to 15 agencies. This value shows this program has received the attention of potential strategic partners who found the worth of working together for the development of disabled entrepreneurs who need more support.

Table 3: Monetary value of SAYLEAD Cohort 2 and Cohort 3

Edition	2nd Edition: 2020/2021	3rd Edition: 2021/2022
Region	9 Districts	9 Districts
Press Release Value (RM)	521,324.00	278,391.00
Sales Turnover (RM)	669,615.00	700,710.00
Partners	8 agencies	15 agencies

Source: SAYLEAD Report for Cohort 2 and Cohort 3.

4. Discussion

The SAY, through its SAYLEAD program, has proven a management style that was successful in developing an entrepreneurial track for individuals with disabilities and promoting system changes in partnership with the Disability Services Unit. The following is a list of some of the lessons acquired up to this point:

- To prevent uncomfortable situations and foster a feeling of togetherness, mentees spend time getting to know one another and generating ideas for their respective enterprises (Jay, 1971).
- The SAYLEAD module starts by emphasizing all of the rules and regulations that must be followed to manage a business before moving on to discuss products and services directly (Nicolai & Peter, 2020).
- SAY established a productive working relationship with a select group of government entities and a university institution. The UiTM through Disability Services Unit built its relationships through its data analysis capabilities, and its capacity to translate research findings into credible actions (Nicholas & Saras, 2007).
- SAYLEAD emphasizes the importance of mentors in each cohort and adapts a universal design of instruction so that inclusive learning is not left out. This is not only useful to the disabled community but to all individuals without the need to create special teaching sessions (Robert Grassinger et al., 2010).
- Not emphasizing the issue of profit alone, the ability of the participants in pitching ideas, products and services is also taken into consideration by emphasizing the issue of communication (Acs Z.J. et al., 2014). In fact, a special slot on how to make an effective presentation can give new input to the participants to be better prepared before going to the final pitching (CIPE, 2014).
- It has been demonstrated that participants in entrepreneurship programs are able to improve their financial resources and business insight, which enables them to become more successful business owners (Michael et al., 2021). Even though this program lasts for over six months, the module that is generated is comprehensive, and it cultivates in business owners a more critical attitude that encourages them to be more imaginative (Gage, 2012) to build their companies.

To create system improvements in the state agency for entrepreneurship ecosystem for disabled entrepreneurs, trusting strategic partners, sources of funds, comprehensive analyses of program data, a drive to improve, and a desire to discover successful solutions were critical components of any entrepreneurship program. The collaboration between SAYLEAD and the UiTM disability services unit, as well as other government and commercial agencies, has resulted in several system reforms that have the potential to give individuals with disabilities with better and more extensive options.

5. Conclusion and Recommendations

Through the influence of SAYLEAD, SAY has launched SAYLEAD, which allows the top three winners to participate, in a one-year program aimed at empowering SAY LEAD winners to become financially viable and qualified for the SAY ASPIRE export-ready program. This program demonstrates that sustained support may produce systemic change and enhance the conditions and employment prospects for people with disabilities, even if they are only small business owners. This is an example of a continual empowering process because individuals are able to continue pursuing their entrepreneurial aspirations. As such, the intervention shows effective approaches for promoting systemic change through the right strategic partnerships. The experience gained offers the researchers worth understanding thus this study would like to suggest for the sustainability of entrepreneurship programs for the disabled, decision-makers might need a driven, dynamic vision and evidence-based knowledge to guide the implementation of change efforts.

With much research highlighting the effect of employment on PWDs, re-strategize the traditional method found as the most practical way of uplifting the needs of entrepreneurs with disability. However, this does not mean the suggested improvement/s is a one-day effort. The SAYLEAD committee is still experiencing some challenges at the mentoring level because this intervention requires further work than just simply observing the task delivered. In effect, the committee has to consistently and diligently alter the process and the culture of EWDs way of seeing things. Networking through agencies leads to a realistic way to discover a new platform to promote business and for EWDs, this great opportunity can be defined as a “golden egg” given the fact they may not be able to advance their business alone. To conclude, for the betterment of the future program and to benefit more recipients, further efforts will be projected to bring together EWDs from various categories and age groups to promote economic sufficiency for an individual with disabilities.

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Effect of Structural Break on Financial Development and Economic Growth Nexus in Middle-Income Countries in Asia: Moderating Role of Technological Advancements

Rishan Sampath Hewage[1], Jaafar Pyeman[2]* & Norashida Othman[3]
[1]Faculty of Management Studies, Sabaragamuwa University of Sri Lanka
[2&3]Faculty of Business and Management University of Teknologi MARA, Malaysia
hewagesampath@mgt.sab.ac.lk, jaaf@uitm.edu.my*, shidaothman@uitm.edu.my

Abstract: Asian countries have experienced many financial catastrophes and pandemics in the past couple of decades. Therefore, evaluating the effect of structural breaks on economies has taken substantive attention in the empirical literature. Thus, this study aims to investigate the effect of structural breaks on the Financial Development (FD) and Economic Growth (EG) of middle-income countries in Asia. The study considered the global financial crisis of 2008 as a key structural break. The sample consisted of 24 middle-income countries while the sample period was 20 years from 2000 to 2019. Technological Advancement was considered a moderator variable that facilitate the smooth functioning of the FD and EG. Structural Break was identified using the "xtbreak" function and the effect was analyzed with panel unit root, panel homogeneity test, and short panel cointegration. The findings revealed that before the structural break, FD and moderator variables were the only significant variables but after the structural breaks, Human Capital (HC) and Private Consumption (PC) also have become significant. FD had a significant negative influence over EG before and after the structural break but the moderator variable had a positive influence. HC was not a significant factor before the structural break but has become significant after the economic downturn with a positive influence on EG. In contrast, PC shows a negative influence after the structural breaks. Hence, it guides the policymakers to decide on reducing investments for FD and direct funds to HC development and developing the technology. Moreover, they must consider making policy decisions to reduce PC too.

Keywords: *Economic Growth, Financial Development, Technological Advancements, Structural Breaks, Middle-income countries.*

1. Background of the Study

Examining the effect of the structural break on an economy has become a prioritized topic within the last couple of decades. It has taken considerable attention in both empirical and theoretical literature in economics and finance. Most school scholars claim that the effect of economic downturns makes significant negative consequences for most countries and most of society at large. With structural breaks, some countries went bankrupt while some economies just managed to survive. During the last four to five decades since 1973, the world has experienced several structural breaks. In 1973, the world experienced a drastic economic downturn with the oil crisis and stock market crash. Therein after there, several turmoil situations ascended in the global context until Covid 19 outbroken. It is hard to assess the political, economic, and social impact of structural breaks since the estimating exact effect is quite harder. There can be identified two types of impact in an economic downturn; first is the direct effect; when there is an economic downturn it firstly affects the financial system of the country and spread over to other sectors. The second is the indirect effect because, till the trading partner nations stand up after the economic bump.

Other countries have to wait and hold their economic activities. Estimating the indirect effect is much harder than assessing the direct effect. That is why many countries tend to take remedial actions to overcome the direct effect of structural breaks. It is quite hard to overcome the indirect effect of structural breaks because it has a spillover effect on other nations and the effect is worse than the direct effects of the economic downturn. So, countries need to keep an eye out for economic downturns and find ways to overcome the direct and indirect effects. In general, understanding, when there is an economic recession, the first and most significantly affected sector is the finance sector. The finance sector is considered the lifeblood of any economy. Hence, when the financial system collapse, the whole economic system gets collapses. Moreover,

the financial system of a country is considered the lifeblood of an economy. Thus, understanding the association between Financial Development (FD) and Economic Growth (EG) is vital and has received considerable attention in the literature. Since, the early centuries before the start of the barter system, people have recognized the importance of having a good financial system and considered what the financial sector plays.

A vital role in economic sustainability and development (Bist, 2018). Furthermore, many theories emerged beginning in the early nineteenth century to demonstrate the relationship and significance of a well-functioning financial system to an economy. One of the key theories is endogenous growth theory which explains how a well-functioning financial system makes it easy to attract investors and develop the nations. Besides financial development, technology is one of the key factors leading economies to high growth. After Economic downturns can be reversed if they consider technological advancements. There are ample examples all over the world to prove how economies achieve high economic development with technological advancements (Song & Appiah-Otoo (2022). Because of technological advancements, both the financial system and domestic production capacity get boosted. As suggested in (Kihomobo et al., 2021; Qamruzzaman & Jianguo, 2018), technological advancements in financial services produce miracle results for the country's economic development. With this, it can be said that technological advancements have a moderating effect on financial development and economic growth (Song & Appiah-Otoo (2022). Motivated by the above works of literature, this study aims to examine the effect of structural breaks on the FD and EG nexus with technological advancement plays a moderating role. The rest of this paper consists of six (6) sections; the literature review is presented in Section Two (2), followed by the methodology in Section Three (3). Section Four (4) makes the analysis and Section Five (5) explained the managerial implication while finally, Section Six (6) provides the conclusion.

2. Literature Review

This section focuses to explain the empirical background of the study with theoretical support.

Structural Breaks and Economic Development: Even though the structural break is not a new turn in the academic world, there is a significant literature gap in analyzing the effect of structural breaks on economic development and other variables. Especially in panel data analysis, there are only a couple of studies have been carried out under this theme (Mironov & Konovalova, 2019; Itoh et al., 2016). One of the significant studies in this area is "The Influence of Arab Spring Effect on Economic Growth in the Middle East Countries' by Beser & Kilic (2017). They discussed how the Arab Spring affects five (5) Middle East countries in terms of their political and economic condition. However, the study followed only the unit root test and the homogeneity test with fixed effect estimation to determine the effect. But panel data series is required to estimate the cointegration with advanced economistic analysis techniques since the data series shows the cross-sectional dependency. Same as Choi (2013) explained how the United States_financial crisis spread over the economy in the United States of America (USA) and how it influences the Mortgage market and ultimately meltdown of the whole economic system in the USA. Further, Yazdi (2019) studied the causal relationship between international tourism development and economic growth with the structural break test and found that there is a significant effect of structural breaks in 2006, 2011 and 2012 on the economic condition, tourism receipts, physical capital, human capital and household consumption of Iran.

The study used only the unit root test and cointegration to estimate the effect of structural breaks. Thus, the real effect of structural breaks does not reflect in the analysis. Mironov and Konovalova (2019) investigated the effect of structural change on economic growth in Russia with the change in the economic condition of the world and have shown that maintaining a diversified economic policy works substantially to overcome economic downturns. However, there was no in-depth analysis was done to examine the effect of structural breaks on economic growth and macroeconomic stability. Further, Chibi et al. (2019) investigated the dynamics of fiscal policy in Algeria conserving the structural breaks. They revealed that there is a significant influence over the income sources and authorities must consider changing their decisions upon the effect of structural breaks in the economy. Investigated the effect of structural change on the output volatility of OECD countries and found that after the structural break in 2010, the output of the countries gets stabilized. The key technique of the study was the ARCH model and the findings suggested that government must focus on the new fiscal policy to maintain stabilized economic condition of OECD countries. Once more, Itoh et al.

(2016) explained that under a structural break period, most economies face demographical and ecological crises as well. Reyes and Villasenor (2011) found that structural breaks can be associated with economic growth and result in a long-term decline in average growth.

Financial Development and Economic Growth: Financial Development can be simply defined as the development of the financial system of a country but in the broader sense, it is the development of financial services, financial products, and financial markets of a country. So, the key task of a sophisticated developed financial system is to provide accurate and timely information for investors and policymakers to get the most appropriate decisions. Thus, the whole economy of a country is depending on the decisions they take. Because making correct decisions minimize the risk of investments in wrong projects, allocates capital to the most appropriate places at appropriate levels maximizes corporate governance, pooling of domestic savings, and many more (IGI Global, 2021). Furthermore, efficient and effective fund allocation and fund transfer among surplus parties and deficit strengthen the economies (Bist & Bista, 2018; Guru & Yadav, 2018; Bongini, et al., 2016; Puatwoe & Piabuo, 2017). A well-equipped financial system will facilitate the private sector to obtain credit facilities which are one of the driving forces of long-run economic growth through new ventures, expanding businesses through capital market and bond markets and insurance sector development. (Hewage et al., 2022; Sharma & Kautish, 2020; Olayungbo & Quadri, 2019; Biplob & Halder, 2018; Puatwoe & Piabuo, 2017; Qamruzzaman & Jianguo, 2017; Pradhan et al., 2017). Tursoy and Faisal (2018) explained that financial depth has a positive influence on economic growth while inflation negatively affects growth in the short run.

Technological Advancement and Economic Growth: Technological advancement creates ample opportunities for investors and countries to enter into high-income projects and markets through the development of new products and strategies. Because, technological development reduces production costs via the declining cost of timely information and increases production efficiency and quality (Hewage et al., 2022; Kihomobo et al., 2021; Qamruzzaman & Jianguo, 2018). Furthermore, technological developments in financial services lead to bringing down capital costs by improving the efficiency of fund transfer facilities (Abeka et al., 2021; Khurana, 2018) and increasing the reliability and accuracy of the financial services which direct for fast and sustainable economic growth (Song & Appiah-Otoo, 2022).

3. Research Methodology

The Population of the Study: The study focuses on Middle-income countries in the Asian continent, where there are 32 countries under this cluster. Even though there are ample studies that can be found concerning investigating the effect of financial development over economic growth, still there is a literature gap to identify how structural breaks influence the relationship between FD and EG while technological advancement plays a moderating role.

Sample: Since the study considered middle-income countries in Asia, the sample consisted of 24 countries that were selected based on data availability during the sample period of 20 years from 2000 to 2019. The study selected the sample period depends based on two conditions; first is the data available to calculate the TA. The second condition is there is no significant economic downturn during the sample period. Because from 2020, the global economy experienced a dramatic economic collapse due to Covid 19 pandemic. Hence, the study was limited only to one structural break. Table 1 presents the name list of selected countries.

Table 1: Sample Countries

Lower Middle-Income Countries	Upper Middle-Income Countries
Bangladesh	Armenia
Bhutan	Azerbaijan
Cambodia	China
India	Georgia
Indonesia	Jordan
Iran	Kazakhstan
Kyrgyzstan	Lebanon
Mongolia	Malaysia
Nepal	Thailand

Pakistan Philippines Sri Lanka Tajikistan Uzbekistan	Turkey

Source: Author constructed.

Key Variables: The study focused to examine how structural beaks influence over to change the relationship between FD and EG. Apart from the key variables, there are two more control variables (Human capital and private consumption) were used. The list of variables, proxies used to measure the variables, and the data collection source with literature backup are presented in Table 2.

Table 2: Key Variables

Variable Name	Proxy and the Calculation Mechanism	Key Pieces of Literature	Data Collection Source
Economic Growth (EG)	Real Gross Domestic Production Per Capita Adjusted to Purchase Power Parity RGDP (PPP) and take the Real GDP Difference over two consecutive periods as a percentage of real DGP in the base year	Rahaman et al. (2020); Bist (2018); Tursoy & Faisal (2018) and Puatwoe & Piabuo, (2017)	World Development Indicators (WDI, 2021)
Financial development (FD)	Financial development was proxied by Financial Development Index which was calculated as financial market development and financial institutional development. considering how deep, accessible, and efficient are they.	Rahaman, et al. (2020); Haini (2020); Wang (2019); Swamy & Dharani (2019) and Bist (2018).	IMF Financial Development Time series
Human Capital (HC)	The economically active population (age above 15 years) as a percentage of the total population	Rahaman et al. (2020); Oyinlola & Adedeji (2019) and Bist (2018)	World Development Indicators (WDI, 2000 – 2019)
Private consumption	Households' final consumption expenditure (% of GDP)	Kaharudin & Ab-Rahaman (2022) & Edinak et al. (2022)	

Source: Prepared by authors.

General Model Specification: The study used a general model as follows;

$$\ln PRGDP_{it} = \beta_0 + \beta_{1i}FD_{it} + \beta_{1i}FD.TA_{it} + \beta_{1i}HC_{it} + \beta_{2i}PC_{it} + \varepsilon_{it} \quad (3.1)$$

Where; PRGDP presents the Per Capita Real Gross Domestic Production (in natural logarithm) as the proxy for economic growth while FD represents Financial Development. FD. TA presents the moderator variable that indicates the effect of technological advancements on Economic growth when combined with financial development and HC is Human Capital. PC presents the Private consumption while i present the cross sections and time.

Data Analysis Techniques

Estimating the Point of Structural Breaks: The study used the structural breaks testing method introduced by Ditzen, Karavias, and Westerlund (2021) to identify the structural break point in the data series. Generally, the structural breaks make asymptotical volatility in the pattern of data series. Therefore, Ditzen et al. (2021) introduced a new command to capture the stochastic changes in time series and panel data series. They introduced the "xtbreak" command to capture multiple structural breaks in the data series. The test has the asymptotically valid test to identify the structural breaks, break dates and confidence interval. The estimation includes several types of tests; the first is to examine no structural change against the specific number of changes in the data series and the second is to test the structural change against the unknown number of

changes in the data series. Hence, this study occupied the "xtbreak" function to estimate the volatility in panel data series with the economic downturn in 2008.

Examining the Cross-Section Dependency: Cross-sectional dependency was estimated with the Breush-Pagan LM test, Pesaran scaled LM test, Bias-corrected scaled LM test, and Pesaran cross-section dependent test.

Homogeneity Test: Homogeneity across the individual countries was measured with 2013, Blomquist and Westerlund (2013) extended homogeneity test. The hypotheses of this test are;
H0: Slope coefficients are homogeneous.
Ha: Slope coefficients are not homogeneous.

Panel Unit Root Test: The study used Karavias and Tzavalis (2014) panel unit root estimation to examine the stationarity level of the data set. The key hypotheses under this test are;
H0: Panel time series contain unit roots.
Ha: Some or all of the panel time series are stationary.

Effect of Structural Breaks on Relationship: The study used the Blundell and Bond two-step System GMM technique to examine the effect of Structural breaks on the FD and EG nexus. Here the sample period was divided into Two (2) clusters pre structural break period and the post-structural break period.

4. Results

Pointing Out the Structural Breaks: The study occupied Ditzen, Karavias, and Westerlund (2021), "xtbreak" analysis to find the structural breaks in the data set. The test results are presented in Table 3.

Table 3: Structural Breakpoints

Number of Observations				**34**
Number of time intervals				20
SSR				4958.22
Trimming				0.15
Serial no.	Index	Date	(95% Confidence Interval)	
1	8	2007	2006	2008

Source: Author constructed using STATA Output.

The study found that in 2007, there was an economic downturn. Even though the Global Financial crisis happened in 2008, from 2007, there have been some indications in economic conditions in individual counties before they realized the real effect of the global financial crisis in 2008. This is a crucial finding since it indicates to the policymakers that before the actual crisis takes place, economic figures are presenting the economic catastrophe in advance. Therefore, it highlights that policymakers be alert to changes in economies to take precautionary actions before the disaster comes.

Testing Cross-Section Dependency: Since countries depend on each other due to several reasons like free trade agreements, foreign trading, political bindings, and cultural similarities it is important to identify the cross-sectional dependency of countries before selecting the appropriate analysis techniques. Thus, the study followed the cross-section dependency test and the results are shown in Table 4.

Table 4: Cross-section Dependency Test

	Breusch-Pagan LM	**Pesaran scaled LM**	**Bias-corrected Scaled LM**	**Pesaran CD**
EG	642.980***	15.620***	14.988 ***	13.923***
FD	2791.115***	107.050***	106.419***	32.825***
FD.TA	3926.753 ***	155.386***	154.755 ***	54.281***
HC	1709.274***	61.004***	60.372***	2.433***

PC	1111.175***	35.547***	34.916***	2.757**

Source: Author constructed using EViews output.

Table 4 confirms there is a cross-sectional dependency among individual countries. Here it used four cross-sectional dependency test types and all the tests prove all the variables show cross-sectional dependency.

Testing Cross-sectional Homogeneity: The study followed Blomquist and Westerlund (2013) homogeneity test with cross-sectional dependency to examine whether the cross-sections show homogeneity or heterogeneity. Because the data set shows cross-sectional dependency, it requires to use of homogeneity with cross-sectional dependency. The test results are shown in Table 5.

Table 5: Slope Homogeneity Test

	Statistic	**P-Value**
Delta	-6.928	0.000
Adjusted Delta	-3.464	0.001
HAC Kernel: Bartlett With average bandwidth of 2 Variables partialled out: Constant Cross-sectional Averaged variables: e.g.(2) fd(3) fdta(3) hc(3) pc(3)		

Source: Author constructed using STATA Output.

Table 5 shows that the data set follows heterogeneity since the p-value for delta is less than 0.05. Furthermore, after adjusting for the degree of freedom also, the analysis found the p-value is less than 0.05 confirming that there is a heterogeneity in the data series. Moreover, the study followed the unit root test to move further with analysis.

Testing the Unit Root of Data Series: The study has done the panel unit root test with Karavias and Tzavalis (2014) panel unit root estimation. The results are shown in Table 6.

Table 6: Panel Unit Root

Number of panels	**24**	**Aver. Number of periods**	**20**
Number of breaks	1		
Cross-sectional dependency	Yes	Linear time trend	Yes
Cross-section heteroscedasticity	Yes	Normal Error	Yes
	Statistic	Asymptotic Critical value	P-value
Z-statistic	-6.3781	-1.6449	0.0000
Result: the null is rejected			
Known break date(s): 2007			
The significance level of the test: 0.05			

Source: Author constructed using STATA Output.

Table 6 confirms that there is no panel unit root after the structural break because the p-value is less than 0.05 which claims there are not enough shreds of evidence to accept the null hypothesis that the data set followed a unit root. Henceforward, the study moves forward to analyze the effect of structural breaks on the FD and EG nexus.

Evaluating the Effect of Structural Breaks on Financial Development and Economic Growth Nexus: The study followed the short panel data analysis technique to estimate the effect of a structural break over the Financial Development and Economic Growth Nexus. The structural break periods were determined using the previous literature and the IMF database and publications. Then to examine the actual period of the economic recession was estimated using the "xtbreak" function. To examine the effect of the structural break on the relationship between variables, the sample period was divided into two-time spans; before the structural break and after the structural break.

Examining the Relationship - Before the Structural Break (From 2000 to 2007): The study occupied Blundell and Bond's two-step system GMM technique to examine the relationship between FD and EG before the structural break. The period is from 2000 to 2007 when there is no significant change in the economy due to structural break. The test results are shown in Table 7.

Table 7: Relationship before the Structural Break

Variable Statistics						
Group variable					Code	
Time variable					Year	
Number of instruments					12	
Number of groups					24	
Number of Observations					168	
Observation per group				Min	7	
				Average	7	
				Maximum	7	
F (5, 23)					56.60	
Prob > F					0.000	
Variable	**Coef.**	**Robust Std. Err.**	**t-stat**	**P> |t|**	**[95% conf. Interval]**	
EG (-1)	0.543	0.096	5.67	0.000	0.345	0.741
FD	-0.535	0.240	-2.23	0.036	-1.030	-0.039
FD.TA	1.304	0.551	2.36	0.027	0.163	2.444
HC	-0.062	0.307	-0.20	0.840	-0.697	0.572
PC	-0.146	0.090	-1.61	0.120	-0.332	0.040
Con	21.795	19.602	1.11	0.278	-18.755	62.346
Arellano-Bond test for (AR2) in first difference: Z= -1.00 Pr > Z						0.316
Sargan test of over id. Restrictions: Chi2 (6) = 2.11 Pr> chi2						0.910
Hansen test of over id. Restrictions: Chi2 (6) = 5.46 Pr> chi2						0.486

Source: Author constructed using STATA Output.

Table 7 shows that only FD and moderator variables had a significant effect on the economic development of the cross-sectional countries before the structural breaks. F statistic shows that model is significant and there is no serial correlation since the Arellano and Bond statistic is greater than 0.05. Moreover, the number of instruments is at its optimum level. Consequently, the study recalculates the BB two-step system GMM to examine whether there is any change has taken place in the relationship between dependent and independent variables after the structural break. Therefore, the test results are shown in Table 8.

Table 8: Relationship after the Structural Break

Variable Statistics						
Group variable					Code	
Time variable					Year	
Number of instruments					16	
Number of groups					24	
Number of Observations					264	
Observation per group				Min	11	
				Average	11	
				Maximum	11	
F (5, 23)					20.64	
Prob > F					0.000	
Variable	**Coef.**	**Robust Std. Err.**	**t-stat**	**P> |t|**	**[95% conf. Interval]**	
EG (-1)	0.199	0.053	3.78	0.001	0.090	0.308
FD	-0.144	0.077	-1.88	0.073	-0.303	0.015
FD.TA	0.274	0.143	1.92	0.068	-0.022	0.570

HC	0.440	0.132	3.32	0.003	0.166	0.714
PC	-0.135	0.049	-2.75	0.011	-0.237	-0.034
Con	-13.306	8.744	-1.52	0.142	-31.394	4.783
Arellano-Bond test for (AR2) in first difference: Z= -0.03 Pr > Z						0.980
Sargan test of over id. Restrictions: Chi2 (6) = 13.40 Pr> chi2						0.202
Hansen test of over id. Restrictions: Chi2 (6) = 14.26 Pr> chi2						0.162

Source: Author constructed using STATA Output.

Table 8 presents the test results for the relationship after the structural breaks and found all the variables get significant after the structural break. Hence, it indicates with the structural break economies found that FD, HC, and PC are significant variables to EG while technological advancement works as a moderator to boost the economy. Moreover, FD and PC demonstrate a negative influence over economic growth while HC has a positive effect. Anyway, the moderator variable shows a positive relationship indicating that technological advancement plays a significant positive influence over the EG. Moreover, the F test confirms the model is significant enough to forecast and the number of instruments is appropriate. Further model does not show a serial correlation.

Managerial Implications and Recommendations: The findings of this study guide and recommend that the policymakers must pay attention to reducing investment in financial development activities and shift those funds to technological advancements and develop human capital to get long-term as well as short-term economic benefits. Furthermore, it is important to consider strategies to reduce domestic consumption because the increment of PC shows negative consequences to the economy in the long run and the short run.

5. Conclusion

This study aimed to examine whether there is any influence by the structural break to the FD and EG nexus in middle-income countries in Asia Further, TA was considered as the moderator variable while HC and PC were used as control variables. The empirical findings confirm that_economic downturns make a significant influence on the EG and FD nexus while technological advancements are important even before and after the structural breaks. Furthermore, financial development showed a significant negative relationship with EG at all times (before and after the structural break). Even though HC and PC were not significant factors to EG before the structural break, they become significant after the economic downturns. Moreover, HC has a positive influence on EG while PC shows an inverse relationship with EG.

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Breast Cancer Management Research Trends: A Bibliometric Analysis

Nor Intan Shamimi Abdul Aziz[1, 2*], Mass Hareeza Ali[1], Ahmad Taufik Jamil[3] & Yuhanis Ab Aziz[1]
[1]School of Business and Economics, Universiti Putra Malaysia, Serdang, Selangor, Malaysia
[2]Faculty of Business and Management, Universiti Teknologi Mara Puncak Alam, Selangor, Malaysia
[3]Faculty of Medicine, Universiti Teknologi Mara Sungai Buloh, Sungai Buloh, Selangor, Malaysia
*intanaziz72@gmail.com, mass@upm.edu.my, atjamil@gmail.com, yuhanis@upm.edu.my

Abstract: Breast cancer is the most prevalent type of cancer in women and has a significant economic impact worldwide. Consequently, there is a need to analyze the disease's research trend academically to determine the breast cancer publishing trend based on a certain period of its collection properties. Bibliometric analysis is used to examine the research trend in breast cancer care through time using various data. Several tools, including the PRISMA flow diagram, Microsoft Excel for frequency analysis, Harzing's Publish or Perish for citation metrics and other pertinent analyses, and VOSviewer for image visualization and bibliometric networks, were used to study this article. Using the TITLE search strategy and the Scopus database, 3,532 articles were located. It was discovered that the trends in research publications rose steadily from one year to the next. Between 1932 and 2021, 3,532 publications will be produced with a total of 61,274 citations, which breaks down to 688.47 citations per year, 17.35 citations per cited paper, and 4.02 citations per author. The United States, Italy, and the United Kingdom have produced the most co-authored works in this discipline. Even though the annual incidence rate of breast cancer remains high, these findings appear promising for determining the most effective treatments, procedures, and management strategies. The guideline standard requires further attention at a higher level.

Keywords: *Breast cancer, Cancer, Management, Bibliometric analysis, Trend.*

1. Introduction and Background

Breast cancer is the most common cancer in women, in which the cells start to grow out of control. A lump is one of the common symptoms associated with cancer. Some of the areas involved are milk ducts, mammary glands, and breast tissue (American Cancer Society, 2021). The prevalence of breast cancer has increased since decades ago. Many factors influenced the prognosis of patients, such as the patient's clinical conditions (such as age, tumor size, histological grade, lymph node status, and menopausal status), the expression of estrogen and progesterone receptors, and the expression of human epidermal growth factor receptor 2 (c-erbB-2) (Chang et al., 2022). Over the years, the morbidity and mortality of breast cancer among women have increased, and thus it has been acknowledged as a burden for public health management. It involved huge health expenditures from the individuals as well as from the government to pay for the treatment. Most of the cases are from low- and middle-income countries that affect women and their families, and obviously, financial catastrophe is a direct consequence of paying for the treatment (Koboto et al., 2020). Nevertheless, breast cancer incidence is expected to grow in the future at an alarming rate around the globe (Sajahan & Omar, 2018).

Furthermore, the International Agency for Research on Cancer has come out with a new estimate that 1 in 5 people will develop cancer in their lifetime, while 1 in 8 men and 1 in 11 women will die from the disease (Union for International Cancer Control, 2020). The top 10 countries with the highest incidence rate for breast cancer are Belgium (113.2), the Netherlands (100.9), New Caledonia (99.0), France (99.1), Luxembourg (99.8), Denmark (98.4), Australia (96.0), New Zealand (93.0), the United States of America (90.3), and Finland (92.4) (Global Cancer Observatory, 2021a). The Global Cancer Observatory (2021b) has analyzed an estimation from 2020 to 2040 that breast cancer incidence will grow from 2,261,419 to 3,025,471 with an additional 33.8% of cases. By using a specific method of bibliometric analysis presented in this article, there will be a way to measure the properties of the collection of articles in a database for a

narrow topic chosen. This study presents a trend in breast cancer management research, giving insights into the trend in topic articles with their basic properties and metadata, such as publisher name, type of document and title of the article.

Author's name, affiliations, country of the authors, abstract, keyword, and references (Ahmi, 2021). Specifically, this research will benefit academic and nurse researchers by providing a different perspective on the evolution of breast cancer fields and directing the researchers from a micro to a macro focus since its capabilities include discovering the underlying structure of this field. This method is not going to replace the traditional way of meta-analysis review, but it is more likely to complement it by providing useful information for the researchers to publish articles (Zupic & Čater, 2015). Furthermore, a scientific image visualization was also used together with the bibliometric method to map and examine collaborations and co-citation relations (Özen Çınar, 2020). Using this shows that generating scientific literacy is important to help more with the knowledge and information understanding needed to increase research publication every year (Effendi et al., 2021).

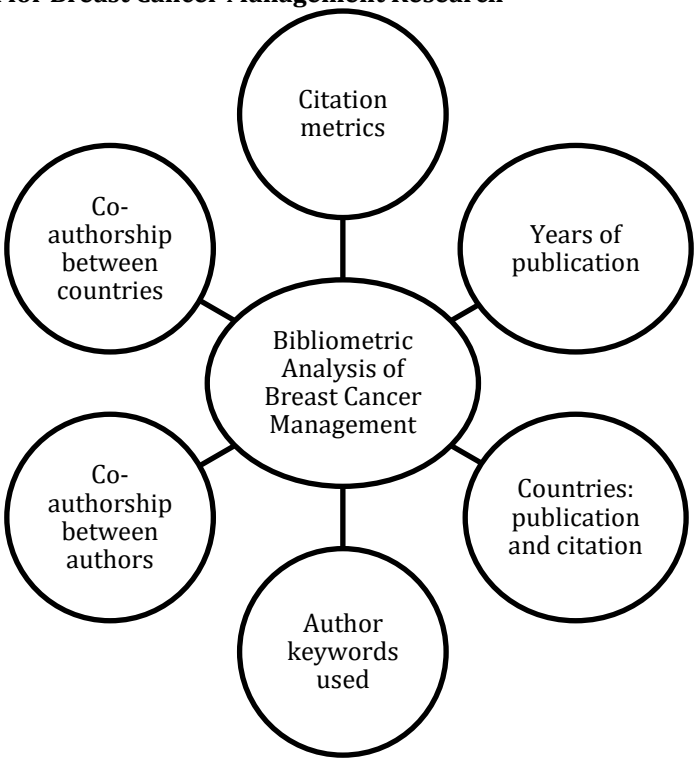
2. Literature Review

The advancement of healthcare requires the dissemination of knowledge derived from scientific study. Priority must be given to investigations carried out with acceptable methods and safe other than trustworthy sources of information, which are also crucial. Recent advancements in the detection and treatment of breast cancer, as well as the consolidation of novel therapeutic approaches, have all been made possible by scientific research in the field (Nascimento et al., 2021). In addition, publication in breast cancer research is piling up around the globe, especially in Western countries, due to the high number of research articles and citations. This is strengthened by the new collaborative effort made between the World Health Organization, UN agencies, and partner organizations called the Global Breast Cancer Initiative, to reduce mortality by 2.5% every year before reaching 2040. Through this initiative, three pillars are introduced, such as health promotion, timely diagnosis with comprehensive treatment, and a great social support system (Brunier & Muchnik, 2021). It is said that inadequate access to early detection and treatment is still a major contributing cause of greater breast cancer mortality among women in developing countries (Kashyap et al., 2022).

Bibliometric analysis is a statistical analysis and quantitative tool to analyze research publication performance over 0a period of time (Xiong et al., 2021). Bibliometrics is the application of mathematical, statistical, and other approaches to books and other forms of communication, according to Alan Pritchard, a pioneering researcher in this field who coined the term in 1969. A few measures, including the volume measure, journal impact measure, citation-based indicators, composite indicators, and distribution-based techniques are employed in bibliometric analysis to gauge research trends (Ismail et al., 2009). While this form of the study had benefits, including the use of computerized data gathered, a substantial number of publications in a field have been published to support additional research, and there has been a significant rise in the number of publications in this sector in recent years (Ellegaard & Wallin, 2015), some further concerns regarding this analysis were identified. First, a suite of indicators may be needed to quantify the quality of research because some indicators do not always accurately reflect research quality because there is no logical relationship between them.

Additionally, it takes a lot of time to gather accurate publications because some articles in scientific databases aren't available in full-text format. Lastly, it can be challenging to define appropriate fields of study for interdisciplinary research because of the differences between these fields, which can have a significant impact on the analysis that is performed (Ismail et al., 2009). For cancer, some bibliometric analysis reported about cancer literature focuses on specific sites like cervical and oral (mouth), specific countries (Ahmad et al., 2021; Ram, 2017), treatment (Franco et al., 2023; Teles et al., 2022), pain (Wu et al., 2021), and diet (Kotepui et al., 2014). Even though breast cancer research has been published for nearly 90 years, there is little evidence that any bibliometric analysis has been published to assess the trend of breast cancer research from the standpoint of management. Thus, to fill the gap, there is a need to analyze the contributions of authors in the publication of breast cancer management research between 1971 and 2021 through an established database. The goal of this paper is to examine the trend of breast cancer management research from several metadata, as shown in Figure 1 below.

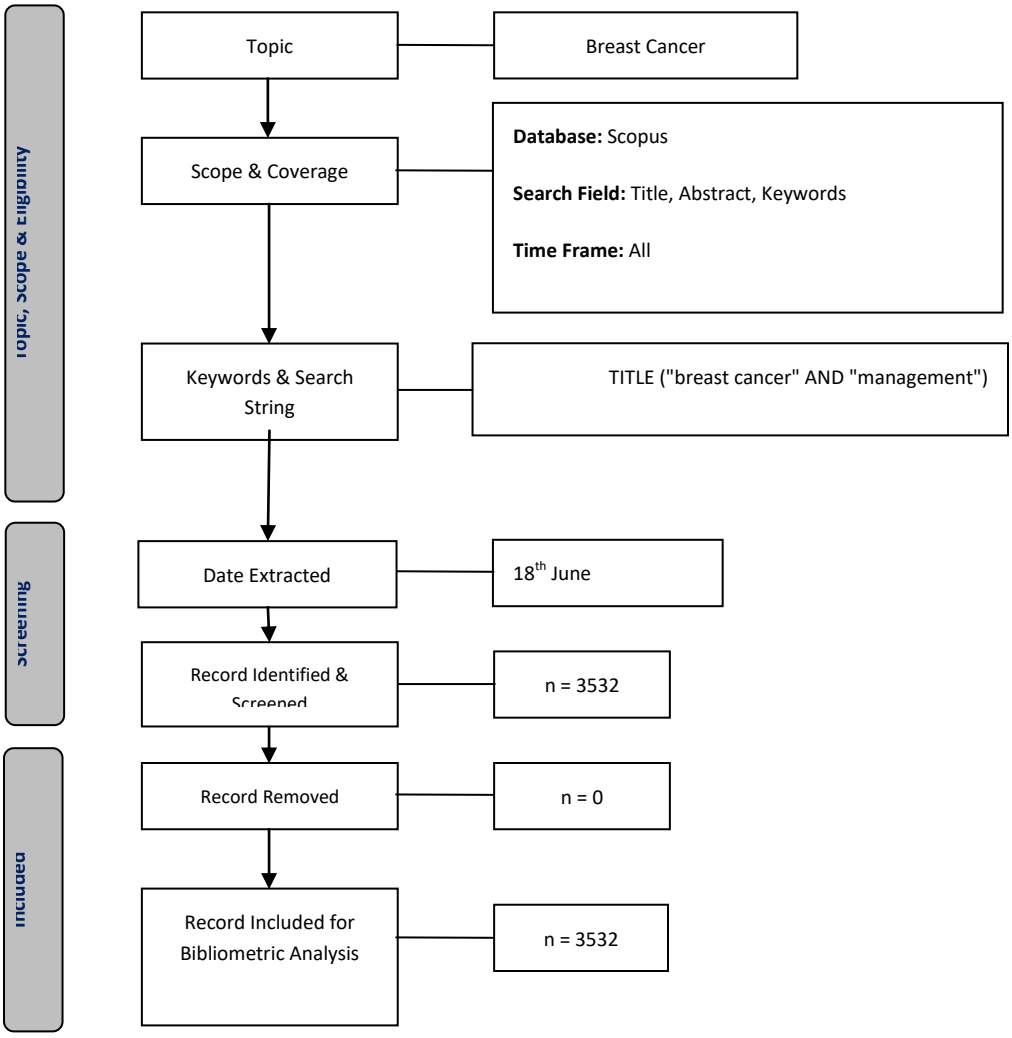
Figure 1: Metadata for Breast Cancer Management Research



3. Research Methodology

The Scopus database was used for the purpose of this analysis as of June 2021. To identify articles that are relevant to the keyword that was used, start your search using TITLE, then add the terms "breast cancer" and "management" to the end of the phrase. The word "TITLE" was selected because the majority of authors scan only the article's title before moving on to the body of the content (Zakaria et al., 2021). Figure 2 is a flow diagram that the researchers presented as an explanation of the search approach. As a result of the search, the researchers concluded that each of the article results appeared to be suitable for being included in the study; hence, no articles have been removed. After the articles have been chosen, the next step is to implement a plan involving the usage of applications and tools such as Microsoft Excel, Harzing's Publish or Perish, and VOSviewer. Microsoft Excel was used to determine percentages and frequencies for the articles that were chosen. Harzing's Publish or Perish was used to calculate article citation metrics and other related metadata, and VOSviewer was used to present a network visualization of the articles. Researchers describe each and every outcome in the next section.

Figure 2: The PRISMA Flow Diagram Search Strategy



Source: Zakaria et al., 2021.

4. Results

Citation Metrics Analysis: Table 1 shows a summary of citation metrics for breast cancer management studies published during the last 89 years, from 1932 to the present. During this time, 3,532 articles were published worldwide, with a total of 61,274 citations. When the quality of the author's article is considered, the citation per author is 4.02 based on the author's work.

Table 1: Citations Metrics

Metrics	Data
Publication years	1932-2021
Citation years	89 (1932-2021)
Papers	3,532
Number of Citations	61,274
Years	89
Citation per Year	688.47
Citation per cited Paper	17.35
Citation per Author	4.02

Yearly Publication Trend: Breast cancer management research began in 1932, and the number of publications has gradually increased over the previous several decades. Table 2 shows the pattern of how the study raised its total publication (TP) contribution from one article per year to more than one hundred publications per year. The year with the most publications was 2020, with a total of 250 articles published, whereas the year with the fewest publications was below 1971, before progressively increasing beginning in 1974. This table also displays the total number of citations (TC) for each year of publication. From 1964 to the present, the citation pattern proved to be good, with numerous other authors citing articles from the study. The lowest citation was discovered in the earlier times between 1932 and 1963, but the number of citations has climbed dramatically, with the highest citation reported in 2015 being 3,658.

Table 2: Years of Publication

Year	TP	%	NCP	TC	C/P	C/CP	h	g
2021	106	3.00%	23	49	0.46	2.13	4	4
2020	250	7.08%	144	495	1.98	3.44	8	14
2019	141	3.99%	111	598	4.24	5.39	12	15
2018	162	4.59%	125	1,253	7.73	10.02	18	28
2017	130	3.68%	110	1,322	10.17	12.02	20	29
2016	154	4.36%	118	1,393	9.05	11.81	20	29
2015	147	4.16%	122	3,658	24.88	29.98	25	57
2014	154	4.36%	120	2,145	13.93	17.88	26	41
2013	136	3.85%	108	2,651	19.49	24.55	29	48
2012	103	2.92%	84	2,518	24.45	29.98	24	48
2011	143	4.05%	109	2,784	19.47	25.54	31	49
2010	124	3.51%	90	2,801	22.59	31.12	25	51
2009	104	2.94%	77	2,559	24.61	33.23	27	49
2008	99	2.80%	77	3,215	32.47	41.75	30	56
2007	111	3.14%	94	3,018	27.19	32.11	28	52
2006	103	2.92%	79	3,094	30.04	39.16	28	55
2005	94	2.66%	73	2,337	24.86	32.01	25	47
2004	84	2.38%	63	1,507	17.94	23.92	21	37
2003	66	1.87%	49	1,782	27.00	36.37	22	42
2002	69	1.95%	53	1,323	19.17	24.96	16	35
2001	69	1.95%	57	2,127	30.83	37.32	19	45
1991 - 2000	502	0.1422	379	10,712	205.01	272.83	15.2	30.9
1981 - 1990	245	0.0694	157	4,920	202.4	313.91	8.2	19.8
1971 - 1980	163	0.0461	94	2,693	141.18	255.57	4.9	12.4
1961 - 1970	54	0.0152	33	287	69.28	95.6	2.2	3.3
1932 - 1960	19	0.0054	5	33	13.33	28	0.4	0.9

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; and g = g-index.

Contribution of Countries in Publication and Citation: Breast cancer management research has been studied by authors from all over the world. The table below shows the top ten countries in terms of publishing impact that contributed to the study, including the number of cited publications, total citations, citations per publication, and citations per cited paper, h-index, and g-index (Table 3). The United States leads the way in terms of publication, with 1299 total publications, followed by the United Kingdom, which comes in second with 463 publications. The United States has a significant advantage over the other top ten countries in total publication, number of cited publications, total citation, citations per publication, and citations per cited publication, which include the United Kingdom, Italy, France, Australia, Germany, Canada, Spain, Belgium, and India. As a result of all of these factors, they have the highest h index (83) and g index (142). With 81 publications, 1058 citations, an h index of 16, and a g index of 31, India is the only Asian country in the top ten for its contribution to the publication of breast cancer management research. The quality of publications by writers from this country can help to improve these indicators.

Table 3: Top 10 Countries Contributed to the Publications

Country	TP	NCP	TC	C/P	C/CP	H	G
United States	1299	1026	32385	24.93	363.88	83	142
United Kingdom	463	388	11148	24.08	195.58	50	91
Italy	227	172	6344	27.95	134.98	35	76
France	211	150	5118	24.26	106.63	29	69
Australia	160	138	3765	23.53	73.82	28	57
Germany	150	116	3969	26.46	84.45	26	61
Canada	123	105	4122	33.51	89.61	30	63
Spain	95	75	2575	27.11	80.47	23	50
Belgium	82	70	4298	52.41	104.83	27	65
India	81	63	1058	13.06	25.80	16	31

Notes: TP=total publications; NCP=number of cited publications; TC=total citations; C/P=citations per publication; C/CP=citations per cited publication; h=h-index; and g=g-index.

Author Keywords Used: The most frequently used author keywords were determined in this study by mapping the network visualization with VOSviewer software. The criteria were met by 182 keywords out of 2653. Figure 3 illustrates nine color clusters used to identify keywords: cluster 1 (red), cluster 2 (green), cluster 3 (blue), cluster 4 (yellow), cluster 5 (purple), cluster 6 (light blue), cluster 7 (orange), cluster 8 (magenta) and cluster 9 (yellow) (light purple). The phrase "breast cancer" is the most frequently used by authors, with 721 occurrences and a total link strength of 1209, followed by "chemotherapy," with 60 occurrences and a total link strength of 187. In comparison to the keyword "breast cancer," the keyword "breast neoplasms" is employed by authors substantially less frequently, with only 53 occurrences and 89 total link strength.

Figure 3: Network Visualisation Map of the Author Keywords

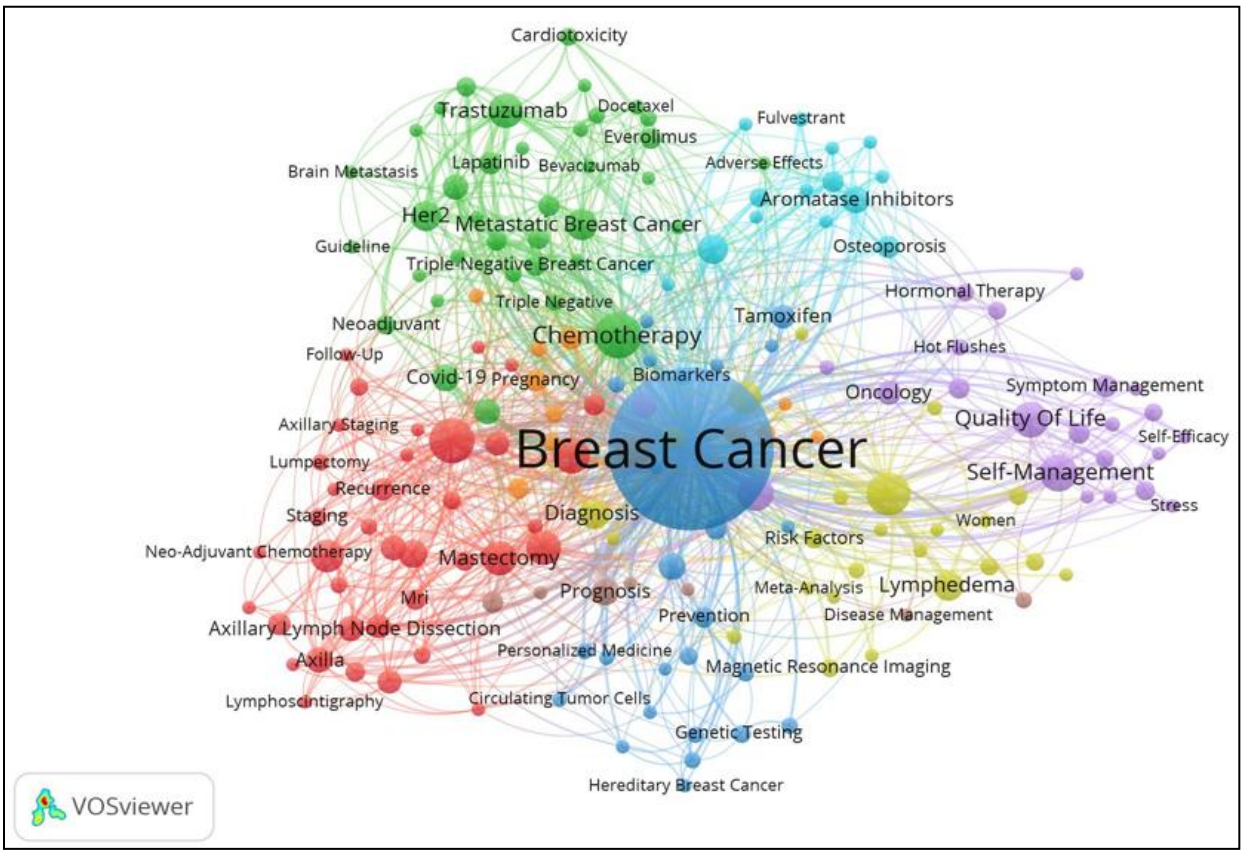
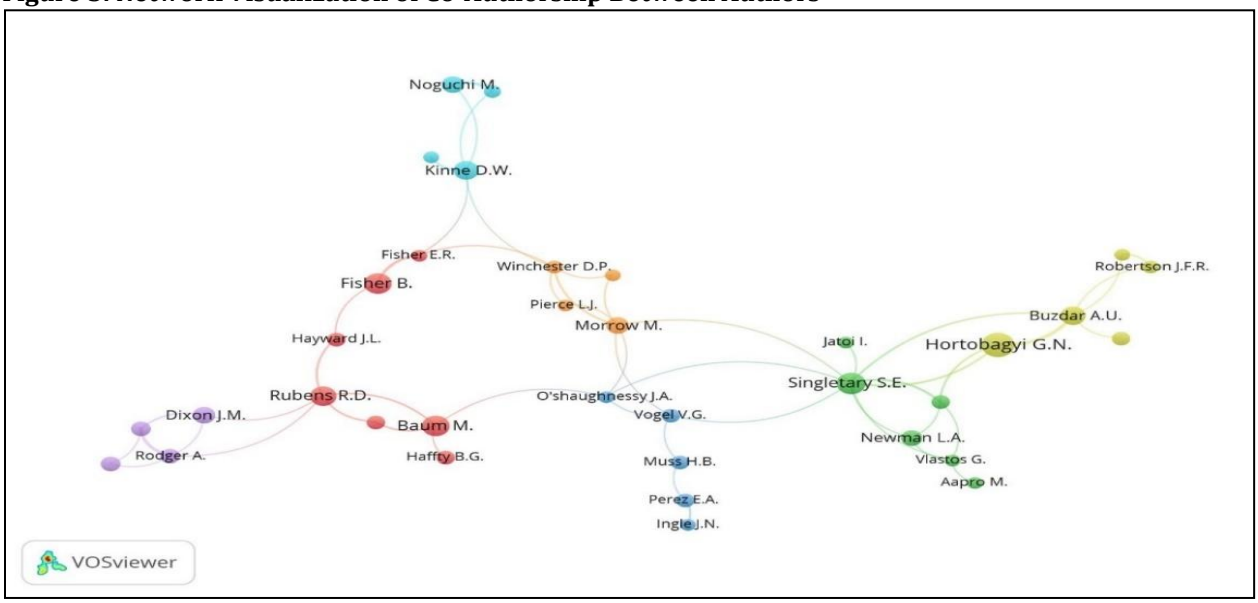


Figure 4: Word Cloud for Top 10 Keywords Used

Co-Authorship between Authors: Figure 4 depicts the collaboration of authors in the field of breast cancer management research. The partnership is broken down into seven categories. Cluster 1 is red, Cluster 2 is green, Cluster 3 is blue, Cluster 4 is yellow, Cluster 5 is purple, Cluster 6 is light blue, and Cluster 7 is light blue (orange). Co-authorship analysis was performed on VOSviewer using the full-counting approach, with the author serving as the unit of analysis. According to the publication, author Hortobagyi, G.N. is the first top author, having created 22 papers, 1684 citations, and a total link strength of 12. Author Singletary S.E, on the other hand, became the first author with total link strength of 14, 17 publications, and 883 citations. The network is then generated automatically as seen below.

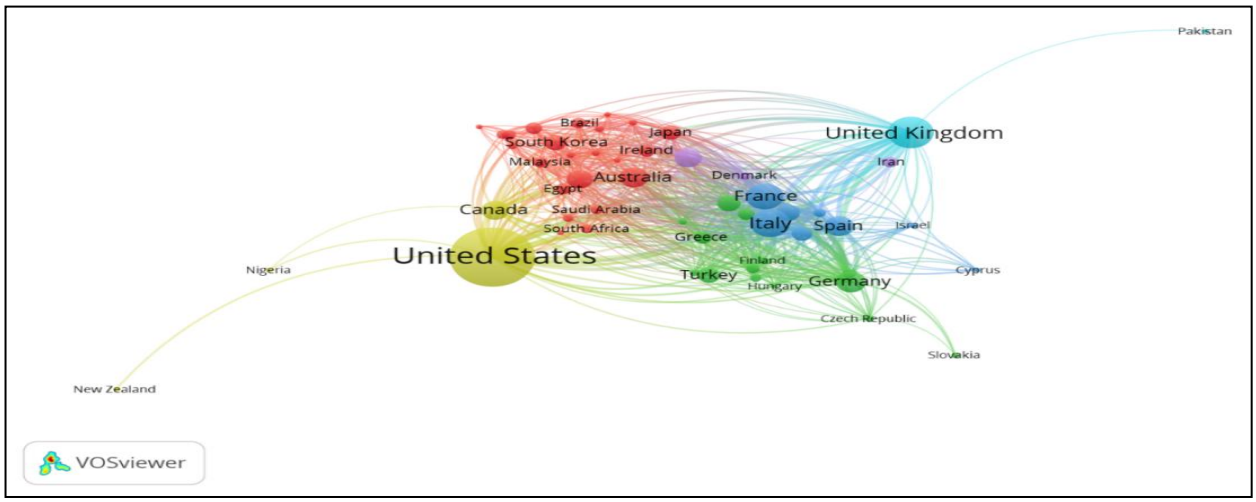
Figure 5: Network Visualization of Co-Authorship Between Authors



Co-Authorship between Countries: The following explains how different countries collaborate on co-authorship in breast cancer management research. Out of 131 countries, 54 have met the threshold using the VOS viewer network visualization. This resulted in six clusters (red, green, blue, yellow, purple, and turquoise); the wider the circle, the greater the collaboration of publications. The link drawn between two distinct countries indicates that the institutions in those countries collaborated on the work. The top three

countries in terms of publication, citation, and total link strength were the United States (651:10283:391), Italy (141:3607:314), and the United Kingdom (185:4241:308).

Figure 6: Network Visualization of Co-Authorship between Countries



Discussion

This bibliometric analysis study provides global research participation by numerous authors from several countries, all of whom are engaged in the creation of breast cancer management-related studies. This database was compiled from the Scopus database between 1932 and June 2021 to illustrate the development of trends in this field. For over ninety years, the research trend in breast cancer care has evolved and become an annual publishing priority. It began with a small number of publications in its early years, before 1971. Consequently, the total number of published papers increased from double digits to triple digits as additional authors contributed articles. This is consistent with the present trend of breast cancer, which, due to its high incidence and societal implications, has led to an increase in research focused on breast cancer to suggest more effective treatment techniques that have no impact on the clinical outcome of patients (Ahmad et al., 2021; Teles et al., 2022). Now, research in breast cancer management is exploding, with over 200 publications and 3500 citations per year. While the world is now experiencing an increase in the number of occurrences of breast cancer (Özen Çınar, 2020), the authors were also interested in publishing on this topic. The United States, the United Kingdom, and Italy have dominated the field of breast cancer management in terms of total publications, total citations, h-index, and g-index contributions. This is because the incidence rates in highly developed countries were significantly higher than in emerging countries such as Iran, China, and Mexico. It is emphasized that epidemiological and demographic shifts have led to an increase in breast cancer incidence rates. Reduced fertility, increased use of hormonal menopause therapy, decreased nursing, and obesity were identified as risk factors for this cancer (Lei et al., 2021).

Due to the aforementioned factors, these three countries also rank highly for breast reconstruction after mastectomy publishing (Zhang et al., 2023). 'Breast cancer' and 'chemotherapy' are two of the most commonly utilized author keywords in breast cancer research management studies. These words were highlighted the most in the author's publication pertaining to this study due to the numerous benefits that the keywords provided, such as the ability to detect both past and present research trends and the fact that bibliometric keyword analysis can help answer further questions. The most prevalent study subject in this publication is among the linked questions. Are particular keywords associated with the probability of an article getting cited? And whether keyword usage can increase or decrease with time (Pesta et al., 2018). Mapping the co-authorship between authors has highlighted the strategic position of authors in the same field of breast cancer, despite the fact that they generated publications with divergent interests, as demonstrated by mapping the co-authorship between authors. Based on the color cluster in Figure 5, it was determined that two famous authors, Hortobagyi G.N. and Singletary S.E., worked in this field despite having differing research interests in breast cancer trends. Using Harzing's Publish or Perish tool, "Integrating comparative effectiveness design elements and endpoints for a phase III, randomized clinical trial (SWOG S1007)

evaluating Oncotype DX-guided management for women with breast cancer involving lymph nodes" (2013) was identified as one of Hortobagyi G.N.'s most significant works.

In the meantime, author Singletary S.E. has a variety of research interests in breast cancer, including the number-one ranked article "Breast cancer management: the route to today" (2008). They have collaborated on at least three articles, including "Locoregional Treatment Outcomes After Multimodality Management of Inflammatory Breast Cancer," "Management of breast cancer during pregnancy utilizing a standardized protocol," and "Surgical and medical management of local-regional treatment failures in advanced primary breast cancer." Collaboration research can facilitate the interchange of ideas within the same discipline, the acquisition of new skills, access to research funding, and the publication of high-quality research with significant benefits (Bansal et al., 2019). Figure 6 displays the United States as the leader in breast cancer management research and international collaborations with countries such as the United Kingdom, Italy, France, and Germany. In response to the expansion of higher education and the advancement of knowledge, as well as the professionalization and specialization of science, the number and significance of international research collaborations have grown. In addition, there are rising investments, improved access to resources, an association with the scientific elite, reciprocal intellectual or social influences, and a rise in scientific productivity (Dusdal & Powell, 2021).

Research Implication: The bibliometric analysis method is gaining popularity in the healthcare profession, particularly in cancer research hubs (Ahmad et al., 2021; Franco et al., 2023; Glynn et al., 2010; Kotepui et al., 2014; Wu et al., 2021). This is a result of the method's capacity to extract meaningful data from databases to determine the trend or performance of a specific research field. Using this strategy, the researchers have emphasized pertinent information to observe the trend in the management of breast cancer research from various perspectives of metadata. As a result, this study was able to contribute to the evolution of breast cancer management by establishing an annual increase in the publication of research on breast cancer treatment trends. The number of total publications cited publications, total citations, average citations per publication, average citations per cited publication, h-index, and g-index increased. In addition, a list of countries that actively participated in this study sector was displayed. Countries such as Germany, Australia, India, Spain, Canada, Belgium, and France are among those represented.

This strategy can also assist researchers in determining which keywords are ideal for this particular breast cancer research study. For instance, in this study, breast cancer and chemotherapy were the most often used terms in research articles. Next, we will discuss co-authorship searches. With the VOSViewer software application, the bibliometric approach can identify this data, which is vital for expanding the number of publications. It can inform the researcher about the collaboration between authors and countries, and based on this information, future researchers can forecast how to improve the publication with the authors mentioned and well-known countries for this topic. The study's key strength is that it analyzed the global research trend in breast cancer management for nearly 90 years, from 1932 to June 2021. Scopus, a well-known scientific database, was used to extract all the data, which is unquestionably a credible source for academic publication. This investigation yielded 3,532 publications, which contribute to this analysis of the breast cancer management research trend. This study, however, has a limitation. This analysis only used data from one source, and it has been confirmed that using additional databases will yield a different conclusion.

5. Conclusion

Breast cancer has been recognized in women since ancient times, even before the 19th century, when Hippocrates referred to it as a systemic disease (Ben-Dror et al., 2022). Albert Soiland wrote the first article on breast cancer with the title "The Management of Breast Cancer" on March 5, 1932. It was named "The Management of Breast Cancer," and it was a success. Subsequently, the evolution of the study has increased annually and involved numerous authors and countries, mainly the United States. The United States, the United Kingdom, and Italy contributed the most to breast cancer management research. Additionally, these countries dominated co-authorship between countries. Breast cancer and chemotherapy were two of the most frequently used keywords by authors. Hortobagyi, G.N., and Singletary, S.E., are the co-authors who have collaborated with most other authors on this subject, establishing them as the most well-known. Future researchers will be able to use the results of this study as a starting point for further research on important

breast cancer management topics and publication of the resulting article, with a high likelihood of collaboration with other authors from leading countries specializing in this field.

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The Work from Home Revolution: WFH Starter Kit

Sharfizie Mohd Sharip[1], Nur Rasyida Mohd Rashid[2*], Syahrul Bariah Abdul Hamid[3], Asiah Abdullah[4]
Noor Hidayah Pungot[5]
[1, 2, 4]Universiti Teknologi MARA Cawangan Negeri Sembilan, Malaysia
[3]Universiti Teknologi MARA (UiTM) Puncak Alam, Malaysia
[5]AUniversiti Teknologi MARA (UiTM) Shah Alam, Malaysia
sharfizie@uitm.edu.my, *syida@uitm.edu.my, syahrulbariah@uitm.edu.my, asiah_abdullah@uitm.edu.my

Abstract: The implications of the COVID-19 pandemic have greatly changed the norm in the employment system. Workers in both the public and private sectors are now adapted to the term "Work from Home" (WFH). Also, despite the little information on reliable practices for working from home, employees are nevertheless expected to perform at their highest level in accordance with the organizational goals. Therefore, this study is aimed to evaluate the need of establishing a guideline for WFH. A total of 178 employees from both private and government sectors were recruited in this survey. Findings showed that 69.1% of staff agreed their organization should provide them with proper guidelines in the implementation of WFH. It means that when they have specific guidelines it enables them to work more independently which also exhibits flexibility and creativity. As a conclusion, the developed and validated WFH manual handbook is able to become the main reference for employees for them to prepare physically and mentally while working efficiently from home.

Keywords: *Work from Home, Guidelines, Government, Private.*

1. Introduction and Background

Working remotely is a term used to define work from home (WFH), which implies that employees should be doing it from a distant location, typically their house. WFH has been labeled as the "new normal" when COVID-19 spreads further. Starting from March 11, 2020, when the World Health Organization announced that COVID-19 is a pandemic, the majority of the employees have been required to Work from Home. Before this, it was necessary to shift from the actual office to a home office for working purposes (Yang, Kim, & Hong, 2021). WFH is becoming more well-liked in developed countries (Morikawa, 2022). According to Rauh, Adams-Prassl, Boneva, & Golin, (2020), the proportion of employees who often WFH was typically 10% or less during those normal times, but starting in March 2020, there has been a considerable increase from the previous number. Bick, Blandin, & Mertens, (2020) reported the proportion of American employees who exclusively work from home increased from 8.2% in February 2020 to 35.2% in May 2020. To stop the spreading of COVID-19 and to reduce expenses, it was also reported that 20% of Thai firms have made the shift into work from home policies (Kate, 2020) during the pandemic. At the same time, The Japan Institute for Labor Policy and Training (JILPT) stated as of December 2020, 30% of employees in the employment sector reported of involving in work from home practice.

The quantity of individuals who work from home has unquestionably greatly expanded since the initial wave of the pandemic, which took place between March 2020 and May 2020 (JILPT, 2020). The government's announcement of the deployment of a Movement Control Order (MCO) to stop the virus' transmission by closing all public and private businesses had an impact on how WFH was implemented for the entire population of Malaysia. Nonetheless, the majority of Malaysian businesses and organizations used a hybrid approach, with some employees working from an office and others from home, because various professions and job kinds required varying work implementation. In a statement, the chief secretary, Tan Sri Mohd Zuki Ali, announced that, except for the health workers or other front liners (Nor Azizah, 2021), only 20% of government staff will report to work and the remaining 80% would be on WFH with rotation. Although implementing the practice of working from home practice was important in that situation, most of the employees were not given any guidance in the form of policies, or a manual of procedures. This makes it challenging for them to assure that they can complete the tasks effectively and efficiently. Furthermore, reports showed number of workers facing stress when they were unable to manage their time properly

between handling family and completing their tasks. Xiao, Becerik-Gerber, Lucas, & Roll, (2021) claimed that the required stay at home practice during the pandemic has interrupted the employees' routines.

Which in turn contributed to their emotions of despair and worry, which in turn will affect their physical and, mental health. At the same time, Hayes, Priestley, Moore, & Ray (2021) illustrated the number of teachers who were forced to change the old teaching and learning approach to online methods when school sessions continue in most countries during the pandemic. They encounter challenges such as being cut off from coworkers and experiencing social distance from their colleagues (Aczel, Konvacs, Van Der Lippe, Szaszi, 2021), which causes them to lose direction and guidance while doing their job at home. Thus, it is significant for them to have a reference while implementing the new norms. Basically, the guidelines or references become vital for employees because they will help them manage broad implementation on how to complete work and usually offer a helpful overview of what to do in circumstances.

At the same time, employees also should be given a checklist regarding the necessities needed during the WFH period. Having good tools and systematic preparation will give them valuable experience working at home, the same as working at their office. When the company's objectives and purposes are completely accomplished, both the company and the personnel will benefit. The Malaysian government has released a JPA circular on the policy of working from home (Jabatan Perkhidmatan Awam, 2020), which however those policies does not provide recommendations for managing other matters such as on the aspect managing their time, emotional, and physical management aspects. It is very essential to ensure that employees have proper direction in establishing the work-life balance while working at home. Thus, this study will be focusing on developing the WFH Starter Kit as a guideline for employees to work systematically and efficiently from home.

2. Literature Review

Work from Home: Since the spreading of the Coronavirus worldwide, World Health Organization (WHO) has classified the virus as a pandemic. It was first identified in Wuhan, China, in November 2019. Following that, governments around the world have accustomed the public to the order of the Movement Control Order (MCO), to halt the spreading of the virus. Therefore, this forces organizations including private sectors and industries to adopt the Work from Home (WFH) practice to ensure business sustainability (Patanjali, & Bhatta, 2022). Work from home (WFH) is now becoming the new norm being practiced by most organizations. Many businesses were ordered to switch from conventional operating procedures to practice full or partial WFH. Some people have found the adjustment to be easier than others, particularly if the staff members are accustomed to work remotely and the necessary technology was made available even before the MCO (New Straits Times, 2020). The majority of the leading companies have stated that over 70% of their employees will have to work from home in the near future, demonstrating that the WFH culture will persist even after lockdowns particularly among jobs that relied on information technology (Oettinger, 2011).

It was also discovered that the decline in the cost of working from home was a major factor in this increase. Peter Drucker, a management expert, claimed in a 1989 Wall Street Journal editorial that the entire infrastructure was already in place for knowledge work to move from offices to people's homes (Waters-Lynch, 2020). According to a UK survey of IT and non-IT workers, working from home helps employees become more independent and motivated (Bailyn, 1988). They discovered that when workers started working from home, the call center's productivity increased by 9% and staff turnover decreased by 50%. However, they are also concerned that if management is unaware of the contribution made, it would negatively impact their promotion. According to a case study conducted in Germany (Kira & Beckmann, 2016), staffs who work from home exert greater effort, particularly when they have additional responsibilities at home that must be completed in addition to their work. On the other hand, OWL Labs (2017) made the case that workers choose WFH to fulfill their responsibilities to their families, avoid frequent travel, and minimize office disturbances.

However, Schawbel (2018) demonstrated that a global study cited in the Harvard Business Review showed that WFH also caused people to feel disengaged from their work and struggle to focus to finish their tasks. The factors most significantly associated with productivity during this period were hence consistent

communication and significant cooperation (Haridas, Rahul, & Subha, 2021). According to other different studies carried out during COVID-19, employee performance and autonomy were favorably correlated. However, a poor work-life balance and related stress may have a negative effect on the employees' production. Women employees may be getting undesirable experiences by not only working from home but also, being obliged to the household chores and managing family, contrary to men who could work longer uninterrupted (Farooq & Sultana, 2021). On the surface, letting your employees work from home can seem to provide all the advantages and conveniences they require for success and productivity. But just as every place of employment has its challenges, so does the home. In light of this, manual/guidelines on a few areas should be enlightened to improve performance and help employees to stay focused during WFH.

Manual/Guidelines: The COVID-19 pandemic is a rapidly changing situation. The expanding number of research papers that have been published and present scientific evidence for preventing COVID-19 have made it possible to formulate several guidelines. Businesses should consider the suggestions made by the World Health Organization (WHO) and International Labor Organization (ILO) about how to protect their employees against COVID-19 at work (WHO, 2021). There are quite a number of additional suggestions were also made, including those for COVID-19 workplace preparation (WHO, 2020a), risky direct communication when there are community involvement (WHO, 2020b) and mental health issues to support mental and psychological well-being throughout the pandemic phase (WHO, 2020c). In response to the COVID-19 outbreak, the International Labor Organization has also developed an employer's guide on WFH (ILO, 2020a). The guideline has been designed to help employers adapt to a new normal. However, up to date, there are very few other scientific research and guidelines on WFH. Many companies are new to WFH arrangements and still struggling to adapt. While conducting WFH, work-life balance should be considered by every company to support the physical health, mental health, and sustain the productivity of WFH workers (Como, Hambley, & Domene, 2021).

The present literature does not suffice to rectify the important points pertaining to the unexpected behaviors and circumstances of being WFH towards the overall well-being of WFH workers (Rudrum, Rondinelli, Carlson, Frank, Brickner, & Casey, 2022). Waizenegger, McKenna, Cai, and Bendz (2020) have reported some undesirable experiences among WFH workers on WFH including being highly difficult, fraught with interruptions and having a damaging impact on their productivity and well-being. The majority of the respondents claimed that distractions from the home environment, family members, and a lack of material and technological support prevented them from concentrating on their professional assignments (Raju and Kumar, 2020; Waizenegger, McKenna, Cai, & Bendz, 2020). Meanwhile, another study reported having posttraumatic stress disorder (37%), anxiety attacks (20.8%), symptoms of despair (17.3%) and sleep problems (7.3%) (Rossi et al., 2020). On the other hand, 21.8% had high levels of perceived stress and 22.9% had adjustment disorder. In response, the International Labor Organization issued further recommendations on how to manage occupational psychosocial threats during the COVID-19 pandemic to address the consequence of mental health (ILO, 2020b). Stress associated with COVID-19 and a lack of organizational assistance during the transition to WFH may impact the work-life well-being of WFH employees (Como, Hambley, & Domene, 2021). The lack of suitable WFH standards from the employers changed how the employees were disciplined in their regular job activities.

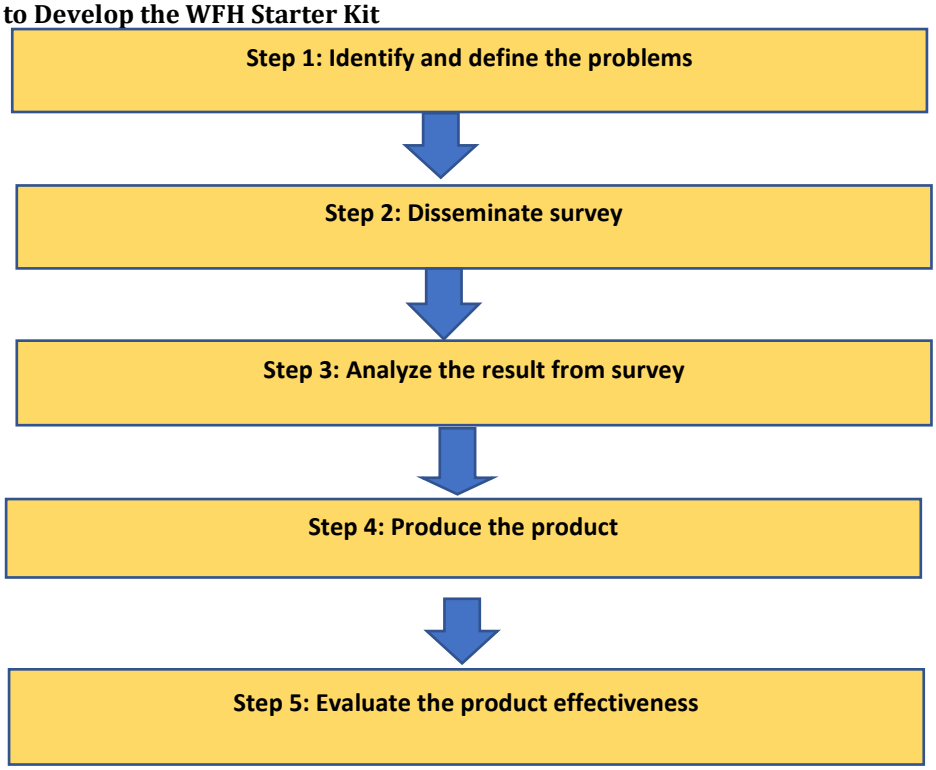
Adults who had COVID-19 had postural discomfort and a reduction in quality of life due to a decline in physical activity, a rise in screen usage, and extended work hours (Sharma, & Vaish, 2020). Apart from that, WFH workers also experienced physical dysfunction that affects their musculoskeletal (Gupta, Jadhav, Nataraj, & Maiya, 2022 and Condrowati, Bachtiar, Maharani, & Utari, 2020)). These four highest body regions are the neck, shoulder, lower back, and upper back. The Centers for Disease Control and Prevention (2020) has adopted a number of guidelines and techniques to control musculoskeletal ailments, including modifications to work practices during WFH and the use of ergonomics equipment. The COVID-19 pandemic, which is expected to start spreading over the world in March 2020, has prompted the Malaysian authority to develop legislation and standard operating procedures to limit the disease in Malaysia. The steady increase in COVID-19 active cases in Malaysia from 14 March 2020 until 25 March 2021 has resulted in the Malaysia Public Service's Circular 5/2020 allowing civil servants to work from home (Tambou, Rahim, & Sabar, 2021). To have a positive impact on the level of productivity at work, both employers and employees should have clear norms and guidelines (Nordin, Baidzowi, & Razak, 2016). Numerous initiatives should be taken to

maintain ongoing communication between employers, employees, coworkers, and the organization (ILO, 2020c). To deal with the new nature of the work environment, it would be necessary to research a variety of WFH-related topics, including developing guidelines for Malaysian workers.

3. Methodology

This study primarily employs primary data collected through the online survey method. The researcher first identified and defined the issues that employees faced when working from home. To confirm that this problem is actually present, researchers have surveyed to get a true picture of the difficulties faced by remote workers. The sample includes employees from both the public and private sectors. To ensure that the data's accuracy and consistency met the objectives of the study, the primary data was collected through the use of a closed-ended online survey. The assessment measure was a five-point Likert scale, with the points ranging from strongly disagree (1) to strongly agree (5). This study used convenience sampling, a non-probability sample technique because it is quick, easy, and reasonably priced. The data were quantitatively examined using the SPSS application and it was conducted from Mei February 2021 until May 2021. Data were analyzed after the respondents provided their responses, and this analysis helped to produce the manual. To gauge the handbook's effectiveness, researchers distributed it to employees in the public and private sectors via online platforms to get their feedback on the relevance and effectiveness of the manual. Basically, there are a total of five processes involved in producing the WFH Starter Kit. Figure 4 depicts the study's methodology in steps.

Figure 1: Process to Develop the WFH Starter Kit



The detail about each step is also explained below:

STEP 1: Identify and Define the Problems: Both public and private sectors have started to implement work from home (WFH) practices in the situation of a pandemic outbreak in the country. There is no proper guideline for staff and leaders in enforcing the practice of WFH. The guideline must provide basic protocols to assist staff and managers in fulfilling their working responsibilities.

STEP 2: Disseminate Survey: The study was conducted through an online survey and involved 178 private and government employees who were practicing working from home. The survey also investigated the need of developing specific guidance in performing work from home among the respondents.

STEP 3: Analyze the Result from Survey: The descriptive statistical analysis is used in looking at the frequency i.e., the distribution of the tendency of employees to realize the need for the existence of a policy in working from home is created. Based on that, 69.5% of respondents agreed that their organization should provide a manual or guidelines on WFH for both employers and employees. At the same time, almost 50.9 % of the respondents agreed that, to date, their company did not provide them with any manual or guideline on WFH policy.

STEP 4: Produce the Product: Produce the WFH guidelines with the name of the WFH Starter Kit to be referred to by staff and leaders which is suitable for both private and government sectors.

STEP 5: Evaluate the Product Validity: The validity of the product will be evaluated through two processes which are the face and content validity. Face validity is obtained from the end user of both government and private sector while the content validity was done by the appointed representative of Jabatan Tenaga Kerja Negeri Sembilan using a self-administered questionnaire. All respondents were satisfied with the manual provided and also suggested improvements in several aspects.

4. Results and Discussion

In the preliminary study, an online survey was conducted among 178 government and private workers in Malaysia to collect demographic data and to get their responses on the standard guidelines for WFH. The sociodemographic characteristics of the respondents were presented in Table 1. About 53.4 % of the respondents were aged between 36 to 45 years old, followed by 31.6 % aged between 26 to 35 years old and 14.9 % aged more than 46 years old. The majority of the respondents were male (75.3%), married (78.7%) and worked as government servants (64.4 %).

Profile of Respondents: Table 1 displays a summary of the sociodemographic characteristics of the Malaysian worker who participated in the study.

Table 1: Socio-Demographic Characteristics of the Respondents (N=178)

VARIABLE	FREQUENCY	PERCENTAGE
AGE		
26-35 years old	56	31.6%
36-45 years old	95	53.4%
>45 years old	27	14.9%
AGE		
Male	134	75.3%
Female	44	24.7%
MARITAL STATUS		
Single	34	19.0%
Married	140	78.7%
Divorce	4	2.3%
WORKING SECTOR		
Self-employed	3	1.7%
Government	115	64.4%
Private	60	33.9%

Furthermore, it was found that 66.9% of the respondents have no experience working from home before the pandemic COVID-19 (Figure 2) and agreed that there are no specific tools that can serve as a guideline and reference in implementing WFH practice. The policy on WFH was created by the government on December 21, 2020, however, its implementation of it was still unclear. About 69.1% of the respondents have agreed that their organization should provide a manual or guidelines on WFH for both employers and employees as shown in Figure 3. At the same time, Figure 4 showed 60.7% of the respondents agreed that the Ministry of Human Resources also should provide a manual or guidelines on WFH for both employers and employees. This has shown that the development of a manual or guidelines is highly crucial to help both employers and employees to have a healthy work and life balance when working at home.

Figure 2: WFH Experience among 178 Government and Private Workers

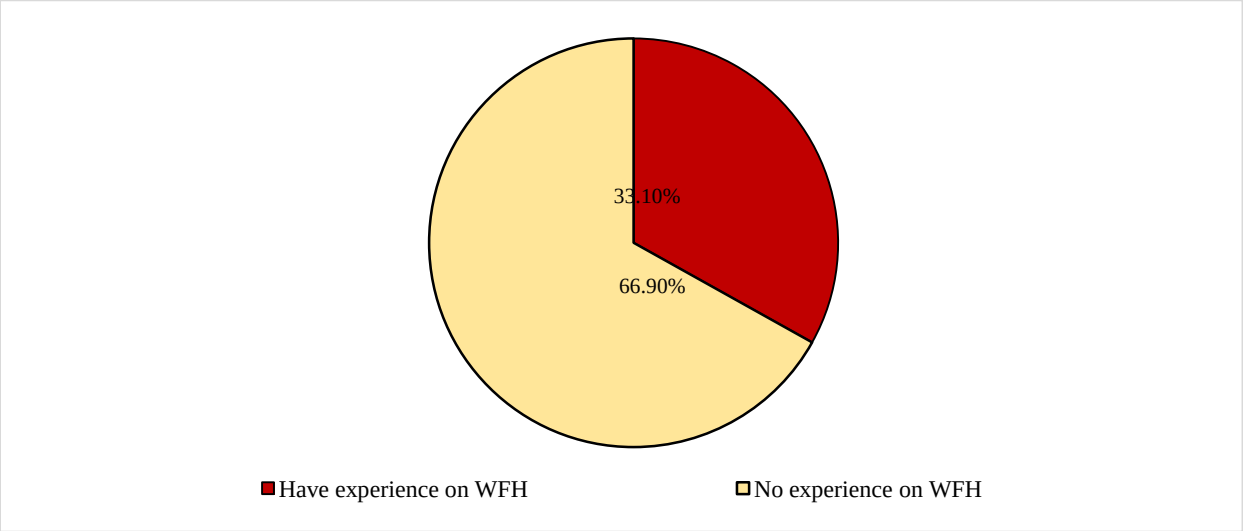


Figure 3: Responses for the Organization to Provide a Manual or Guidelines on WFH for Employers and Employees

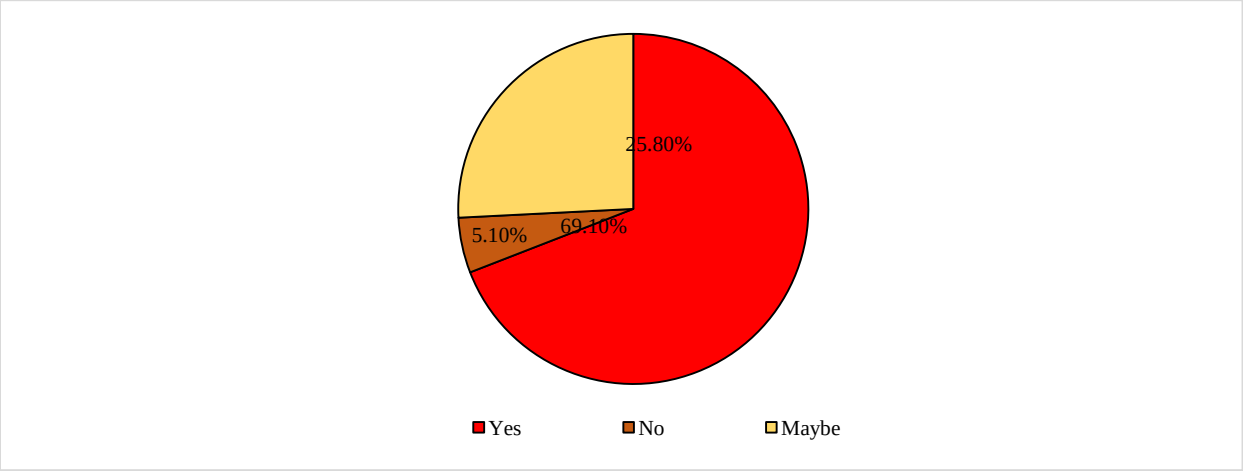
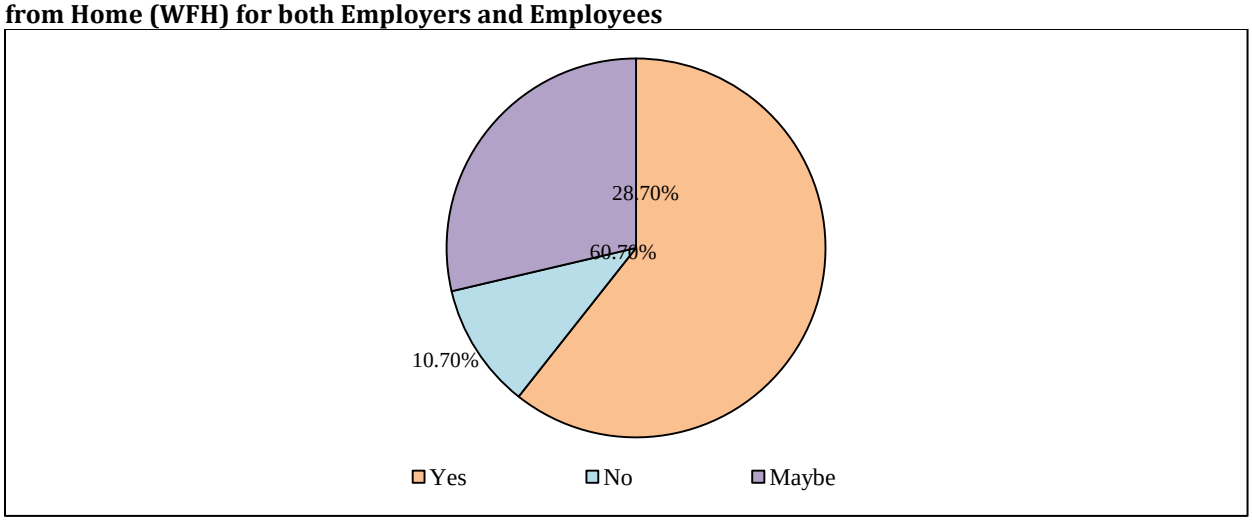


Figure 4: Responses for the Ministry of Human Resources to Provide a Manual or Guidelines on Work from Home (WFH) for both Employers and Employees



Mean Comparison: Table 2 shows the distribution of the WFH satisfaction level for both males and females are not normally distributed with SW=0.923 and SW=0.970 respectively with p-value=0.005.

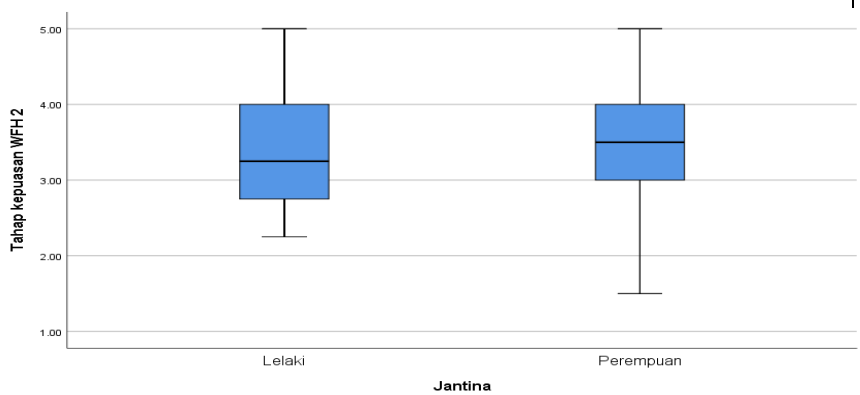
Table 2: The WFH Satisfaction Level for both Female and Male

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sex	Statistic	DF	Sig.	Statistic	DF	Sig.
The level of Satisfaction WFH	Male	.159	46	.005	.923	46	.005
	Female	.078	132	.049	.970	132	.005

a. Lilliefors Significance Correction

Figure 5: Box Plot Satisfaction Level WFH



Case Summaries

Mean

Sex	Satisfaction Level WFH
Male	3.5435
Female	3.4981
Total	3.5100

Based on the Box plot as shown in Figure 5, the median line lies far from the center of the box plot. This indicates the distribution of the WFH satisfaction level for both male and female skewed and not normally distributed. On average, WFH satisfaction level score among males was 3.54 slightly higher than females' score of 3.50.

Table 3: Mann-Whitney Test for WFH Satisfaction Level among Gender

Ranks

	Sex	N	Mean Rank	Sum of Ranks
Satisfaction Level WFH	Male	46	89.97	4138.50
	Female	132	89.34	11792.50
	Total	178		
Mann-Whitney U	3014.500			
Wilcoxon W	11792.500			
Z	-.072			
Asymp. Sig. (2-tailed)	.943			

Table 3 above demonstrates the Mann-Whitney Test results, and it illustrates that not much difference in mean rank for both males and females. Nevertheless, the mean rank of the male is slightly higher than the female. The results also showed there is no significant difference in the mean WFH satisfaction level between gender (U=3014.5, p-value = 0.943 > 0.05). This outcome was consistent with what has been established by Brancaccio et al. (2021), who likewise discovered that there was no gender-based substantial variance in the working activity during the lockdown. Job satisfaction may rise as WFHs had considered employees' freedom and they gain their own control over work-related tasks, pace and location (Deole, Deter, & Huang, 2023). WFH was no longer an option but a necessity during the COVID-19 epidemic, and women valued it more than men, especially those with young children (Mas & Palais, 2017). The fact that working mothers still provide the majority of the childcare explains why their WFH satisfaction level is marginally lower than that of men,

which is most noticeable among respondents with children (Gallen, 2018). It was discovered, however, that men thought it was possible to work from home (Adams-Prassi et al., 2022). Despite the fact that women spend more time caring for children, there was no statistically substantial difference in the mean WFH satisfaction level between the sexes in this study, suggesting that both sexes share equally in homework and childcare during WFH. In the meantime, the distribution of the WFH satisfaction level for both government and private sectors are significantly not normally distributed with SW=0.977 and SW=0.919 with $p < 0.05$ respectively as demonstrated in Table 4.

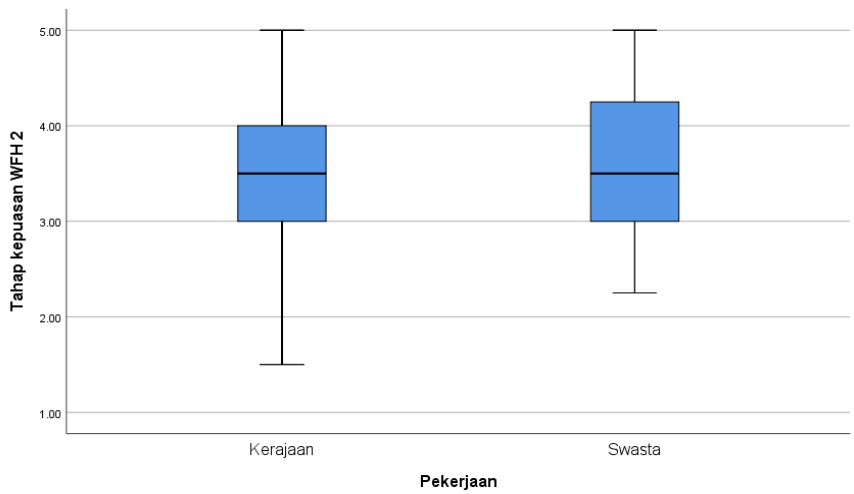
Table 4: The Distribution of the WFH Satisfaction Level for both Government and Private Sector

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sector	**Statistic**	**DF**	**Sig.**	**Statistic**	**DF**	**Sig.**
Satisfaction level WFH	Government	.081	117	.058	.977	117	.046
	Private	.129	58	.017	.919	58	.001

a. Lilliefors Significance Correction

Figure 6: Box Plot Distribution of the WFH Satisfaction Level for both Government and Private Sector



Case Summaries

Mean

Sector	Satisfaction Level WFH
Government	3.4509
Private	3.6293
Total	3.5100

Based on Figure 6 above, the median line lies far from the center of the box plot. This indicates the distribution of the WFH satisfaction level for both government and private sectors skewed and not normally distributed. On average, the WFH satisfaction level for the private sector showed a score of about 3.63 slightly higher than the government sector score of 3.45.

Table 5: Mann-Whitney Test for WFH Satisfaction Level for both Government and Private Sector (N=175)

Ranks

	Sector	**N**	**Mean Rank**	**Sum of Ranks**
Satisfaction Level WFH	Government	117	85.13	9960.00
	Private	58	93.79	5440.00
	Total	175		
Mann-Whitney U	3057.000			
Wilcoxon W	9960.000			
Z	-1.070			
Asymp. Sig. (2-tailed)	.285			

Table 5 above displays the Mann-Whitney Test results of slightly different mean ranks for the government and private sectors. However, the mean rank of the private sector is slightly higher than the government

sector. The results also showed there is no significant difference in mean WFH satisfaction level among the working sector (U=3057, p-value = 0.285 > 0.05). The percentage of government employees who were able to work totally from home during the coronavirus epidemic is higher than the average for all private employees. This is because it adheres to the guidelines provided in a circular issued by JPA about Government Office Operations. The WFH strategy and working with flexible hours are encouraged and used as support for ongoing efforts to prevent the spread of the virus during the Conditional Movement Control Order (MCO) period beginning on May 2, 2020. In an ongoing attempt to enhance the way public services are delivered and to balance the demands of officers' obligations and their well-being, the government has committed to develop a WFH policy as a substitute for a new method of working in the public sector.

5. Recommendations and Conclusion

Overall, it can be suggested that this developed and validated WFH Starter Kit will serve as a guideline for employees to work efficiently by outlining the strategies in preparation for the daily tasks needed. It also helps employers in making decisions, disseminate tasks and instructions to their workers systemically. This tool is also applicable to assist employees in having a balance between workloads that must be carried out at home while maintaining their health quality. The WFH Starter Kit provides the most up-to-date electronic in any platform and quick reference for employees and employers whenever the government needs to change or revise its policies due to current situations. Any arrangements made in the future are subject to modification in response to revised instructions and the organization's changing needs. It is also advised that employers think about altering or creating corporate policies or guidelines to give specific instructions on how to adopt WFH in their business. All employees should be properly educated about this policy and notified about any changes that may be made. The efficiency of the company's policies and rules should be frequently evaluated by the employer. During WFH implementation, personnel should be given the precise tools, equipment, materials, and technology they need to complete the necessary duties. Also, it is critical that personnel receive the necessary training, supervision, guidance, and information, including strategies for handling emergencies during pandemics. Any arrangements pertaining to the tasks and key performance indicators (KPI) given should also consider the employees' physical and mental well-being.

On the other hand, monitoring and evaluation of employees' work performance should also be carefully developed and considered certain degrees of flexibility while conforming to the expected standard. A new type of management will need to be used much more widely in WFH practice in the new post-COVID-19 era. With the relaxation of lockdowns, agile businesses are very likely to embrace this method of working. Improved digital infrastructure will make it easier for employees to work from home effectively. This is due to the likelihood that more workers will look for employment that enables WFH to meet their family and personal demands. So, in the long run, employers would be seeking better regulations and rules from the government regarding the operation of WFH. Hence, WFH is a constant element of employment in Malaysia that may alter the country's customary contract of employment as the labor market adapts to the advancements of the Industrial Revolution. Many believed that as the world slowly recovers from the pandemic, some changes in working arrangements, such as WFH and increased use of technology, will continue. In this regard, the article's findings cast a favorable light on WFH's alternative working structure. During WFH, productivity levels for both employees and employers may even hold steady or even rise. The WFH Starter Kit can be a contingency guideline and reference to ensure job preservation and productivity. Finally, it is concluded that the findings of this study can help the university or company's top management in short- and long-term planning to improve the performance of its departments. Therefore, this kit will be used to create applications or mobile apps for HR managers to use in their HRMIS scheme which will be beneficial to many government institutions or the private sector.

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