

THE 2ND INTERNATIONAL CONFERENCE ON CROSS-DISCIPLINARY ACADEMIC RESEARCH 2023 (ICAR 2023)

Sustainable Business, Environment & Society

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WELCOME TO ICAR 2023

ICAR 2023 , also known as The 2nd International Conference of Cross-Disciplinary Academic Research will be coordinated by the Institute of Graduate Studies (IGS) of UPTM with the theme of 'Sustainable Business, Environment & Society'. ICAR 2023 aims at providing fellow researchers and participants with an excellent platform to discuss and present many current issues and findings in various fields. It also aims to encourage further collaboration between UPTM and other universities while providing exposure to academicians and industry key players to gain a better understanding and interest in various fields through discussions and presentations.

With collaboration and assistance from Universitas Jambi, Universiti Malaysia Kelantan (UMK), AAGBS - UITM, IBE - UITM and Kolej Poly-Tech Mara (KPTM), ICAR 2023 also aims at cultivating a culture of writing in academic research among UPTM educators by providing an encouraging and promising ground for them to communicate and interact with researchers around the world.

MESSAGE FROM THE PRESIDENT



Alhamdulillah, praise to Allah s.w.t for His gracious blessings the conference finally materialized and for all of us to gather here today.

It is with immense pleasure and a sense of profound anticipation that we welcome you to the 2nd International Conference on Cross-Disciplinary Academic Research 2023 (ICAR 2023), with the overarching theme of "Sustainable Business, Environment, and Society." This momentous occasion, hosted by an exceptional team of organizers, promises to be a catalyst for transformative conversations and interdisciplinary collaborations.

ICAR 2023 stands as a beacon for fostering intellectual cross-pollination among diverse fields of study. Our conference, designed with three dynamic tracks, embodies the spirit of synergy across disciplines. Track 1 encompasses "Advances in Computing, Electronics, Engineering, and Mathematics," where technological innovation meets the complexities of our digital age. In Track 2, "Advances in Business & Economics, Social Science, Communications & Media" will provide insights into navigating the ever-evolving landscape of global economies, societies, and communication. Finally, Track 3, "Advances in Humanities, Education, Teaching, Learning & Arts," invites us to explore the profound impact of creativity and education on our shared human experience.

As we delve into these tracks, we aspire to bridge the gaps that often exist between academia and the practical world, aiming to catalyze solutions to the critical challenges facing our world. Sustainable development, at the core of our theme, serves as a unifying thread, underlining the imperative for responsible and ethical engagement in all disciplines.

ICAR 2023 would not have been possible without the dedication of our organizing committee, the support of our sponsors, the invaluable contributions of our presenters, and the eager participation of our attendees. We encourage you all to engage actively in the discussions, share your insights, and forge new connections that can pave the way for a sustainable future.

Let us embark on this enlightening journey together, breaking down the boundaries that constrain our collective knowledge. Welcome to ICAR 2023, where the fusion of ideas and the pursuit of excellence take center stage. We look forward to the dynamic exchange of ideas and the emergence of innovative solutions that this conference promises to deliver.

Thank you for being a part of this extraordinary gathering. Let us, together, shape the future we envision.

Assoc. Prof. Ts. Dr. Zahrah Binti Yahya Deputy president (Academic)
Acting President

MESSAGE FROM THE CONFERENCE CHAIR



Assalamualaikum, Salam Perpaduan dan Salam Malaysia Madani,

A warm welcome to the 2nd International Conference on Cross-Disciplinary Academic Research (ICAR 23'). This second iteration of ICAR has registered 115 papers out of over 200 papers received. The essence of this gathering is to foster the spirit of intellectual exploration and collaboration, as we come together from various fields of study to share our insights, establish connections, and contribute to the advancement of knowledge.

In a world marked by complexity and interconnectedness, the importance of multidisciplinary research cannot be overstated.

In today's rapidly evolving global landscape, our problems are no longer confined within a single discipline. Climate change, public health crises, economic disparities, and technological revolutions demand a comprehensive approach from the collective wisdom of diverse experts. The theme of this year's conference, "Sustainable Business, Environment & Society" is a testament to our commitment to address the most pressing challenges facing us today.

As we conclude this conference, let us reflect on our responsibility to use our knowledge and expertise wisely. Whether we are researchers, educators, or students, we can drive positive change and shape a brighter future for all.

On a final note, I would like to express my gratitude to all participants, reviewers, sponsors and UPTM who have made this conference possible. Also, I would like to extend my heartfelt thanks to our co-organisers KPTM, UMK, Universitas Jambi, AAGBS UiTM and IBE UiTM.

Last but not least, I express my most profound appreciation to all of the chairs of the organising committee and their team members who have dedicated their time and effort to ensure the success of ICAR 23'.

Thank you,
Dr Adam Shukry Ali
ICAR 23' Conference Chair



MESSAGE FROM THE KEYNOTE SPEAKER

Salam Sejahtera and Salam Malaysia MADANI,



I am truly honored to stand before you today as we gather to explore one of the most pressing and transformative topics of our time: sustainable supply chain management. I'd like to extend my heartfelt thanks to the organizers of this conference for bringing together a diverse group of professionals and experts who are dedicated to advancing sustainable practices within our supply chains.

The concept of sustainability has evolved from a buzzword to a critical necessity in the world of business and logistics.

It is no longer just a choice, but an imperative for organizations seeking to thrive in the 21st century. As we delve into this subject today, I want to take a moment to reflect on the significance of sustainable supply chains and the profound impact they can have on our world.

Sustainability is not merely an environmental consideration; it encompasses economic, social, and ethical dimensions as well. It is about striking a balance between our planet's limited resources and the ever-increasing demands of global trade and consumption. It's about ensuring that the needs of the present are met without compromising the ability of future generations to meet their own needs, as eloquently articulated in the Brundtland Report.

In our journey today, we will explore the multifaceted aspects of sustainable supply chains. We will discuss the strategies and innovations that are reshaping the way businesses operate and how they interact with their stakeholders. We will delve into the significance of responsible sourcing, ethical labor practices, and the reduction of carbon footprints throughout the supply chain.

As we navigate this conference, I encourage you all to share your experiences, insights, and best practices. Together, we can inspire change and set new benchmarks for sustainability in supply chain management. The challenges ahead are substantial, but so too are the opportunities for innovation, growth, and social responsibility.

In closing, let us remember that a sustainable supply chain is not just a corporate goal; it is a global imperative. It is a commitment to creating a world where commerce and conservation coexist harmoniously, where businesses thrive without compromising the planet's well-being. I look forward to engaging in meaningful discussions and forging new partnerships that will propel us toward a more sustainable and prosperous future.

Thank you for your attention, and let us embark on this transformative journey together. Prof. Ts. Dr. Veera P.K.S.
Keynote Speaker

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1 THE EFFECT OF COMPANY TRANSPARENCY ON THE PERFORMANCE OF PUBLIC LISTED COMPANIES IN MALAYSIA

Kavitha A/P Manoharan¹ Azahari Jamaludin² azahari@kuptm.edu.my

¹Institute of Graduate Studies

²Faculty of Business, Accountancy and Social Sciences Universiti Poly-Tech Malaysia Kuala Lumpur, Malaysia

ABSTRACT

Transparency is crucial for financial, corporate social responsibility, and corporate governance, fostering company performance and sustainability. The study examines transparency's effect on firm performance, offering insights on how transparent reporting methods can improve financial performance. It's pertinent to Malaysia's corporate sector, especially PLCs, clarifying the significance of transparency in enhancing stakeholder confidence, trust, and financial performance. The study benefits officials, regulators, and investors advancing sustainable development in Malaysia by informing policies and regulations promoting transparent reporting practices in Malaysian PLCs. The study's contribution to knowledge, applicability, and potential influence on investment and policy choices enhance its significance.

Keywords: Financial transparency, Corporate social responsibility transparency, corporate governance transparency, Firm performance, Public listed companies

INTRODUCTION

Transparency is a crucial element of financial, corporate social responsibility, and corporate governance, and its impact on stakeholders has been extensively studied. Bingwen (2019) found that higher transparency is positively related to firm value, especially for companies with higher information asymmetry. Dissanayakeal (2020) found that corporate social responsibility transparency is linked to higher stock returns and reduced price crash risk. Greater transparency and disclosure can help reduce bias in information and aid in resolving corporate governance issues (Sari & Anugerah, 2011). Despite efforts by the Malaysia Code of Corporate Governance (MCCG), unethical behavior and a lack of transparency persist in some Malaysian listed companies (Ahmad Firdhauz Zainul Abidin, 2019).

Several studies have investigated the impact of financial transparency on Malaysian public listed companies (PLCs). Financial transparency refers to accessible and clear financial statements and reporting. Shah (2019) found a positive correlation between financial openness and firm performance. Syed (2021) found higher financial transparency levels associated with higher market values, and Ho (2018) found that more financially transparent companies tend to have higher profits. Baharom A. H. (2019) found a positive correlation between financial reporting quality and firm success, while Razali (2020) demonstrated that voluntary disclosure positively impacts firm performance. Regulatory monitoring and financial reporting procedures need improving to boost investor confidence and enhance financial performance.

Studies have extensively investigated the impact of corporate social responsibility (CSR) on the performance of public listed companies (PLCs) in Malaysia. CSR involves a company's legal obligations to stakeholders and its commitment to social and environmental responsibility. Several studies, including Abdullah N.A. (2019), Mohd Fauzi (2021), Zulkifli (2018), Haron (2019), and Rahaman (2021), found a positive correlation between CSR and firm performance, indicating that organizations prioritizing CSR typically perform better financially. However, the lack of CSR accountability and transparency in Malaysian PLCs has led to stakeholder mistrust, which can limit access to finance and depress stock prices. The literature recommends stronger CSR practices and regulatory oversight to ensure transparent and accurate reporting and advance sustainable development. Overall, CSR positively impacts corporate performance in Malaysian PLCs, emphasizing the need for ethical and sustainable business practices.

Corporate governance (CG) regulates and controls a business through laws, customs, and procedures. Research has focused on its impact on company performance, particularly in public listed companies (PLCs) in Malaysia. Several studies indicate that

businesses that prioritize CG practices perform better financially in terms of profitability, efficiency, and market value. Strong CG mechanisms like audit committees, board of directors, and internal audits positively impact financial performance. Transparent CG practices favorably affect firm performance, and businesses with higher financial success tend to publish their CG practices precisely and openly. The lack of CG accountability and transparency may result in a lack of shareholder trust, depressing stock prices and restricting access to funding. To improve financial performance, stakeholder confidence, and reputation, regulatory scrutiny and enforcement are necessary. (Ibrahim, 2018; Hasan, 2019; Abduh, 2020; Omar, 2018; Baharom A. H., 2020). Due to unconvincing outcomes from previous studies current study take the initiatives to study the effect of company transparency on the performance of public listed companies in Malaysia.

RESEARCH OBJECTIVE

The following are the study research objectives:

- a) To determine the relationship between financial transparency and firm performance in PLCs in Malaysia.
- b) To determine the relationship between corporate social responsibility (CSR) transparency and firm performance in PLCs in Malaysia.
- c) To determine the relationship between corporate governance transparency and firm performance in PLCs in Malaysia.

SIGNIFICANCE OF STUDY

Transparency is crucial in financial, corporate social responsibility, and corporate governance, and can improve firm performance. Current study examined the effect of transparency on firm performance in Malaysian PLCs, highlighting the importance of transparency in fostering stakeholder confidence, strengthening reputation, and enhancing financial performance. The study is relevant to Malaysia's corporate sector and can inform policy development. Overall, the study's significance lies in emphasizing the importance of transparency in financial, corporate social responsibility, and corporate governance, and its potential to influence investments and policy decisions that promote sustainable development in Malaysia.

LITERATURE REVIEW

Financial Transparency

Financial transparency in corporate governance has gained attention due to corporate scandals and governance failures. Bujang and Zainal (2021) found a significant link between financial openness and profitability in Malaysian listed companies. Kengatharan (2021) studied the construction sector and found financial openness improved success. Mohd Nasir, et al. (2021) found financial transparency helped businesses during the COVID-19 epidemic. However, Abdul Rashid, et al. (2020) discovered that financial transparency's effect on firm performance was limited by institutional ownership levels.

Corporate Social Responsibility Transparency

Corporate social responsibility (CSR) has grown in importance, and CSR transparency has been recognized as a key factor in business success. Research in the Malaysian context indicates a significant link between CSR transparency and a company's performance, including its market value, return on equity, and return on assets. Studies by Heng et al. (2021) and Tan et al. (2020) show that CSR transparency can significantly improve a company's success and financial performance. However, Ahmed et al. (2019) found that the degree of government ownership can influence the association between CSR transparency and corporate performance.

Corporate Governance Transparency

Corporate governance (CG) is crucial for accountability and openness to stakeholders, with CG transparency being recognized as vital for business success. Yap et al. (2021) found a significant link between CG transparency and firm performance in Malaysian publicly traded companies. Akhtar et al. (2021) found that CG transparency improved business performance in Malaysian banking. Ong et al. (2020) found CG transparency improved financial performance during COVID-19. However, Abdul Wahab et al. (2019) found that larger family ownership could hinder the benefit of CG openness.

Firm Performance of PLCs in Malaysia

Malaysian publicly traded companies need to perform well to meet stakeholders' expectations. Intellectual capital and corporate social responsibility investments improve financial performance, according to Fauzi and Rahman (2021) and Yap et al. (2020). Increased investment in these areas can enhance competitiveness and profitability. Lai et al. (2020) found that environmental performance investment can improve reputation and competitiveness. However, Hassan and Noordin (2020) discovered conflicting results, with the industry sector buffering the effects of firm size, debt, liquidity on financial performance.

Underpinning Theory

The agency theory suggests that company transparency can mitigate the conflict of interest between shareholders and agents managing the company. Stakeholders' confidence can be boosted by financial openness, as found by Ali and Ullah (2015), and by CSR disclosure, as found by Sulong et al. (2021), improving business performance by lowering agency costs and increasing trust. Transparent businesses can enhance their financing, borrowing rates, and market position by building trust with stakeholders.

Financial Transparency and Firm's Performance

Financial transparency is crucial for investors, encompassing financial data accuracy and accessibility, and disclosure of significant information. It positively correlates with Tobin's Q and significantly impacts a company's performance (Edogbanya & HasnahKamardin, 2016; Zaman, Arslan, & Siddiqui, 2015; Omondi, 2015). Financial transparency can improve risk management (Ahmad and Othman, 2021), competitiveness, profitability, and long-term financial success in Malaysia (literature review). However, state ownership level can impact the relationship between financial openness and firm performance (Wong et al., 2017). Further research is needed on financial transparency's relationship with business success in Malaysian listed companies. Thus the following hypothesis is postulated.

H1: There is a positive relationship between financial transparency and firm performance.

Corporate Social Responsibility (CSR) Transparency and Firm's Performance

Corporate social responsibility (CSR) involves ethical practices that prioritize community, employees, environment, and shareholders, aligning business practices with social concerns. Recent studies show that CSR transparency improves business performance and can increase competitiveness, profitability, and risk management. Studies on Malaysian companies and banks indicate a positive correlation between CSR transparency and business performance. The proposed study seeks to further explore this relationship in Malaysian PLCs. (Tarus & Omandi, 2013; Neu, Warsame, & Padwell, 1998; Shahrul & Ibrahim, 2020; Anwar et al., 2021; Chong & Ria, 2021). Thus the following hypothesis is postulated.

H2: There is a positive relationship between corporate social responsibility transparency and firm performance.

Corporate Governance Transparency and Firm Performance

Corporate governance encompasses a company's management strategies, policies, and rules, with the board of directors playing a significant role in it. Corporate governance framework refers to the laws and decisions regulating business behavior. CG transparency has been linked to improved financial performance, competitiveness, and risk management in Malaysian listed companies (Mohamad, Hassan & Noordin, 2021; Ng et al., 2020; Ho & Wong, 2021). However, contradictory findings exist, such as industry mediating the relationship between CG transparency and business performance (Mohamad et al., 2019). The proposed study seeks to advance the literature by examining the relationship between CG transparency and company performance in Malaysian PLCs. Thus the following hypothesis is postulated.

H3: There is a positive relationship between corporate governance transparency and firm performance.

Theoretical Framework

The research proposal identifies three categories of transparency: financial, CSR, and governance. They will be independent variables, and firm performance will be the dependent variable. Figure 2.1 shows the theoretical framework for the study.

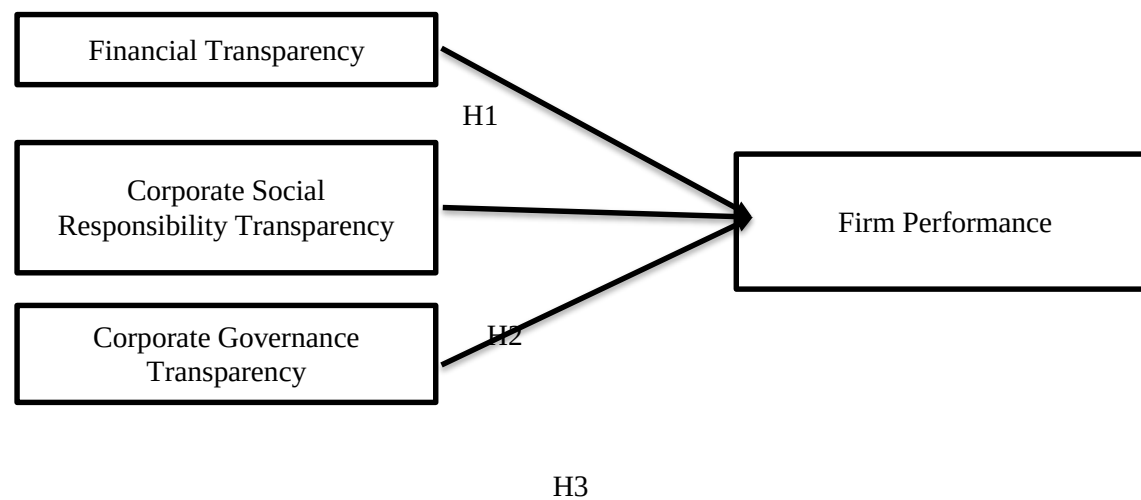


Figure 1: Theoretical Framework

(Bujang and Zainal, 2021; Heng et al., 2021; Akhtar et al., 2021)

Research Hypothesis

From the above discussions, the following are current study hypotheses.

H1. There is a positive relationship between financial transparency and firm performance in PLCs.

H2. There is a positive relationship between corporate social responsibility transparency and firm performance in PLCs.

H3. There is a positive relationship between corporate governance transparency and firm performance in PLCs.

CONCLUSION

This study aims to investigate how corporate transparency, encompassing financial, CSR, and corporate governance information, affects the performance of PLCs in Malaysia. While corporate governance emphasizes balancing economic, social, personal, and communal interests, many well-known companies have experienced significant scandals due to poor governance. Despite numerous studies examining the connection between transparency (i.e., financial, CSR and CG) and firm performance, the PLCs have received less attention in this regard (Anandarajah, 2004; Ullah, Rehman, & Waheed, 2016).

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2 MODIFIED NON-DOMINATED SORTING GENETIC ALGORITHM-II BASED ON SCA FOR SOLVING MULTI-OBJECTIVE ENGINEERING DESIGN PROBLEMS

Wei Jer Lim wjlim@sc.edu.my

Department of Electrical & Electronics Engineering, Southern University College,
Johor, Malaysia

Hariharan Muthusamy hariharanm@nituk.ac.in

Department of Electronics Engineering, National Institute of Technology, Uttarakhand, India.

Vikneswaran Vijejan vikneswaran@unimap.edu.my

Faculty of Electronic Engineering & Technology, Universiti Malaysia Perlis,
Perlis, Malaysia

Yeng Seng Lee leeyengseng@gmail.com

Advanced Communication Engineering, Centre of Excellence, Universiti Malaysia Perlis,
Perlis, Malaysia

Yong Quay So yqso@sc.edu.my

Department of Electrical & Electronics Engineering, Southern University College,
Johor, Malaysia

ABSTRACT

Multi-objective problems appeared in many fields such as operation research, engineering, data mining, and science. In this paper, Modified Non-Dominated Genetic Algorithm-II (MNSGA-II) is presented to solve multi-objective engineering design problems. MNSGA-II is modified by integrating the population update mechanism from Sine Cosine Algorithm (SCA) with conventional genetic operators. The optimal non-dominated solution obtained by the proposed algorithm is compared with other competent algorithms in the literature. Overall observation, MNSGA-II achieved the lowest mean (Δ) in multi-plate disk brake design problem with 0.2255. Finally, the results summarise that MNSGA-II was able to generate promising and competitive optimal non-dominated solutions compared to other state-of-art algorithms in this paper.

Keywords: Metaheuristic, engineering design problems. optimization, modified multi-objective algorithms

1 INTRODUCTION

In the past decade, researchers and scientists have developed and applied multi-objective evolutionary algorithms (MOEAs) in solving real-world multi-objective optimization problems (MOPs) (Ray & Won, 2005). The MOPs has a wide diverse of applications such as solving crew planning problems in airline operation (Ehr Gott & Ryan, 2003; Ouyang & Zhu, 2023), arranging job-shop scheduling problem (Fontes et al., 2023; Lei, 2008; Moslehi & Mahnam, 2011; Yagmahan & Yenisey, 2008), data mining (Bandaru et al., 2017; Ma, 2023; Waluyo et al., 2020), multiple objective combinational problems (Bérubé et al., 2009; Ehr Gott & Gandibleux, 2002, 2003) engineering problems (C. A. Coello Coello et al., 2005; Goicoechea et al., 2018; Hu et al., 2022; W. J. Lim et al., 2015; Nekoo et al., 2022; Ölvander, 2000) and medical application (Hariharan et al., 2018; Muthusamy et al., 2015; Pervaiz et al., 2021; Zabidi et al., 2010).

In contrast to single-objective optimization problems (SOPs), the optimal goal of MOPs is to discover solution sets, named as Pareto optimal solutions or also known as non-dominated solutions. There are many objective functions in MOPs that need to be optimized simultaneously. Some of the objectives functions are incommensurable and conflicting with other objective functions in MOPs, hence solving them becomes a challenging task due to the aforementioned problems. Some of the meta-heuristic algorithms have specific advantages owing to fast convergence rate and accuracy, these MOEAs include Strength Pareto Evolutionary Algorithm (SPEA) (Zitzler et al., 2001), Strength Pareto Evolutionary Algorithm 2 (SPEA2) (Amuso & Enslin, 2007),

Non-Dominated Sorting Genetic Algorithm (NSGA) (Srinivas & Deb, 2000), Non-Dominated Sorting Genetic Algorithm II (NSGA-II) (Deb et al., 2002), Pareto Archive Evolution Strategy (PAES) (Knowles & Corne, 1999), Multi-Objective Particle Swarm Optimization (MOPSO) (Hrolenok, 2011), IMOPSO (Li et al., 2012), Micro Genetic Algorithm (MGA) (C. Coello Coello & Pulido, 2001), and Hybrid Micro Genetic Algorithm (HMGA) (W. J. W. J. Lim et al., 2015). Nature-based metaheuristic Genetic Algorithm (GA) was first introduced by Holland in 1975 (Holland, 1975). The concept of nature-based metaheuristic has then caught the attention of researchers due to the effectiveness of the approach in solving multi-modal and multi-dimensional problems. This has been proven through nature-based algorithms developed such as Artificial Immune Algorithm (AIA) (Farmer et al., 1986), Ant Colony Optimization (ACO) (Dorigo & Gambardella, 1997), Bacteria Foraging Algorithm (BFA) (Passino, 2002), Particle Swarm Optimization (PSO) (Kennedy & Eberhart, 1995), Invasive Weed Optimization (IWO) (Karimkashi & Kishk, 2010), Grey Wolf Optimizer (GWO) (Mirjalili et al., 2014), Firefly Algorithm (FA) (Yang, 2009), Bat Algorithm (BA) (Yang, 2010), Lion's Algorithm (LA) (Rajakumar, 2012), Ant Lion Optimization (ALO) (Mirjalili, 2015), Multi-Objective Sine Cosine Algorithm (MO-SCA) (Tawhid & Savsani, 2017) and many more. As well as the metaheuristic algorithms listed above, a simple yet effective algorithm named Sine Cosine Algorithm (SCA) been developed by Seyedali Mirjalili for solving single-objective optimization based on mathematical model of sine and cosine functions (Mirjalili, 2016). The SCA has shown the capability in updating the position of solution to achieve optimal objective output, an advantage where population updated with fewer operator parameters. In this paper, Modified Non-Dominated Sorting Genetic Algorithm-II (MNSGA-II) is proposed, which is the extended version of NSGA-II. The first contribution of this paper is to introduce SCA population update algorithm into conventional NSGA-II. Second contribution is to prove the effectiveness of MNSGA-II in solving engineering design problems and multi-objective benchmark functions.

The paper is prepared as follow: Section 2 illustrates the basic definition of multi-objective optimization problem and terminology. Section 3 presents the detail of NSGA-II elitism and SCA algorithms, along with the proposed MNSGA-II algorithm. Section 4 mentioned the MOEA indicators used in these experiments. The results and discussion on multi-objective engineering design problems presented in Section 5. Finally, conclusions are cover in Section 6.

2 Multi-Objective Problems

MOPs can be defined as the optimization function with two or more objectives for optimization and these objectives are optimized simultaneously. The mathematical formula is formulated in (1):

$$F(X) = [f_1(X), f_2(X), \dots, f_k(X)]^T \quad (1)$$

Where $X = [x_1, x_2, \dots, x_b]$ is the vector of test function variable and b is the number of the variable. One of the common methods imply for solving MOPs is weighted sum method. This method assigned the weight factor and combined the objectives into a single objective optimization problem (Deb & Deb, 2014). The weighted sum method is formulated as below:

$$F = \sum_{m=1}^M w_m f_m(x) \quad (2)$$

Where M is the number of objective and w_m is the weight applied for function f_m .

Owing to the combined function in the weighted sum method, there are only one objective to optimize during optimization. In order to find the optimized set of solution, variety of weight factor has to be experimented in (2). The major downside of this method is wide variety of weight factors have to take into consideration, this is extremely time-consuming.

The other method for solving MOPs is by optimizing the entire objective simultaneously by storing a set of best solutions in an archive and updating the best solution in every

iteration. The best solutions found in this operation are called Pareto optimal solutions or non-dominated solutions (Deb et al., 2002). Figure 1 illustrates the overview of the concept of Pareto optimal solutions in MOPs. It is noticeable that the solutions A and B are dominated by solution C in Figure 1, both A and B are known as non-dominated solutions and the line they form among the triangle is Pareto optimal front.

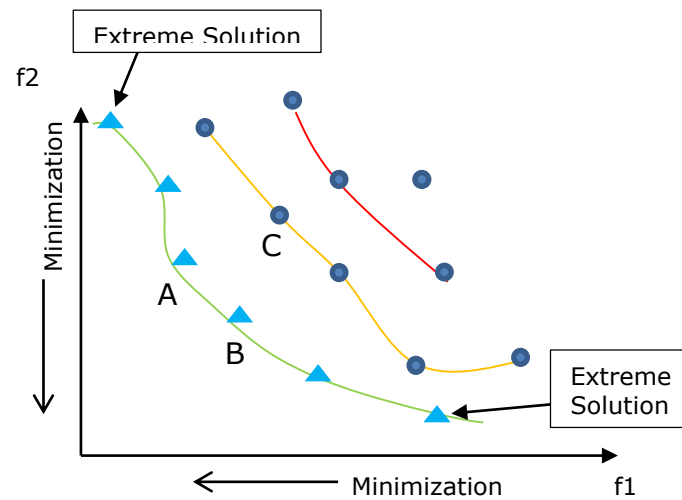


Figure 1: Optimal Pareto solutions

3 Modified Non-Dominated Sorting Genetic Algorithm-II (MNSGA-II)

This section discusses the fusion of SCA algorithm on the conventional NSGA-II algorithm to form proposed MNSGA-II. NSGA-II is well-known for fast non-dominated sorting of Pareto ranking and crowding distance, and for preserving the diversity of the search.

3.1 NSGA-II elitism

This section presents the elitism used in NSGA-II. First, the fast non-dominated sorting algorithm (FNDSorting) compares two candidate solutions in the population, a and b respectively. If candidate a dominates b , then candidate a is stored in S_a . But if candidate b dominates a , then domination counter for a , n_a will increase by 1. Next the Pareto ranking assignment for each of the candidate, if $n_a=0$, a will belong to the first Pareto front, PFr_1 . Every candidate not belong to PF_1 will be inserted into separate list Q . Then proceeds to next front with the candidates from Q , domination counter, n_b of each candidate b in S_a is deducted by 1. The candidate b with $n_b=0$ will be ranked in the second rank. This process continues until all Pareto frontiers are complete ranked.

```

For each  $a \in P_s$ 
   $S_a = \emptyset$ 
   $n_p = 0$ 
  for each  $b \in P_s$ 
    if  $(a < b)$  then
       $S_a = S_a \cup \{b\}$ 
    else if  $(b < a)$  then
       $n_a = n_a + 1$ 
  if  $n_a = 0$  then
     $P_{a_{rank}} = 1$ 
     $PFr_1 = PFr_1 \cup \{a\}$ 
   $i = 1$ 
  while  $PFr_i \neq \emptyset$ 
     $Q = \emptyset$ 
    for each  $a \in PFr_i$ 
      for each  $b \in S_a$ 
         $n_b = n_b - 1$ 
        if  $n_b = 0$  then
           $b_{rank} = i + 1$ 
           $Q = Q \cup \{b\}$ 
     $i = i + 1$ 

```

$$P\text{Fr}_i = Q$$

Figure 2: Fast non-dominated sorting in NSGA-II pseudo code (Deb et al., 2002)

```

j = |Z|
for each i, set Z[i].dist = 0
for each objective n
    Z = sorting(Z, n)
    Z[1].dist = Z[j].dist = ∞
    For i = 2 to (j-1)
        Z[i].dist = Z[i].dist + (Z[i+1].n -
        Z[i-1].n) / (fnmax - fnmin)

```

Figure 3: Pseudocode of crowding distance procedure (Deb et al., 2002)

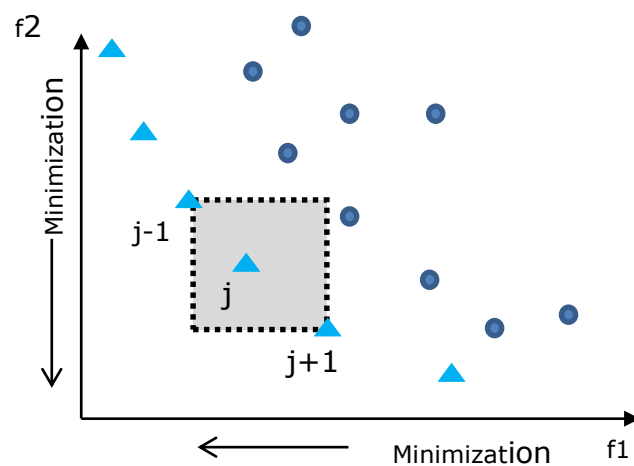


Figure 4. Crowding distance (Coello et al., 2007)

Figure 3 shows the pseudo-code for calculating the crowding distance. Crowding distance (CDassign) utilized to assign the distance value for every candidate in the solution space. A higher value of crowding distance indicates that the surrounding of the solutions is less crowded. In Figure 3, j is the total number of individuals in Z . Firstly, initiated the value 0 for each of the solution i in Z . Then, sorting operation is done on solutions in Z . Both the top and lowest boundary is set to infinite distance to ensure these two boundary points are selected. Here, $[Z].n$ refers to the n th objective function value of the z th individual, while maximum and minimum values of m th objective function are $f_n^{\max}$ and $f_n^{\min}$ respectively. As shown in

Figure 4, the crowding distance of a solution i is calculated as half of the perimeter of the cuboid.

In contemplation of maintaining diversity along the Pareto optimal front, a crowded comparison operator is carried out based on non-domination rank and crowding distance (Deb et al., 2002). In this case, the operator likely to select and preserve the solutions with lower ranking $i\text{rank} < j\text{rank}$ where $i\text{rank}$ and $j\text{rank}$ are the number of ranking for individual i and j respectively, also less crowded region for reproduction to next iteration. If two solutions are found in the same non-domination rank, the solution of higher crowding distance will be selected, ($i\text{rank} = j\text{rank}$ and $i\text{distance} > j\text{distance}$).

3.2 Sca Algorithm

The SCA algorithm is proposed by (Mirjalili, 2016), is based on the sine and cosine

mathematical expressions to update the solutions in each iteration. The formulation is shown in (3).

$$X_m^{g+1} = \begin{cases} X_m^g + r_1 \sin(r_2) |r_3(P)_n^g - X_m^g| \\ X_m^g + r_1 \cos(r_2) |r_3(P)_n^g - X_m^g| \end{cases} \quad (3)$$

Where X_a^g is the current solutions in m th dimension and g th generation. P is the best solution (destination) from the population. There are four parameters in SCA to controls the exploitation and exploration of the searching, which are r_1, r_2, r_3 , and r_4 . Parameter r_1 leads the searching direction either in the space between solution and destination or outside it. Parameter r_2 indicates the steps of the movement of the searching toward or outward the destination. Random weight between $[0, 2\pi]$ is assigned in the formula by parameter r_3 . The formula for updating the search agent switches between sine and cosine function during the searching and updating the position of the search agent which is affected by parameter r_4 , where if $r_4 < 0.5$ then sine function is chosen else cosine function is chosen.

3.3 Implementation of MNSGA-II

The proposed MNSGA-II algorithm in this paper is the adoption of SCA population updating mechanism into conventional NSGA-II. The conventional genetic operator of NSGA-II is replaced with SCA algorithm during the population updating stage.

Figure 5: Flow chart of MNSGA-II illustrates the flow of proposed MNSGA-II. Initial population, P_i is random generated with the size of N , then fitness values for each of the solution in P_i is obtained thru fitness evaluation. The process then follows by *FNDSorting* and *CDassign* for each solution in search space. Next, SCA algorithm is employed to create the new population, Q_i then merge with population P_i after fitness evaluation process to form $Compop_i$. This $Compop_i$ is sorted based on the non-domination rank and crowding distance and the best solutions are selected into the next generation P_{i+1} with size of N . This process is repeated until the stopping criteria are met.

4 MOEA Indicator

4.1 Generational distance

Generational distance (GD) used to determine how far the elements computed could approximate those in the optimal Pareto front. GD is defined as (4):

$$\text{Generational Distance} = \frac{\sqrt{\sum_{i=1}^j d_i^2}}{j} \quad (4)$$

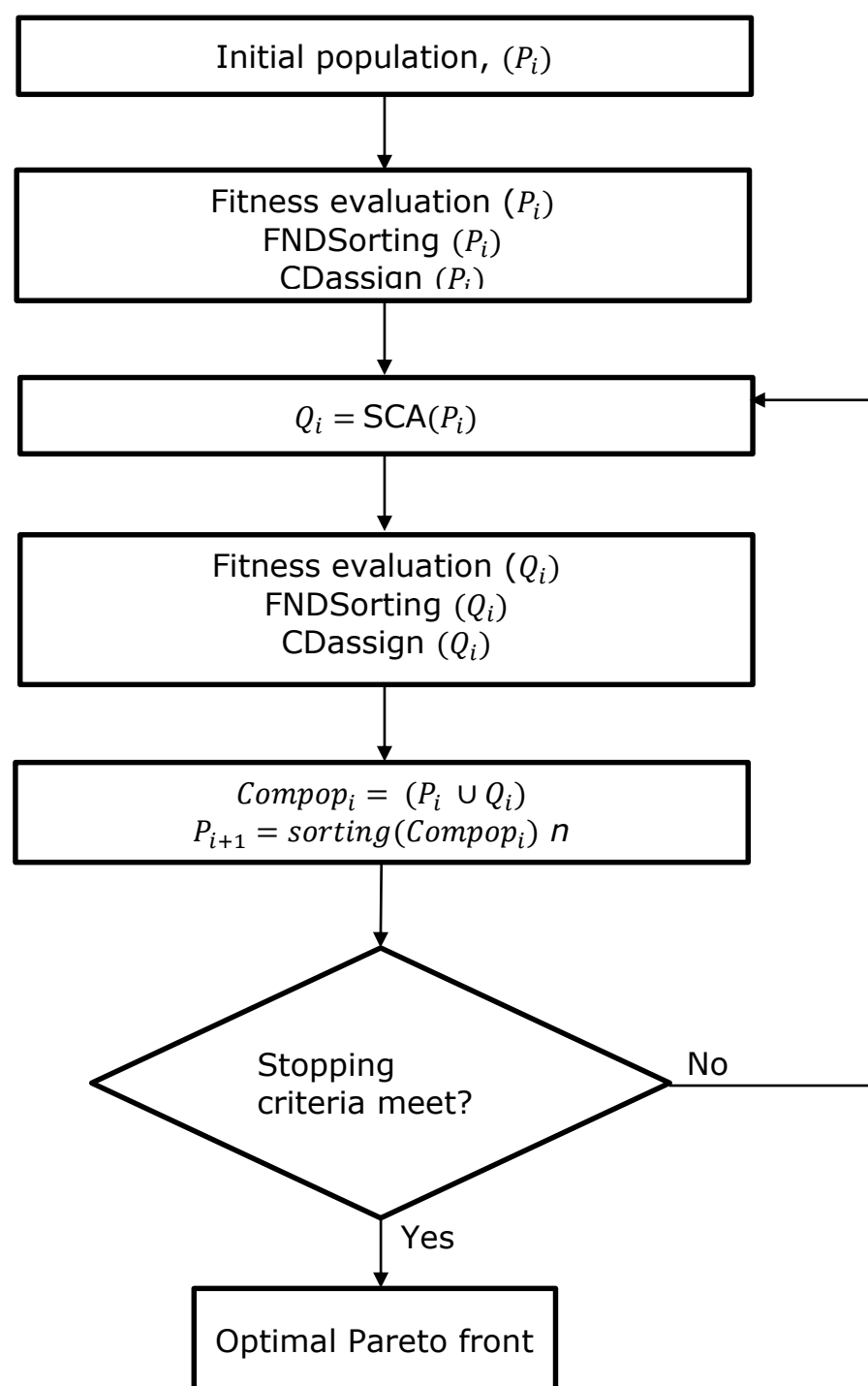


Figure 5: Flow chart of MNSGA-II

Note that j is the number of solutions in the optimal set and d_i is the Euclidean distance between each of the solution with the consecutive solution in the optimal Pareto front. In this case, the lower value of GD indicates that the obtained optimal Pareto front is more near to true Pareto front.

4.2 Spacing

Spacing (SP) is a measurement of the spread of solution throughout the obtained optimal Pareto front. The Spacing MOEA indicator is suitable for judging how well the optimized solutions are distributed along the optimal Pareto front. The formula of Spacing as shown in (5).

$$S \triangleq \sqrt{\frac{1}{n-1} \sum_{i=1}^n (\bar{d} - d_i)^2} \quad (5)$$

where $d_i = \min_j (|f_1^i(x) - f_1^j(x)| + |f_2^i(x) - f_2^j(x)|)$, $i, j = 1, \dots, n$, $\bar{d}$ is the mean of all d_i and n is the number of non-dominated solutions found so far. A value of zero for this spacing indicates that all solutions in the Pareto front are spread evenly.

4.3 Spread

Spread (Δ) indicator used for measuring the coverage of the solutions from Pareto optimal over true Pareto front. For spread indicator, the smaller value of Δ means the obtained Pareto front has better spread with uniform distribution. The spread is

mentioned in (6):

$$\Delta = \frac{\sum_{j=1}^n d_j^{ex} + \sum_{p=2}^k |d_p - \bar{d}|}{\sum_{j=1}^n d_j^{ex} + (k-1)\bar{d}} \quad (6)$$

Where d_p is the Euclidean distance between two consecutive points of optimal Pareto front and $\bar{d}$ is the average value of d_p . d_j^{ex} is the Euclidean distance between the optimal Pareto front with true Pareto front?

5. Multi-Objective Engineering Design Problem

In this section, six mechanical engineering design problems are studied to investigate the MNSGA-II performance in finding Pareto optimal front. All the engineering design problems retain different characteristics, some of the optimization problems are subjected to constraint on certain condition. Therefore, increase the difficulty during searching for optimal Pareto solutions. The parameter setting for all engineering optimization problems is fixed with a population size of 100 and 500 maximum iterations. The results presented in this work are the average result obtained from 30 runs in order to preserve the same experimental parameters as (Tawhid & Savsani, 2018).

5.1 Four Bar Truss Design Problem

The objective of this design problem is to minimize the displacement of joints and volume simultaneously. This is an unconstrained problem with all the continuous design variables. The design system is shown in Figure 6. The formulation of this case is shown below (Sadollah et al., 2015):

$$\text{Min: } f_1(x) = L(2x_1 + \sqrt{2x_2} + \sqrt{x_3} + x_4) \quad (7)$$

$$\text{Min: } f_2(x) = \left(F \frac{L}{E}\right) \left(\frac{2}{x_2} + 2\frac{\sqrt{2}}{x_2} - 2\frac{\sqrt{2}}{x_3} + \frac{2}{x_4}\right) \quad (8)$$

Where, $F=10$, $E=2e5$, $L=200$

$$1 \leq x_1, x_4 \leq 3, \sqrt{2} \leq x_2, x_3 \leq 3$$

Four bar truss design problem has a convex Pareto front and the obtained optimal Pareto front for proposed MNSGA-II is shown in

Figure 7. In this case, only the value of SP is available in (Tawhid & Savsani, 2018), hence the SP value for proposed MNSGA-II is compared with different algorithms in (Tawhid & Savsani, 2018) and is presented in Table 1. Result (SP) for four bar truss problem. It can be proved from the results that MNSGA-II has achieved better SP value

compared to MGA and PAES, whereas it is slightly mediocre to NSGA-II, MOAAA, and MOWCA. The extreme solutions found for this problem is (1174.1999, 0.0341) and (1727.7393, 0.0027). The optimal Pareto front is plotted in

Figure 7 and has the same Pareto trade-off in (Tawhid & Savsani, 2018).

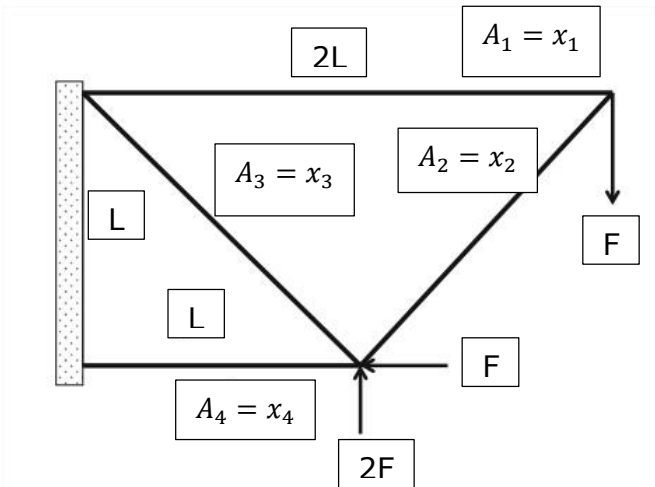


Figure 6: Four bar truss problem

Table 1. Result (SP) for four bar truss problem

Algorithm	SP	
	Mean	SD
MGA	8.2742	16.8311
MOPSO	2.5303	0.2275
PAES	3.2314	5.9555
MOAAA	2.3861	0.2314
MOWCA	2.5816	0.0298
NSGA-II	2.3635	0.2551
Proposed MNSGA-II	2.9825	0.2828

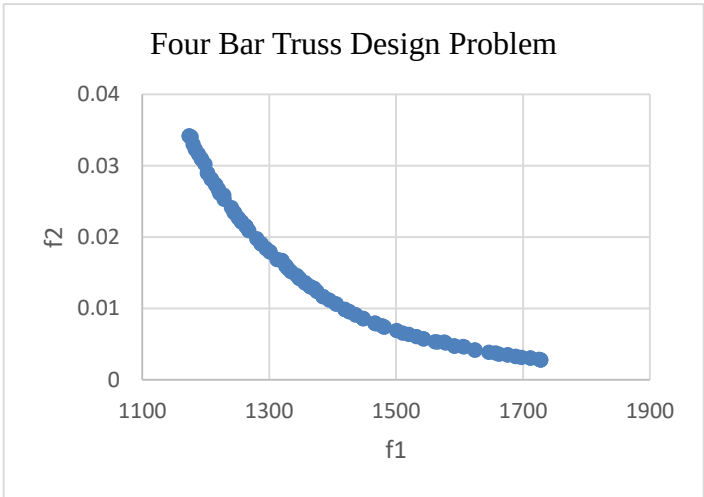


Figure 7: Optimal Pareto front of four bar truss problem

5.2 Gear train problem

Figure 8 shows the gear train design problem with parameter x_1, x_2, x_3 , and x_4 which are representing the number of teeth in each gear. In this case, one of the problems is to minimize the maximum size of any of the gears, hence this is a minimum and maximum problem with discrete variables (design variable has to be integer value varied from 12 to 60). The formulation for this problem as below (Tawhid & Savsani, 2018):

$$\min: f_1(x) = \left[\frac{1}{6.931} - \frac{x_1 x_2}{x_3 x_4} \right]^2$$

(9)

$$\min: f_2(x) = \max(x_1, x_2, x_3, x_4)$$

(10)

Where $12 \leq x_1, x_2, x_3, x_4 \leq 60$

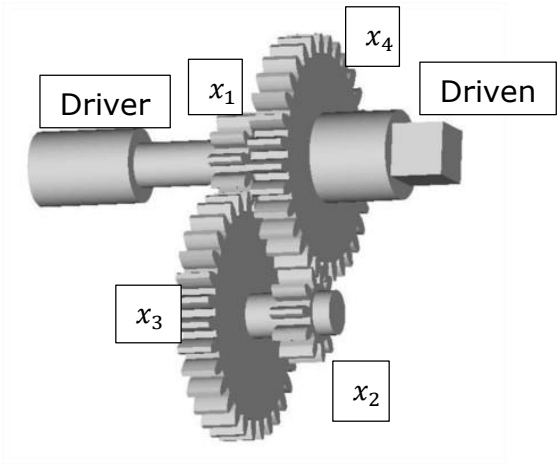


Figure 8: Gear train problem

The performance indicators such as GD, Δ , and SP are not available in (Tawhid & Savsani, 2018). Hence, the results are compared based on extreme solutions obtained from the literature (Tawhid & Savsani, 2018). The extreme solutions obtained for MOWCA, NSGA-II, MOAAA, and MNSGA-II can be found in **Error! Not a valid bookmark self-reference.** From the results, the extreme solutions achieved by MNSGA-II is (1.55e-10,44) and (7.32e-1,12). Obviously, these extreme solutions are superior among all the algorithms for $f_1(\min)$ and in par with MOWCA and MOAAA for $f_2(\min)$.

Table 2. Extreme solutions for gear train problem

Algorithms	Objective function		
		f_1	f_2
MOWCA	$f_1 \rightarrow (\min)$	4.5e-9	43
	$f_2 \rightarrow (\min)$	7.32e-1	12
NSGA-II	$f_1 \rightarrow (\min)$	1.83e-8	37
	$f_2 \rightarrow (\min)$	5.01e-1	13
MOAAA	$f_1 \rightarrow (\min)$	9.92e-10	47
	$f_2 \rightarrow (\min)$	7.32e-1	12
MNSGA-II	$f_1 \rightarrow (\min)$	1.55e-10	44

	$f_2 \rightarrow (\min)$	7.32e-1	12
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5.3 Multi-Plate Disk Brake Problem

This problem required minimization on the mass of brake and stopping time.

Figure 9 illustrates the design of multi-plate disk brake. There are four variables inner radius of the disk, the outer radius of the disk, the engaging force, and the number of friction surface. The problem is mentioned as the formulas below (Tawhid & Savsani, 2018):

$$\begin{aligned} \min: f_1(x) = & 4.9e \\ & - 5(x_2^2 \\ & - x_1^2)(x_4 \\ & - 1) \end{aligned} \tag{11}$$

$$\begin{aligned} \min: f_2(x) & \tag{12} \\ = & (9.82e6) \frac{x_2^2 - x_1^2}{x_3 x_4 (x_2^3 - x_1^3)} \\ g_1 = & 20 + x_1 - x_2 \\ g_2 = & 2.5(x_4 + 1) - 30 \\ g_3 = & \frac{x_3}{3.14(x_2^2 - x_1^2)^2} \\ & - 0.4 \\ g_4 & \\ = & 2.22e - 3x_3 \frac{x_2^3 - x_1^3}{(x_2^2 - x_1^2)^2} \\ & - 1 \\ g_5 = & 900 - \left(\frac{2.66e - 2x_3 x_4 (x_2^3 - x_1^3)}{x_2^2 - x_1^2} \right) \\ \forall g \leq & 0 \end{aligned}$$

Where the range of input variables are $55 \leq x_1 \leq 80, 75 \leq x_2 \leq 110, 1000 \leq x_3 \leq 3000, 2 \leq x_4 \leq 20, x_4 \in I$. As shown in the formulation, this is a constraint problem with five restrictions (g_1, g_2, g_3, g_4, g_5) .

The MNSGA-II results are compared with other algorithms from the literature (Tawhid & Savsani, 2018) in term of Δ value in

Table 3. MNSGA-II has shown a better Δ value and standard deviation (SD) among all the algorithm with 0.2255 and 2.25E-16 respectively.

Figure 10 shows the distribution of non-dominated solutions obtained in optimal Pareto front.

Table 3. Result (Δ) for multi-plate disk brake problem

Algorithms	Δ	
	Mean	SD
ραε-ODEMO	0.8401	0.20085
NSGA-II	0.7971	0.06608
MOWCA	0.4604	0.10961
MOAAA	0.2582	0.03420
MNSGA-II	0.2255	2.25E-16

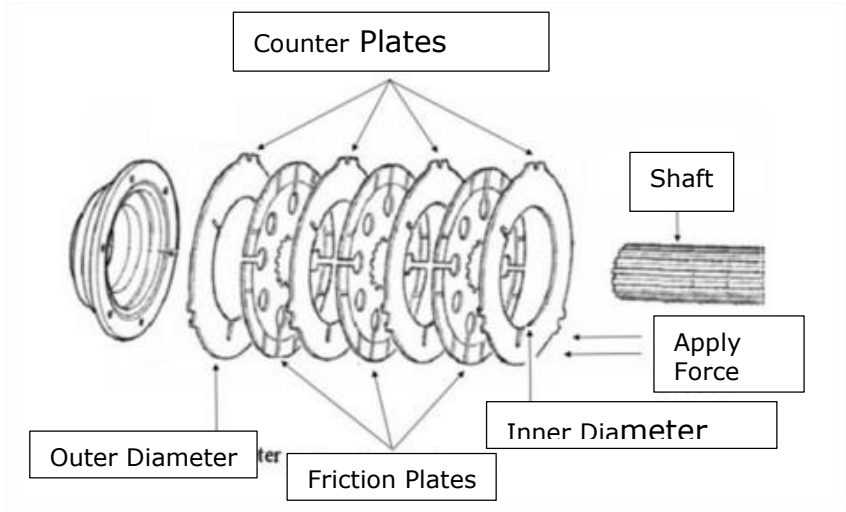


Figure 9: Multi-plate disk brake problem

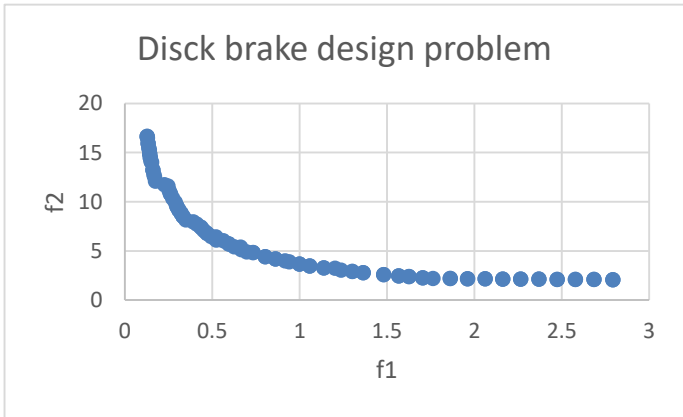


Figure 10: Distribution of optimal Pareto front by MNSGA-II for multi-plate disk brake problem

5.4 Speed Reducer Problem

In this case, the transverse deflection of the shaft and weight of the gear have to optimize simultaneously. Seven design variables are subjected to the constraint formula shown below (Sadollah et al., 2015):

$$\begin{aligned} \min: f_1(x) &= 0.7854x_1x_2^2\left(\frac{10x_3^2}{3} + 14.933x_3 - 42.0934\right) \\ &\quad - 1.508x_1(x_6^2 + x_7^2) + 7.477(x_6^3 + x_7^3) \\ &\quad + 0.7854(x_4x_6^2 + x_5x_7^2) \\ \min: f_1(x) &= \frac{\sqrt{(745x_4/x_2x_3)^2 + 1.69e7}}{0.1x_6^3} \end{aligned} \tag{13}$$
$$g_1(x) = \frac{1}{x_1x_2^2x_3} - \frac{1}{27}$$
$$g_2(x) = \frac{1}{x_1x_2^2x_3^2} - \frac{1}{397.5}$$

$$g_3(x) = \frac{x_4^3}{x_2x_3x_6^4} - \frac{1}{1.93}$$
$$g_4(x) = \frac{x_5^3}{x_2x_3x_7^4} - \frac{1}{1.93}$$
$$g_5(x) = x_2x_3 - 40$$
$$g_6(x) = \frac{x_1}{x_2} - 12$$
$$g_7(x) = 5 - \frac{x_1}{x_2}$$
$$g_8(x) = 1.9 - x_4 + 1.5x_6$$
$$g_9(x) = 1.9 - x_5 + 1.1x_7$$
$$g_{10}(x) = \frac{\sqrt{(745x_4/x_2x_3)^2 + 1.69e7}}{0.1x_6^3} - 1300$$
$$g_{11}(x) = \frac{\sqrt{(745x_5/x_2x_3)^2 + 1.575e8}}{0.1x_7^3} - 1100$$
$$\forall g_1 \leq 0$$
$$2.6 \leq x_1 \leq 3.6$$
$$0.7 \leq x_2 \leq 0.8$$
$$17 \leq x_3 \leq 28$$
$$7.3 \leq x_4, x_5 \leq 8.3$$
$$2.9 \leq x_6 \leq 3.9$$
$$5.0 \leq x_7 \leq 5.5$$

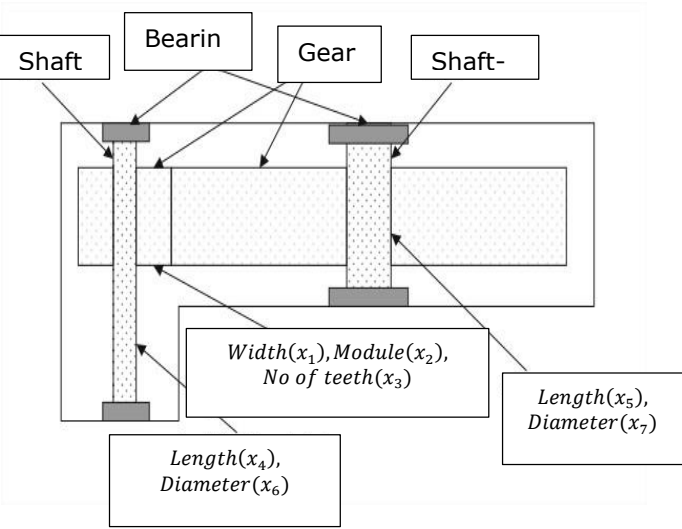


Figure 11: Speed reducer design

Figure 11 shows the schematic view of speed reducer design with all the design variables. All the variables are continuous except x_3 , which is the number of teeth that must be integer. The extreme solutions obtained by MNSGA-II are (2352.448,1695.964) and (5356.658,694.2336). Based on the literature (Tawhid & Savsani, 2018), the results are compared to MGA, NSGA-II, MOWCA, and MOAAA in SP values. The comparison is revealed in

Table 4. It can be observed that the best result is obtained by NSGA-II with mean SP of 2.765. In this problem, MNSGA-II is inferior to other algorithms but performed better than MGA. The non-dominated Pareto front is given in Figure 12.

Table 4. Result (SP) for multi-plate disk brake problem

Algorithms	SP	
	Mean	SD
MGA	47.800	32.80

NSGA-II	2.765	3.534
MOWCA	16.680	2.697
MOAAA	18.223	3.432
MNSGA-II	22.905	2.618

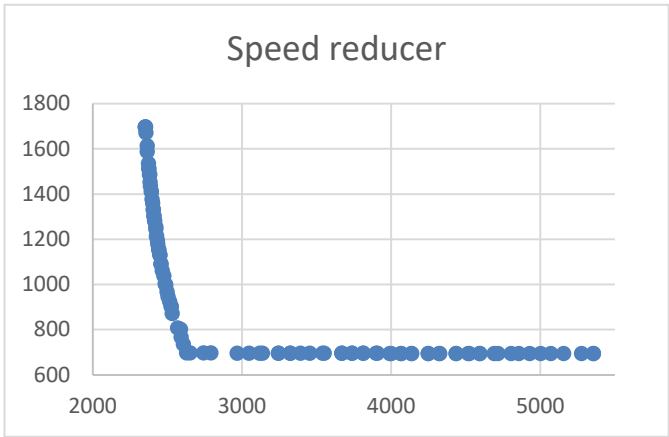


Figure 12: Optimal Pareto front for speed reducer design

6 Conclusions

This paper presented a novel multi-objective modified non-dominated sorting genetic algorithm-II, named as MNSGA-II. The main contribution in this method is by integrating the simple and efficient SCA population updating mechanism to replace genetic operators in conventional NSGA-II. In this paper, the MNSGA-II was used to solve a well-known engineering design multi-objective problems. The performance is measured/analyzed by using MOEA indicators: generational distance, spacing, and spread. The results obtained from the MOEA indicators shown that the proposed MNSGA-II capable in provided better optimal Pareto front or as par to a variety of state of the art algorithms mentioned in this paper. Furthermore, MNSGA-II also produces a wider range of non-dominated solutions. This work motivates us to investigate robustness of MNSGA-II on more different scale of engineering MOPs in future.

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3 HIGHER EDUCATION INSTITUTIONS RESILIENCE DURING COVID-19 POST-PANDEMIC: A QUANTITATIVE APPROACH

Mokhtar Bin Abdullah Muhammad Bin Omar Nor Azilah Binti Husin

ABSTRACT

Higher Education Institutions (HEI) have experienced tremendous impact due to the COVID-19 pandemic. The question is whether the HEIs have been capable of adopting the new normal caused by the pandemic. There has been scarce research on HEI resilience that produced empirical studies using quantitative approaches. While some formidable frameworks that conceptualize the organizational resilience have been proposed by several authors, none of these studies were able to present clear evidence of the COVID-19 pandemic of the HEI resilience, quantitatively. The current study aims to operationalize the HEI resilience framework proposed by Dudek (2020) by measuring the inter-relationships between the components of the framework using Structural Equation Modeling with Partial Least Squares (SEM-PLS) method. The data from 121 public and private universities in Malaysia were collected and used as a basis for determining the significant relationships in the HEI resilience framework. The results showed that the three antecedents, i.e., anticipation, coping, and adaptation (also a higher-order construct, consisting of four lower-order constructs, i.e., knowledge-based, resources availability, social resources, and power-based) positively impacts the HEI Resilience. Meanwhile, each of the lower-order (knowledge-based, resources availability, social resources, power-based) seemed to have strong correlation with each of the higher order constructs (i.e., anticipation, coping, and adaptation). Recommendations for practice and research are discussed.

Keywords: Higher Education Resilience, Anticipation, Coping and Adaptation

1.0 Introduction

The COVID-19 pandemic was among the most catastrophic occurrences. The World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern on 30 January 2020 and a pandemic on 11 March 2020 [Jasarevic et al., 2020; WHO, 2020]. Due to the global COVID-19 pandemic, there is an abrupt shift in the educational landscape. For example, the traditional face-to-face teaching mode is now conducted online. Mentors for internships have shifted to virtual coaching and mentoring. Teaching interns have provided feedback on their experiences with blended teaching (i.e. synchronous and asynchronous classes) since the launch of online classes (Iradel et al., 2021). Students face significant obstacles as a result of poor internet connectivity, a lack of appropriate electronic devices, difficulty concentrating, and other issues (AgAhmad, 2020). Students and instructors continue their education via online learning during the COVID-19 pandemic. Interaction and social relationships are critical components of online learning. For students and instructors, a limited internet connectivity is a constant source of frustration, impairing both their interactions and relationships (Mohd Ghani et al., 2022). When instructors and students work well together, online learning can be more enjoyable (Richardson et al., 2017). Indeed, students now face barriers such as a lack of social engagement and an inability to form study groups, both of which they previously enjoyed (Chung et al., 2020).

As a result, many university students were unable to continue their studies at home during the COVID-19 outbreak. Many students' motivation was affected and undermined as a result of these obstacles during the learning process (Gustiani & Sriwijaya, 2020; Sakkir et al., 2021).

In response to the COVID-19 pandemic, the government of Malaysia and Ministry of Health (MOH) took action to manage disease spread and minimise mortality by implementing a movement control order (MCO) on 18 March 2020 (Maung et al., 2022). The Director-General of the MOH emphasised that the order being enforced came under the Prevention and Control of Infectious Diseases Act 1988 and the Police Act 1967 and would help to control the spread of the virus. Public institutions, including educational institutions, schools, and higher education

institutions, were required to close due to COVID-19 (Shah et al., 2020).

COVID-19 has become a new pandemic worldwide, where many countries face a critical state in managing and controlling the rampant spread of the virus. The pandemic is extremely “complex” in nature because it not only affects the health sector but also triggers disastrous socioeconomic and political crises in countries with high rates of infection. The pandemic is not only substantially challenging the health care systems and economic sectors but also constantly putting pressure on governments’ actions to formulate sensible and effective strategies in controlling the virus (Muhamad Khair et al., 2021). Due to the lockdown, the manufacturing, tourism, and transportation industries experienced tremendous losses due to extended lockdown periods (Chakraborty and Maity, 2020). The low production rates of such industries were low, which directly influenced GDP and placed countries at risk of high inflation, unemployment crisis, and decreased hours of work (Béland, et al., 2020; Kawohl and Nordt, 2020).

This study addresses multiple facets. First, by applying partial least squares structural equation modeling (PLS-SEM), we model HEI Resilience as a higher-order construct, which incorporates two layers: lower-order components that together comprise an abstract, higher-order construct (Hair et al., 2022; Sarstedt et al., 2019; Wetzels et al., 2009). Applying a higher-order construct demonstrates the diversity, complexity, and inter-relatedness of the various lower-order constructs that together comprise HEI Resilience. In addition, through the utilization of PLS-SEM, we apply a complex model to learn how the higher-order construct HEI Capabilities (i.e., anticipation, coping, and adaptation) – comprised of knowledge-based, resources availability, social resources, power-based – interacts with HEI Resilience to affect the institutions’ sustainability.

2.0 Literature Review and Hypotheses

2.1 HEIs Resilience

In the context of organizations, the word resilience was first used by Meyer (1982). He used it to describe an organization’s capability to absorb a shock and return to its original state. Recently, Koronis and Ponis (2018) referred to resilience as the maintenance of positive orientation under disruptive conditions such that the organization becomes more resourceful and strengthens itself. Organizational resilience is complicated because it affects the community and societal security, effective rural and urban responses, and consequences. Its effectiveness is also significantly influenced by people, organizations, infrastructure, logistics, capability, and preparedness elements (Almufarji & Husin, 2022). An organization’s ability to cope with unexpected events, such as internal and external threats, is critical for the organization’s stability and even survival (Burnard & Bhamra, 2019). The COVID-19 pandemic is previously testing the resilience of organizations, including HEIs, worldwide. Through cultivating elements of resilience within organizational systems, several authors have suggested that an organization may be better placed to maintain or restore efficacy during challenging conditions (Burnard et al., 2018; Young et al., 2022).

However, while the concept of resilience is receiving duly increased attention, resilience still presents several challenges for organizations. Further work is still required to understand the features of resilience and the effective development of organizational-level resilience. One of the central challenges of resilience is that the resilience of an organization element is not directly observed but is often the result of multiple interactions and linkages between variables. These interactions foster the complex ability to address discontinuities and adversity (Burnard et al., 2018). For the HEIs to navigate through the ongoing pandemic smoothly, the development of resilience capabilities is imperative.

3.0 Theoretical Framework

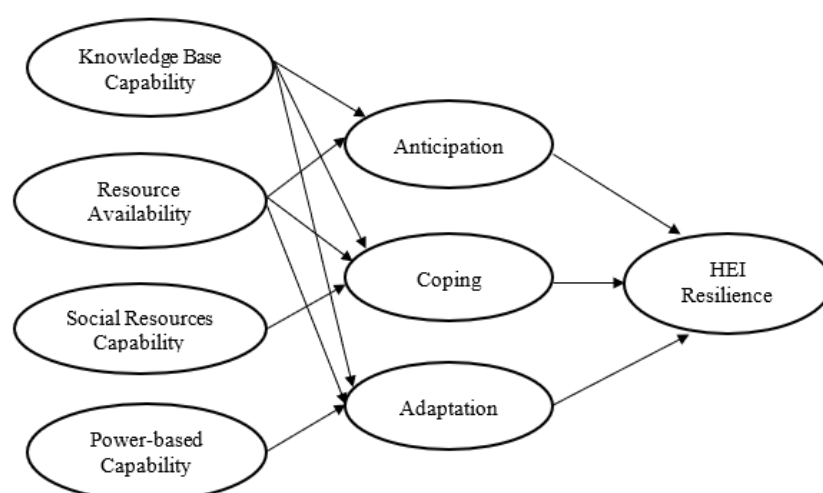


Figure 1: The Conceptual Framework

for Higher Education Institutions Resilience

3.1 The Influence of Knowledge Base Capability on Anticipation

Anticipation in the context of a resilient organization is not limited to forecasting events, which may be impossible, but includes the critical concept of preparation (Bartusevičienė et al., 2021). Regardless of the strategies of anticipation, Fachrunnisa et al. (2020) argued that the key to the success of anticipation capability lies in the organization's 'future-oriented knowledge base capability. According to Gressgård and Hansen (2015), a diverse knowledge base may reduce the tendency to focus on the surface and promote the organizational future function logic instead of individual blame when explaining failures. The knowledge base, such as human capital's know-how, is a valuable source and important approach to organizational learning. Post-event learning increases the organization's knowledge and becomes the primary source informing anticipation of and preparation for future events (Zahra et al., 2018). Based on this discussion, this study conjectures the following hypothesis.

H₁: There is a significant influence of knowledge base capability on anticipation

3.2 The Influence of Knowledge Base Capability on Coping

Coping capabilities are related to short-term actions to deal with unexpected events to avoid the worst-case scenario and ensure survival (Bartusevičienė et al., 2021). Effective handling of the disruptive event requires (a) accepting the reality as it is and (b) developing and implementing solutions through immediate or short-term action (Duchek, 2020). Previous studies found that strong internal knowledge bases, by enabling internal capabilities, yield strong coping capacity and lead to higher innovation performance during the financial downturn (Zouaghi et al., 2018). In the HEIs context, Bartusevičienė et al. (2021) suggested that going through the coping stage required faculty members to develop and implement creative solutions to pedagogical issues. Both effective formal and informal communication during the anticipation stage can promote access to a wider range of coping options and contribute to the smooth implementation of coping strategies by promoting the best practices for strengthening organizational capabilities for academic resilience. Based on the discussions, this study predicts the following hypothesis.

H₂: There is a significant influence of knowledge base capability on coping

3.3 The Influence of Knowledge Base Capability on Adaptation

Adaptation capability suggests an organization's ability to quickly coordinate and reconfigure resources to respond to sudden environmental changes while sustaining performance (Corrales-Estrada et al., 2021). It has been argued that organizations that invest in internal knowledge base capabilities benefit more when adapting to environmental conditions post-COVID-19 (Krammer, 2022). Organizations possessing internal investments in knowledge generation can improve their knowledge base capabilities and their adaptive capacity (Martínez-Sánchez et al., 2020). In turn, strong adaptive capabilities in these areas will provide these firms with internal resources they can employ to deal with an unexpected crisis (Zouaghi et al., 2018). Similarly, Stieglitz et al. (2016) revealed that organizations possessing adaptive capability learn faster by integrating external information into the knowledge base of the organization. Based on the preceding discussion, the following hypothesis is proposed:

H₃: There is a significant influence of knowledge base capability on adaptation

3.4 The Influence of Resource Availability on Anticipation

Ensuring the availability of resources is an essential step in preparation for unexpected events. Findings related to organizational resilience capabilities pointed out anticipation as a capability

related to preparation based on resource availability (Duchek, 2020). Making resources (such as material, financial, and human talent) available may seem counterintuitive in uncertain times. However, organizations striving for resilience must expend resources on not only “what is” but also on “what may be” (Cyfert et al., 2021). In order to develop the ability to withstand disruption, organizations must recognize available resources and identify the limitations within current operations, planning, and the organization’s capacity to respond in the future (Burnard & Bhamra, 2019). Based on this discussion, this study assumes the following hypothesis.

H₄: There is a significant influence of resource availability on anticipation

3.5 The Influence of Resource Availability on Coping

According to Bergami et al. (2022), organizations must ensure that they have resources available that allow them to 'be ready to adjust and cope with disturbance, as well as the actual capabilities deployed by the organization in response to adversity. For instance, the health care workers’ coping strategies during disasters included their sense of duty, religion, family and peer support, as well as resource availability (Ali et al., 2022). In the HEIs context, Shaya et al. (2022) found that solid resource availability allowed for effective coping capability in terms of coordinating with regulators while accelerating the institutions’ digital transformation. Reams et al. (2017) found that the capacity to overcome difficult and stressful situations using any available resources must be acknowledged as a complex process involving the dynamic interactions between the organization and the environment. The following hypothesis is predicted based on this discussion.

H₅: There is a significant influence of resource availability on coping

3.6 The Influence of Resource Availability on Adaptation

Resource availability played a significant role in advancing adaptation capability (Shaya et al., 2022). Through utilizing available resources and recognizing contextual or situational demands, Bergami et al. (2022) found that the firms mobilized their resources and capabilities to expand their ability to adapt and cope with adversity at the organizational level. Similarly, Krammer (2021) found that organizations with more resources, more agile, and more open to change appear to be better equipped to adapt their production to these new challenges. Sarwadhamana et al. (2022) revealed that sensitivity and adaptability to a disaster are determined by a number of human, technological, physical, funding, political, and resources that can be used to deal with disturbances. Based on the discussions, this study predicts the following hypothesis.

H₆: There is a significant influence of resource availability on adaptation

3.7 The Influence of Social Resource Capability on Coping

According to Ho et al. (2022), social resources, such as shared goals, mutual respect, and a trusting organizational culture, are necessary for coping capabilities. Similarly, Andersson (2018) and Ojo et al. (2021) agreed that social resources in terms of enhanced information sharing, resource interchange, shared objectives and vision, and high levels of support and coordination among employees could serve as critical components to coping capabilities. In addition, Ojo et al. (2021) exposed that social support positively impacts organizational resilience by improving employee resilience and increasing job engagement. Further, Kuščer et al. (2022) revealed that social resources are significant antecedents to coping capability for achieving organizational resilience in the tourism industry due to the pandemic. Based on this discussion, this study conjectures the following hypothesis.

H₇: There is a significant influence of social resources capability on coping

3.8 The Influence of Power-based Capability on Adaptation

After a crisis, powerful actors can either inhibit or hinder the process of turning lessons learned into overall positive change, affecting organizational performance directly. This reflects how power-based capabilities could be used through shared decision-making, which allows for empowering technical expertise to build organizational strategies, reconfigure, and adapt to ever-changing conditions (Onwughalu & Amah, 2017). The power-based capability involves decentralization, self-organization, shared decision-making, organic structures, as well as employee involvement and empowerment, which are largely related to adaptation capabilities (Duchek, 2020). Previous studies suggest that power-based relationships emerged as a valuable antecedent to the adaptation stage (Abdullah et al., 2020; Kuščer et al., 2022), demonstrated through empowering employees as a long-term priority designed to keep the organization as resilient as possible post-pandemic (Abdullah et al., 2020). Similarly, Shaya et al. (2022) also found that power-based relationships emerged as a valuable antecedent to the adaptation stage, which was demonstrated through resetting priorities. The following hypothesis is expected based

on this discussion.

H₈: There is a significant influence of power-based capability on adaptation

3.9 The Influence of Anticipation on HEI Resilience

Anticipation capabilities are related to preventive actions in case of disturbance and minimizing adverse consequences (Duchek, 2020). The main characteristics at this stage are the ability to (a) observe the evolution of potential events inside and outside the organization, (b) identify critical issues and potential threats, and (c) be prepared to continue activities in a risky environment. Brühlhart et al. (2020) revealed that anticipation and measured responses are able to increase organizational resilience to such disruptive environments caused by the pandemic crisis in Switzerland. In building a resilient university, Bartusevičienė et al. (2021) found that high-level anticipation capabilities have at their disposal to draw on in the face of disruptive events that threaten academic continuity. Hence, the following hypothesis can be conjectured.

H₉: There is a significant influence of anticipation on HEI resilience

3.10 The Influence of Coping on HEI Resilience

Coping capabilities are related to short-term actions taken to deal with unexpected events in order to avoid the worst-case scenario and ensure survival. Effective handling of the disruptive event requires (a) accepting the reality as it is and (b) developing and implementing solutions through immediate or short-term action (Duchek, 2020). The findings of Bartusevičienė et al. (2021) revealed that to ensure academic continuity and build resilience, the university must develop coping capability and act on lessons learned. They found that faculty members engaged in ad-hoc problem solving, using available resources and existing capabilities to make an uninterrupted transition from face-to-face to online learning. To cope with the unexpected COVID-19 pandemic, Lombardi et al. (2021) suggested that leaders should respond accordingly and opt for solutions that are consistent with the environment where they are embedded so that organizational resilient could be achieved (Lombardi et al., 2021). Based on this discussion, this study predicts the following hypothesis.

H₁₀: There is a significant influence of coping on HEI resilience

3.11 The Influence of Adaptation on HEI Resilience

Adaptation capabilities are related to the abilities of the organization to (a) reflect and learn from success and failures and (b) implement organizational change (Duchek, 2020). This stage is crucial for the successful development of organizational resilience because it is related to reflecting on lessons learned from successes and failures and the use of those lessons in feeding back to the coping stage and ultimately building the knowledge base and strengthening resilience capabilities stages. Bartusevičienė et al. (2021) suggested that resuming the same pre-pandemic teaching and learning models once the crisis has ended would be a lost opportunity. Instead, HEIs should consider how newly developed solutions can become opportunities for new learning models, such as blended learning or expanded online offerings which make use of newly developed digital skills and pedagogical capabilities. According to Ho et al. (2022), actions such as systematic measurement, evaluation, and learning are necessary for the adaptation stage. At the adaptation stage, organizational leaders can consider what else they could do to rethink, recover, rebuild, and develop stronger organizational resilience for the future. Therefore, the following hypothesis is suggested.

H₁₁: There is a significant influence of adaptation on HEI resilience

4.0 Methodology

4.1 Higher Order PLS-SEM

Higher-order constructs (also known as hierarchical component models in the context of PLS-SEM; Lohmöller, 1989) provide a framework for researchers to model a construct on a more abstract dimension (referred to as higher-order component) and its more concrete subdimensions (referred to as lower-order components). As such, they extend standard construct conceptualizations, which typically rely on a single layer of abstraction.

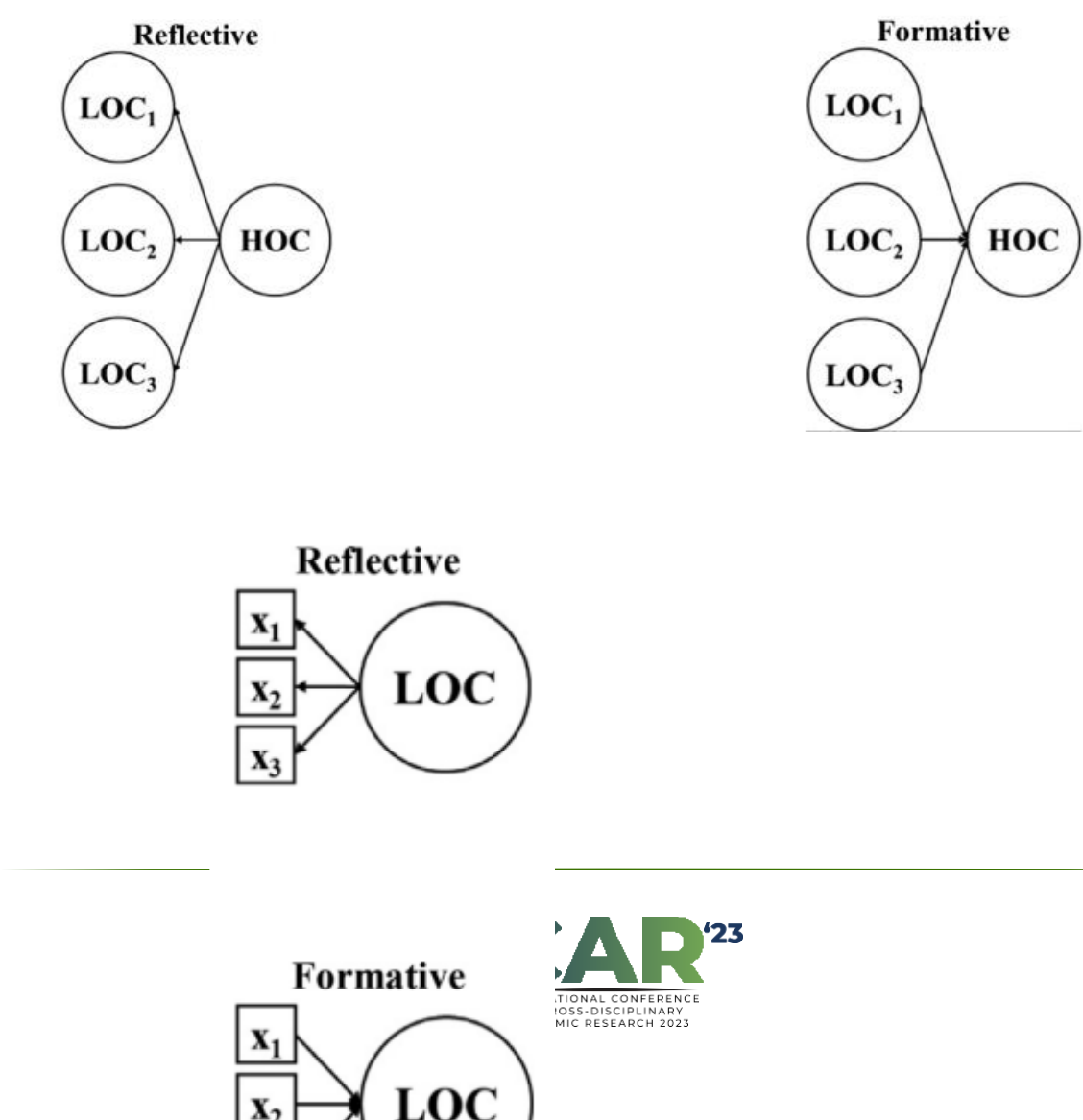
Higher-order constructs have several advantageous features. For example, higher-order constructs help to reduce the number of path model relationships, thereby achieving model parsimony (Edwards, 2001; Johnson et al., 2011; Polites et al., 2012). Instead of specifying relationships between multiple independent and dependent constructs in a path model, researchers can summarize the independent constructs in a higher-order construct, making the relationships from the (then) lower-order components to the dependent constructs in the model obsolete. Higher-order constructs provide a means for reducing collinearity among formative

indicators by offering a vehicle to re-arrange the indicators and/or constructs across different concrete subdimensions of the more abstract construct (Hair et al., 2018).

Researchers can choose among different approaches to identify the higher-order construct. Prominent approaches are the repeated indicators approach or the two-stage approach (Hair et al., 2018). Evaluating the measurement quality of higher-order constructs is highly challenging. some authors do not assess the reliability and validity of the lower-order components and higher-order components, while others erroneously interpret the relationships between higher- and lower-order components as structural model relationships—instead of assessing the lower-order components as elements of the higher-order construct’s measurement model. We also find that while researchers frequently analyze the discriminant validity of the lower-order components, they neglect the discriminant validity assessment of the higher-order construct as a whole (Sarstedt et al., 2019).

This paper aims to illustrate how to specify, estimate, and validate higher-order constructs in PLSSEM. After a general introduction to higher-order constructs and the key technical aspects researchers must consider, we discuss how to evaluate the results by applying standard model assessment criteria. Focusing on the most prominent reflective-reflective and reflective-formative types of higher-order constructs, we use the conceptual model proposed by Duchek (2020) to illustrate their specification and estimation using the repeated indicators and two-stage approaches. As part of our descriptions, we discuss how to apply standard model assessment criteria to validate higher-order constructs. In doing so, we pay particular attention to the assessment of discriminant validity, which prior research on higher-order constructs has not (or only incompletely) covered (Becker et al., 2012; Van Riel et al., 2017; Wetzels et al., 2009).

To begin with, we focus on the (extended) repeated indicators approach. Table 1 provides an overview of the metrics relevant to validate a higher-order construct’s measurement model when using the (extended) repeated indicators approach. Three aspects require particular attention when validating higher-order constructs. First, the higher-order construct must not be evaluated in terms of its (repeated) indicators used to identify the higher-order component (x1-x9 in Fig. 1).



These indicators only ensure that the higher-order construct is identified—they do not represent its actual measurement model. The higher order construct's measurement model is, instead, defined by the relationships between the higher-order component and its lower-order components. When the lower-order components are reflections of the higher-order component (reflective-reflective and formative-reflective types), the direction of relationships is from the higher-order component to the lower-order component (Fig. 1) and, therefore, represent loadings. Conversely, when the lower-order components form the higher-order component (reflective-formative and formative-formative types), the direction of relationships is from the lower-order constructs to higherorder construct (Fig. 1) and, therefore, represent weights. Hence, researchers need to apply the standard measurement model assessment criteria to the path relationships between the higherand lower-order components (Table 1).

5.0 Data Collection

To operationalize the proposed conceptual model, we adopted a quantitative exploratory and causal research design. To assess HEI resilience as a special Covid-19 pandemic-related experience a group of individuals who are at managerial level in managing their respective institutions were selected. They are the ones who utilize the expert knowledge and experience can evaluate the impact of the pandemic on various academic as well as organizational resilience. This justifies the use of purposive sampling to collect the data which were conducted between July to October 2022.

Using an online on semi-structured questionnaire and purposive sampling, a cross-sectional study was conducted among Malaysian teachers during the COVID-19 pandemic from 1 August 2021 to 31 October 2021. The link to the questionnaire was sent through emails to the participants. The selection of the respondents was based on a database of emails of individuals at top management of public and private universities in Malaysia. Prior to engagement with the selected respondents, an invitation email was sent to explain the objectives of the study, the voluntary nature of participation, confidentiality, anonymity, and the right to withdraw from the survey at any time.

A total of 121 out of 200 (60.5%) respondents returned the completed questionnaires and the information gathered was used for the subsequent steps of analysis.

6.0 Empirical Results and Discussion

To expand the adopted theoretical model, we utilized a qualitative phenomenologi- cal research design. Organizational resilience as a phenomenon was explored and exploited with a group of individuals who once assumed a senior leading role in managing the current pandemic crisis. Research questions that strive to reach an in-depth understanding of patterns of individuals' practices and behaviors call for a qualitative research design (Merriam 2009). Considering the nature of the pan- demic, with potential threats to academic continuity and the existence of organiza- tions, participant selection capitalized on utilizing the expert knowledge of execu- tives affiliated with universities showing high organizational resilience. Accordingly, purposive sampling took place. Data were collected during the Spring/Summer 2020–2021 semesters.

Data were collected through face-to-face and online semi-structured interviews, lasting around 30–50 mins each. Subject recruitment was based on researchers' per- sonal connections. Prior to enrollment, an invitation email to take part in the study was sent to potential subjects. Information pertinent to the aims and objectives of the current research study and a consent form encapsulating the subject's voluntary participation, confidentiality, anonymity, and the right to withdraw at any time was shared. Upon receiving confirmation of participation, subject names were given codes and listed in table form for future use in the analysis. Subjects were mainly contacted directly through their personal email accounts and, in a few cases, through the office of their executive assistants.

In total, 15 highly experienced participants holding senior positions in their academic institutions were invited to participate, while two declined amid the study due to illness. The final sample

consisted of 13 senior executive leader’s in

Table 1 Demographic characteristics of the respondents

Characteristic		V a l u e
Gender	Male	11 (84%)
	Female	2 (16%)
Educational background	PhD	13 (100%)
Age	40–49	5 (39%)
	50–59	7 (54%)
	60+	1 (7%)
Professional rank	Associate Professor	2 (16%)
	Full Professor	11 (84%)
Designation	Dean	10 (77%)

	Provost	2 (1 6 %))
	Vice Chancellor	1 (7 %))
	Sector	Private higher education institutions
		1 3 (1 0 0 %))
Affiliated colleges	College of Business Administration	3 (2 3 %))
	College of Education	2 (1 6 %))
	College of Arts	2 (1 6 %))
	College of Engineering	3 (2 3 %))
Nationality	Non-Emirati	1 3 (1 0 0 %))

critical roles at the deanship and higher levels. Each participant holds at least one Ph.D. The age groupings ranged from 45 to 70 years old. Only two of the interviewees were female, the remainder being male. The participants work for eight different private higher education institutions in the UAE that have shown high resilience levels during the pandemic period (Table 1).

Semi-structured interviews were conducted, facilitating an inductive research style and allowing the researcher to focus at the micro level to address the problem (Marshall and Rossman 2011). Semi-structured interviews are considered an important data collection tool as these interviews provide relaxed and spontaneous opportunities for participants to share their experiences and allow for data analysis, validity checks, and triangulation (Creswell 2013). These interviews usually provide the participants a platform where they can describe complex situations easily and elaborate or clarify questions (Corbin and Strauss 2008). Interview recordings were professionally transcribed, and the data were analyzed via theoretical thematic analysis (Braun and Clarke 2006) in which the data were organized around major findings. Theoretical thematic analysis is driven by the researcher's theoretical and analytic interest in a specific area and is thus predominantly analyst-driven. Theoretical thematic analysis was deemed as more appropriate for this study; as a more specific question this study needs to answer concerns "the resilience of UAE-based higher education institutions toward the COVID-19 pandemic." Hence, the thematic area and second-order themes in this study were driven by the literature of anticipation, coping, and adaptation, with the first-order themes subsequently emerging from the data.

Once the transcripts were ready, the themes were identified using Braun and Clarke's (2006) six-phase approach: familiarization with data, generation of initial codes, searching for themes, reviewing themes, defining and naming the themes, and producing the report. Emerging codes were regarded as potential themes in a process where various codes merge toward forming overarching and, eventually, themes, sub-themes, components, and antecedents. Initially, this was an inductive process, followed by applying a more deductive approach to explore whether participants confirmed the validity of the main research constructs and relationships and further demonstrated how they were being incorporated during the pandemic as part of their crisis management. Throughout all phases, constant cross-checking of data extracts, codes, and themes against each other and the entire dataset was performed. The authors conducted all interviews and generated initial codes and potential themes. Credibility was addressed by researcher triangulation throughout the analysis, with three industry experts in organizational resilience within the academic context and two researchers having experience with qualitative research. Bias was reduced by having more than one person handling the analysis, where at least two researchers undertook data coding, followed by having an external expert review the data analysis and findings. The experts were two retired deans.

6.1 Validity and Reliability of Data

Creswell and Miller (2000) define "validity" as "how accurately the account represents participants' realities of the social phenomena and is credible to them" (p. 124). Qualitative researchers often refer to the trustworthiness of data (Glesne 1998) instead of reliability. Therefore, a number of steps were taken to enhance the trustworthiness of the data.

Trustworthiness is considered an important step to be established in qualitative studies. Lincoln and Guba (1985) describe four criteria to be met: credibility, transferability, dependability, and confirmability. *Credibility* is one of the most important criteria to consider, representing the extent to which the study findings are congruent with examined reality. Patton (2002) recommends an amalgamation of three elements to achieve credibility: a rigorous method, credibility of the researcher, and a philosophical belief in the value of qualitative inquiry. To address these elements, several steps were taken to achieve credibility in the present study. First, the research method used in this study is well established in organization sciences. Second, credibility was ensured as the researchers have a high level of familiarity with the overall culture of the participating organizations. Third, not only were semi-structured interviews conducted, but field observations were also performed to establish the variety, richness, and completeness of the information.

Transferability is another important parameter used to evaluate the trustworthiness of qualitative research. Generally speaking, transferability (or generalizability) is one of the key

limitations of qualitative research, limiting its scope (Marshall and Rossman 2011). In order to tackle the issue of transferability, the participating organizations were chosen from all the Emirates of UAE.

Dependability is similar to the concept of reliability in quantitative studies and refers to the need to obtain similar results by other researchers under the same situations. Therefore, in order to enhance reliability in this qualitative study, a colleague was asked to read the transcripts and generate the potential codes. The codes generated by the researchers and colleague were then compared to find the differences so that accurate codes could be reached. A high degree of agreement was found between the codes generated by the colleague and researcher.

Similar to the concept of construct validity in quantitative research (Shenton 2004), *confirmability* refers to the objectivity in qualitative research, specifically focusing on the avoidance of bias, which may influence the researcher. In this study, a few steps were taken to ensure that the study findings were based on informants’ ideas and experiences rather than the preferences of the researchers. For example, transcripts were sent to the respective participants to confirm and comment on the information they provided during their interview. This increases the reliability and validity as in participatory and collaborative research strategies (Thomas 2017).

6.2 Results

In light of the research questions and objectives, the results of the qualitative data analysis yielded *organizational resilience* as a key theme, three main themes (*anticipation, coping, and adaptation*), six subtheme components, five theme antecedents, and two moderating variables. (see Table 2 for detail).

6.3 Key Theme: Organizational Resilience

Participants (*n* = 10) defined organizational resilience as a process that enables organizations to adequately react to adverse events and capitalize on sudden disruptions that could potentially threaten the organization’s existence, growth, and prosperity. For example, as one interviewee commented: “It is all about how an institution can effectively respond to a high degree of threat, such as the current global health crisis, to ensure continuity, then achieve progress. Resilience is not an end; it is a means toward transforming to the better and remaining as strong in the face of threat”.

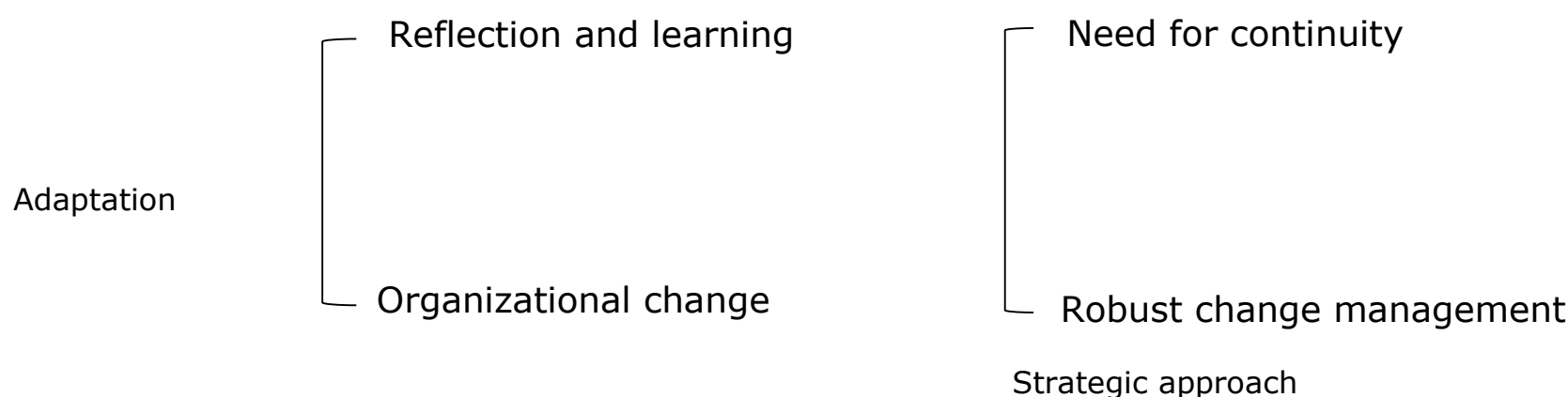
All of the participants (*n* = 13) confirmed that successful or unsuccessful responses to disruptive events are linked to several enabling factors, hereby denoted as main themes, that would ultimately diminish potential harms, leading to survival and contributing to the organization’s evolvability.

In this study, resilience was operationalized as a product of three main themes:

anticipation, coping, and adaptation.

Table 2: Themes from the data analysis

Thematic area	Second-order themes	First-order themes
Anticipation	Observation Identification	Threat detection, Scenario planning, Crisis communication, Risk assessment
Coping	Accepting Developing and implementing solutions	Defining the problem, Gathering information and Collecting data, Developing and weighing, The option, Choosing best possible, Option, Plan and execute, Follow-up action Developing new policies, Remote teaching and Learning environment, Students’ training



6.4 Themes

6.4.1 Theme 1: Anticipation Stage

Participants defined anticipation as a pre-crisis stage characterized by the ability to detect critical developments within the organization or in its environment and to adapt proactively. For example, as one interviewee argued: "To anticipate is to observe the environment and identify events that might adversely turn into potential threats to our continuity".

Two main subtheme components were identified: (a) observation and identification, and (b) preparation. Observation and identification were characterized by threat detection ($n = 13$), scenario planning ($n = 11$), crisis communication ($n = 13$), and risk assessment ($n = 12$). Threat detection is characterized by early warning signals detection and

taking corresponding preventive measures that limit the damage. Scenario planning was mainly based on: (1) the institution remains operating face-to-face with appropriate social distancing measures, (2) an imbalanced combination between physical and online classes, and (3) shifting to full online modes. Interviewees explained that effective communication with internal and external stakeholders, pre-crisis, capitalized on transparency, adequate updates, involvement, clarity, urgency, and empathy. In this sense, staff naturally support institutional efforts in implementing critical messages. Risk assessment in an organization surfaced as critical to adequately plan and prepare for crises and was determined as either low, moderate, or high, with associated interventions in each. On the other hand, preparation to manage the crisis was characterized by mobilizing a proactive academic continuity plan ($n = 10$), upgrading the technology infrastructure ($n = 13$), and faculty support ($n = 13$). Interviewees ($n = 10$) explained that the plan comprises elements of preparedness, activation, response, and assessment that will mitigate the risks and ensure continuity of delivery. Upgrading of technology and IT infrastructure would render organizations to be technologically complex; hence, there is a need to develop suitable recovery plans while capitalizing on such adverse events and unexpected opportunities. Professional development activities were needed to ensure technical readiness. In addition, faculty members received direct individual support from the heads of departments and deans.

6.4.2 Theme 2: Coping Stage

Participants demonstrated how resilient organizations coped during the crisis, with coping functioning as an integral component of the resilience process. Coping was defined as interacting dynamically with the changing situation and then taking constructive actions through developing and implementing fast and positive adaptive responses to the current disruptive crisis. For example, as one interviewee commented: "Once the organization has passed the signal-detection stage, it is now time to deal with the sudden and unexpected events that disturb academic continuity by taking swift and well-planned actions".

Two main subtheme components were identified: (a) accepting, and (b) developing and implementing solutions.

Accepting was characterized by an immediate and strategic response through forming emergency response teams to install a dynamic and pragmatic operating model.

Interviewees ($n = 11$) confirmed the formation of task forces that are dedicated to handling the fast-moving situation. The task force would develop a framework for action through a series of steps: defining the problem, gathering information and collecting data, developing and weighing the options, choosing the best possible option, planning and executing, and finally taking follow-up action.

Developing and implementing solutions was characterized by operationalizing the adopted model through developing new policies and guidelines that were specific to the remote teaching and learning environment and training students.

Participants confirmed revising their policies and procedures to guide and inform their institution community, including faculty members, students, and administrators. Policies concerned the learning management system, delivery of lectures, remote assessment, IT and data security, grading systems, and so on. In addition, continuous training of students took place.

6.4.3 Theme 3: Adaptation Stage

Participants indicated that the academic institutions are currently in the early adaptation stage, which is highly critical and part of the resilience process.

Adaptation was signified as taking place once challenging issues were largely resolved during the coping stage and when opportunities surrounding digitalization and other transformative practices cease so that institutions can grow and change as they reopen campuses in the upcoming academic year. For example, as one interviewee ascertained: "Adaptation is not simply to get back to where we had left off; rather, adaptation is in transforming our practices and attitudes to grow and remain as resilient in the future".

Two main subtheme components were identified: (a) reflection and learning ($n = 12$), and (b) organizational change ($n = 13$).

Reflection and learning were demonstrated through the need for continuity planning to be part of a strategic approach that enables institutions to stay ahead of adverse events and to react productively and strategically. Organizational change was signified by emerging stronger from the pandemic using a robust strategic change management approach.

6.5 Theme antecedents

6.5.1 Antecedents

Four main antecedents were identified as directly affecting the stages of organizational resilience in different ways.

Prior knowledge was demonstrated ($n = 13$) through having crisis control planning and utilizing past experiences universities had with piloting online teaching and learning models in previous years. In addition, direct communication was established with a university that has expertise in online learning services in the country. Ultimately, lessons learned post the COVID-19 outbreak shaped the way the current Fall 2021 is expected to start, with emphasis on incorporating blended learning models and enhancing strategic approaches. In that sense, prior knowledge was instrumental in supporting preparation for the crisis (anticipating stage), developing and implementing solutions (coping stage), and enacting organizational change (adaptation stage). For example, as one interviewee mentioned: "Our university has been trying with several blended and online models over the past few years, so talks on possible full transition to online learning were light on us, as we knew it wouldn't be difficult".

Resource availability was demonstrated through financing and procuring new software licensure, IT equipment, and a heavy reliance on experienced faculty and administrators. The participants ($n = 13$) showed that the presence of strong resource availability allowed for effective monitoring of the spread of the virus and coordinating with regulators and other local authorities while accelerating the institutions' digital transformation. The availability of experienced faculty and administrators encouraged institutions to consider online teaching and learning as a reliable replacement of classical modes in some existing and newly developed programs. Therefore, resource availability played a major role in advancing anticipation, coping, and adaptation capabilities. For example, as one interviewee commented: "We relied on our experienced staff and faculty, purchased additional software and expanded our laboratories and studios' capabilities. Our faculty have given their best to innovate their teaching methodologies and design rich learning experiences. We really think now that we are able to

consider online teaching as a strategic approach in our future”.

Social resources denoted the knowledge sharing and collegial support within the departments and across the institution. Participants (n = 12) demonstrated that these resources capitalize on collaboration that helps the community network in the institution to thrive as faculty members navigate through challenges brought about by the pandemic. Hence, institutions capitalizing on social resources helped in developing effective coping capabilities. For example, as one interviewee explained: “Knowledge sharing occurred within the department as well, where experienced faculty were providing a sort of mentoring and coaching faculty members to enhance their classroom experiences”.

Power-based relationships emerged as a valuable antecedent to the adaptation stage, which was demonstrated through resetting priorities. All the interviewees (n = 13) confirmed expanding their decision-making authority to empower their employees as a long-term priority that was designed to keep the organization as resilient as possible post-pandemic. For example, as one interviewee commented: “We expanded the decision-making authority as an opportunity to remain resilient amid facing any similar potential threats”.

6.6 Emerging Themes

Interviewees were asked whether there were any other important contributing elements toward the organization’s resilience process when encountering adverse events in order to better understand the characteristics of resilient organizations during the pandemic. Three new themes emerged: crisis leadership traits, employee resilience, and innovative culture.

6.6.1 Crisis Leadership Traits

Directive Leadership in the Anticipating Stage All interviewees (n = 13) agreed that despite their nature, all crises have three main aspects in common: they require a response with immediacy, have an unprecedented influence, and tend to unfold in an unordered manner. Hence, the effectiveness of crisis leadership with particular behavior that helps in anticipating and navigating the pandemic and reaching the recovery stage is of immense importance. Crisis leadership traits was demonstrated to be capable of either strengthening or weakening the relationship between each of the stages and resilience as a construct, hence presenting as a moderating variable.

Participants (n = 13) explained that amid a scarcity of information, ambiguity, and uncertainty engulfing the anticipating stage, directive leaders provide entrenched clarity through explicit and decisive instructions on task requirements and job roles. Hence, teams are better supported through a top-down approach. For example, as one interviewee mentioned: “The team required clear directions from leaders at this stage, where we were able to leverage knowledge, enhance situation awareness, and emphasize on testing plans. The team, in return, felt clear and good about”.

6.6.2 Delegative Leadership in the Coping Stage

Amid the process of confronting the acute situation and managing academic continuity, the need for delegative leadership arises in the coping stage. Participants (n = 13) signified the role that the emergency response teams play in responding to adverse events; hence, leaders empower these focused teams while they exercise autonomy in their decisions. Such approaches create a positive work environment that capitalizes on the team’s competency. For example, as one interviewee demonstrated: “We allow for high levels of autonomy and motivate our team members to undergo their own reasoning and creativity to solve some problems at hand. I know they are capable of that, and, at times of uncertainty, it is highly needed. They feel accountable”.

6.6.3 Participatory Leadership in the Adaptation Stage

Participants (n = 12) explained that leaders strive at the adaptation stage to learn from the crisis experience in hopes of emerging stronger and seizing opportunities to grow. The “new normalcy” becomes a reality, where leaders encounter a number of uncommon situations post-crisis, compared to normal situations, and, hence, are required to be flexible in their leadership behavior. This approach is characterized by engaging and involving team members in the continuous process of decision-making, boosting motive, and productivity. For example, as one interviewee explained: “We trusted our Task Force. They work day and night to provide ultimate resolutions. In delegation, we were able to increase employee engagement, motivate change readiness, expand networks and relationships with different partners, encourage innovation and creativity in benefit of all parties”.

Nevertheless, a number of leadership traits were recurrently mentioned and surfaced across all stages of the crisis. These traits are characterized by finding the right mix of attributes during

a crisis, namely empathetic leadership ($n = 11$) and communicative leadership ($n = 10$). As the daunting crisis may seem pressuring, stakeholders' emotional support is required to navigate through the crisis and reach recovery. Successful leaders share what they know and remain open about matters they are unclear about. Communicating with immediacy and transparency can reduce the lack of clarity and enhance adjustments to constantly changing conditions. For example, as one interviewee noted: "Empathy matters, and our strategy was successful. I have observed that the employees and faculty members performed better at home as they were in a closed and comfortable setting where they were able to work without any distractions"; Another interviewee also explained: "We have always kept a close communication channel open at all times. Regular meetings and straightforward talks. Our policy was set to discuss and report in accordance with a well-defined strategic goal/objective".

6.6.4 Employee Resilience

A common factor supporting organizational resilience was employee resilience ($n = 12$). The capacity of staff in coping with emotions such as fear, stress, anxiety, and burnout was instrumental in complementing the institution's strategic approach in confronting the crisis. Employee resilience was demonstrated to be capable of either strengthening or weakening the relationship between each of the stages and resilience as a construct, hence presenting as a moderating variable. For example, as one interviewee noted: "We are proud to say that our faculty body and staff showed high resilience. The means in which they cope with strong and overwhelming emotions can really affect the success of our plans in combating the COVID-19 impact and our hopes to rise as stronger".

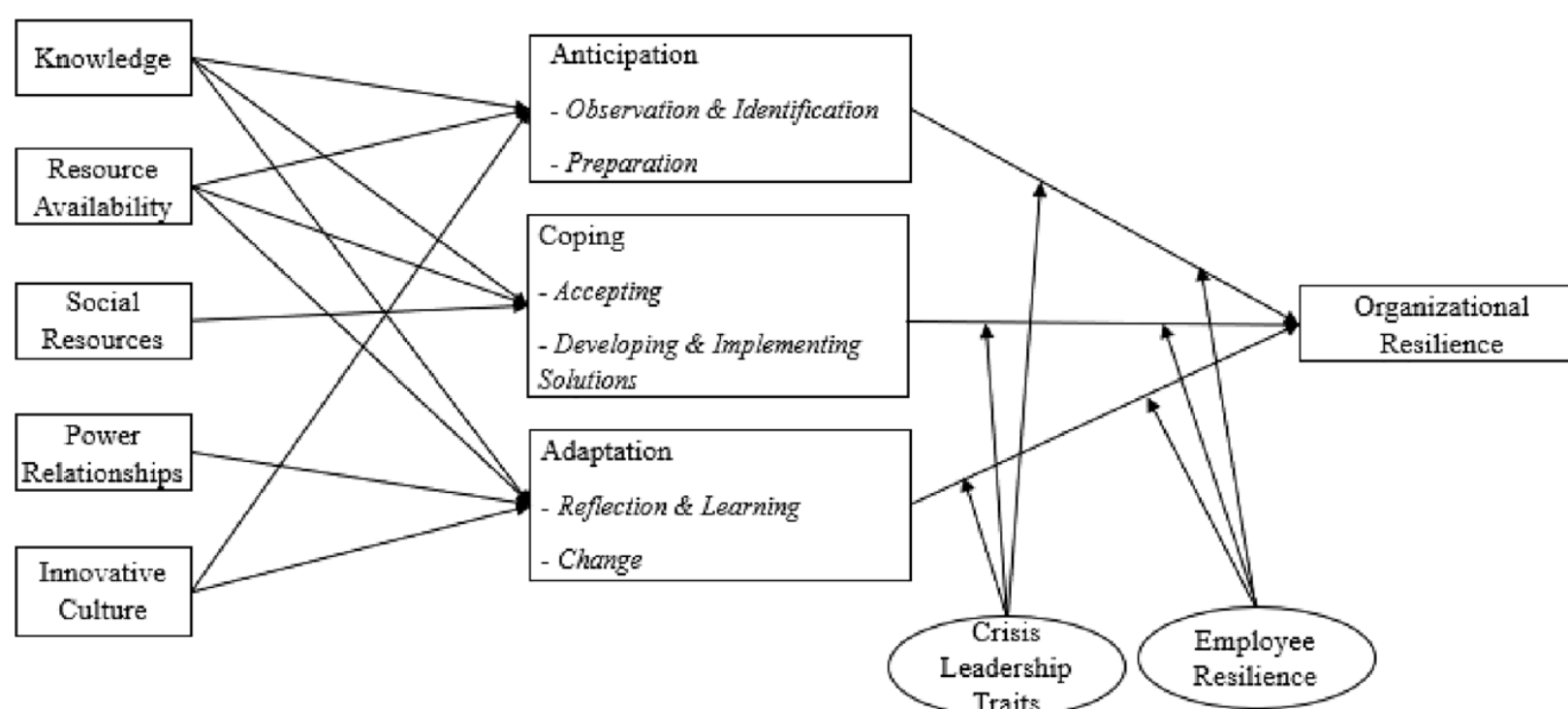
6.6.5 Innovative Culture

Participants ($n = 10$) revealed the role of trust, employee engagement, and psychological safety as a nurtured organizational culture in their institutions, supporting crisis management efforts. In this sense, a shared understanding of the situation is developed. An important component of the adaptation stage is the need for change and directions, which is supported by the presence of an adaptive culture in an institution that embraces change and new ideas. Therefore, innovative culture surfaced as the fourth critical antecedent to the anticipation and adaptation stages, leading to organizational resilience. For example, as one interviewee explained: "We aim at creating a culture that promotes innovation, creativity, and collaboration while keeping its autonomy and flexibility that helps in stimulating and reinforcing problem-solving, decision making, and teamwork, indeed, with the least hierarchy".

7.0 Discussion

7.1 Principal Findings

This qualitative study aimed to empirically validate an organizational resilience theory by revealing how the resilience successive stages and interactions of antecedents contribute to organizational resilience. Subject interviews yielded descriptive data that confirmed the applicability of the framework to the organizational resilience of



the UAE higher education context (Fig. 1), which led to the expansion of the model toward a final study model (Fig. 2).

The findings provide insight into the present state of higher education institutions in the UAE, which are still in the early stages of adapting to the current COVID-19 crisis. Organizational resilience was conceptualized as a process that enables organizations to respond appropriately to adversity and capitalize on unexpected disruptions in order to develop and thrive. It arises from the ability to anticipate, cope with, and respond to changes as the crisis progresses, which is consistent with previous findings (McManus et al. 2008; Madni and Jackson 2009; Williams et al. 2017; Duchek et al. 2020; Bartusevičienė et al. 2021). Four main antecedents proved to be fostering organizational resilience, namely, knowledge resource availability, social resources, and power-based relationships, confirming Duchek's (2020) and Bartusevičienė et al.'s (2021) findings. Therefore, this study verifies the applicability of the adopted model to the UAE higher education context. Nonetheless, upon investigating why some institutions are emerging as more resilient than others in the current COVID-19 crisis, three main themes emerged: crisis leadership traits, employee resilience, and innovative culture.

These findings lend support to the Duchek and Bartusevičienė models, showing that organizational resilience is primarily based on knowledge, resource availability, social resources, and power-based relationships and is further strengthened by crisis leadership traits, employee resilience, and an innovative culture. More specifically, organizations with these attributes are more likely to come out of crises more easily than those lacking in these factors. Furthermore, these attributes play a key role in preparing organizations to pass through the stages of anticipation, coping, and adaptation, which ultimately transforms into organizational resilience.

Crisis leadership qualities and employee resilience have been shown to be important attributes required in each stage and so are regarded as moderating factors capable of strengthening or weakening the relationship between related stages and organizational resilience. Directive leadership in the anticipating stage, delegative leadership in the coping stage, and participatory leadership in the adaptation stage were identified as the three major leadership types most needed at each stage of the crisis. Across all stages, an empathic and communicative leadership style was shown to be necessary. Innovative culture, on the other hand, emerged as a fifth antecedent and emerging theme, with direct implications for the anticipation and adaptation stages. This indicates that organizations that have an innovative culture are highly flexible and accommodative. These organizations motivate their employees to think outside of the box and bring in new and creative ideas. As a result, whenever they face any kind of uncertain situation, they are in a far better position to tackle it.

7.2 Comparison with Prior Studies

The anticipation stage was found to constitute two main capabilities—observation and identification and preparation—which is in line with earlier studies (i.e. Duchek et al. 2020; Madni and Jackson 2009; Bartusevičienė et al. 2021). Furthermore, our findings revealed that observation and identification was characterized by threat detection of the COVID-19 pandemic, deriving alternative scenarios, crisis communication, and risk assessment. These results are also consistent with previous studies (i.e. Stern 2009; Lengnick-Hall et al. 2011; Dohaney et al. 2020; Ojo et al. 2021). Preparation for the crisis situation was distinguished by upgrading the institution's software and IT infrastructure, and intensive professional development of academic and administrative staff, supporting the findings of Wang et al. (2020), Ojo et al. (2021), and Dohaney et al. (2020). Regarding the coping stage, two main subtheme components were identified—accepting the situation, and developing and implementing solutions—which were found to be in line with Duchek's (2020) and Jaques' (2007) findings.

In this study, developing and implementing solutions was characterized by operationalizing an academic continuity plan through developing new policies and guidelines that are specific to a remote teaching and learning environment, conducting continuous professional development, and providing external support to faculty and students. In accordance with Grissom and Condon's (2021) findings, the current research shows the need for crisis management among institutions following the COVID-19 outbreak to mitigate damages. With respect to the adaptation stage, our study shows that academic institutions in the UAE are presently in the early stages of adaptation when compared to western colleges, as stated by Olson and Wu (2020). These findings contradict those of Bartusevičienė et al. (2021), who note Swedish universities are at the coping stage. One main reason explaining the discrepancy is that this study was conducted close to the commencement of the Fall 2021 semester, whereby the UAE was ending all forms of distance education at the school level and bringing university students back to many campuses across the country. In line with Duchek (2020), two primary subtheme components were found: reflection and learning, and organizational transformation. Such capabilities to adapt to the given adverse events surfaced as a critical component for the successful development of organizational resilience as a whole. These findings align with a number of scholars who highlight the need for organizations to incorporate new knowledge into their repertoire for further use (Vogus and Sutcliffe 2007; Duchek 2020; Bartusevičienė et al.

2021).

With respect to antecedents, prior knowledge was observed as having a direct impact on the anticipating, coping, and adaptation stages, which is in accordance with a number of other studies (Bartusevičienė et al. 2021; Dohaney et al. 2020; Beinhocker 1999; Williams et al. 2017). The presence of earlier frameworks related to the earlier implementation of online learning and mobile learning systems was instrumental at this level, confirming the significance of prior knowledge. Furthermore, adaptation depends on long-term learning (Madni and Jackson 2009), where the post-crisis era is most conducive to real corporate learning and system change. Every crisis should be followed by a time of preparation for the next one (Jaques 2007). In this study, the leveraging of previous university experiences with piloted online teaching and learning methods fulfilled this.

The presence of good financial reserves, human resources, and knowledge resources also appeared to be critical components in establishing contexts that promote resilience, denoting the importance of resource availability and aligning with Lengnick-Hall et al. (2011). As expected, the availability of accessible resources proved to directly impact the three successive stages and strengthen individual and institutional resilience capacity. Other scholars have reached similar results (Bartusevičienė et al. 2021; Vogus and Sutcliffe 2007; Ojo et al. 2021). Financial and human resources, in particular, have been shown in this study as necessary to keep business afloat during difficult times (Gittell et al. 2006; Duchek et al. 2020; Glover 2012).

Furthermore, social resources surfaced as an important antecedent to the coping stage, which is in line with previous studies that have observed the importance of social support (Gittell 2001; Abdullah et al. 2020; Ojo et al. 2021). Exchanging resources and best practices, sharing knowledge and visions, and providing collegial support are among the needed social resources. In this way, organizations may function effectively by leveraging social capital and resources that capitalize on individual worker involvement and networks of good connections among employees. These results align with a number of studies (Andersson 2018; Duchek 2020; Ojo et al. 2021). Power-based relationships emerged as a valuable antecedent to the adaptation stage, demonstrated through empowering employees as a long-term priority designed to keep the organization as resilient as possible post-pandemic. These results are in line with the literature (Lengnick-Hall et al. 2011; Abdullah et al. 2020).

Accordingly, these results verify the relevance of Duchek's (2020) model. Yet, an important finding of this study was that innovation culture was derived as an emerging antecedent to the anticipation and adaptation stages. Creativity and innovations are directly associated with an organizational culture that is less dependent on hierarchies and rigid choices, relying more on progressive and flexible strategies. Only a few other researchers have reached similar findings; Verdu-Jover et al. (2018), for example, observed that structured flexibility and reflexive learning were found to have a positive influence on product/service innovation results when an adaptable culture was fostered.

Regarding the emerging themes, and in line with Williams et al.'s (2017) results, findings revealed a variety of crisis leadership qualities with a strong impact on each of the crisis stages, denoting how leadership style interacts with how leaders and organizations prepare for the probability of a crisis. During the early stages of the pandemic, participants in the anticipating stage favored directed leadership as a means for clear instructions in order to make quick decisions and adequately respond to the crisis (Madni and Jackson 2009). Delegated leadership was particularly favored during the coping stage. Top management and supervisors should promote and assist their subordinates in developing resources that will help workers in becoming more resilient, engaged, and confident (Ojo et al. 2021). During the adaptation stage, participatory leadership is recommended in line with Rangachari and Woods (2020). Creating communication frameworks that allow the firm to learn from the problem-solving and communication skills of individual employees is immensely effective. A strong group process, also known as relational coordination, is necessary (Gittell 2001). In addition, a number of leadership traits were identified and appeared throughout all stages of the crisis, including empathetic leadership and communicative leadership, which aligns with the findings of Bartusevičienė et al. (2021) and Rangachari and Woods (2020). On the other hand, employee resilience was cited by the majority of participants as a key factor in building organizational resilience during the COVID-19 pandemic. This study intends to provide academic institutions with the means to ensure academic continuity and create resilience during times of turbulence and destabilization (Bartusevičienė et al. 2021). Therefore, leaders must adopt a comprehensive approach to workers' psychological safety—one that recognizes the pandemic's complex impact on emotional discomfort (Rangachari and Woods 2020).

7.3 Research Implications

The findings of this paper have several theoretical and practical implications for presidents, chancellors, and other key executive positions in higher education, along with scholars. First and foremost, the derived crisis leadership qualities should be included in the organization’s structure, business continuity plan, and, most significantly, recruitment strategy. Hiring leaders based on the identified leadership qualities and reinforcing these through continuous professional development is vital to successfully overcome crisis situations. Second, training leaders on decision-making in crises and emergency situations, scenario planning, and strategic crisis management ought to be a necessity. Third, employees are often placed at the bottom in the pyramid-form of organizational structure, reflecting a top-bottom command and control approach in rigid hierarchies. It is recommended that organizations empower employees through a progressive and innovative adaptive approach to support engagement, agility, and innovation. Transforming rigid pyramids into flexible and agile structures through autonomous teams will reinforce organizational resilience. Fourth, adopting recruiting practices to select highly resilient candidates has become a requirement. Among the most successful strategies is attracting employees coming from highly resilient institutions and then further training these employees to sustain resilience. Fifth, a change management strategy that provides all organizational change activities with a clear direction and purpose is critical, as is overcoming possible opposition and collaborating for success. Sixth, the change brought forth by COVID-19 to higher education institutions was long needed, especially in terms of changing teaching and learning methods and extending into online education. As a result, a quantitative approach should be used to investigate institutional resilience in the context of COVID-19.

8.0 Conclusion and Limitations

Drawing on organizational resilience theory, the present study expanded the boundaries of the given theoretical model into the constituents of a resilient organization amid the COVID-19 experience, with strong practical implications. It provided deep insight into the resilience of the higher education institutions in the UAE, where they proved to be at the early levels of the adaptation stage of the current crisis, surpassing many other universities across the globe. Crisis leadership qualities and employee resilience have emerged as critical attributes required in each stage that are capable of reinforcing or weakening the relationship between related stages and organizational resilience as a whole of the academic institution. One of the study’s strengths is the inclusion of participants from institutions with a high level of organizational resilience, allowing for the identification of best practices in responding to the current crisis situation and beyond. Furthermore, the use of qualitative research techniques allowed for a thorough examination of the phenomenon. The interviews were not limited to a set of predefined and rigorous question guidelines, allowing the theoretical boundaries of Duchek’s (2020) model to be expanded. Yet, the focus on resilient institutions to unravel the practices and causes underlying their competitive advantage remains a limitation. As a result, this sample may not accurately reflect the intended population. Innovative culture, crisis leadership attributes, employee resilience in the workplace, and subsequently leading resilient employees might be further explored with the possibility of developing a quantitative evaluation instrument. Finally, the derived model is considered to be the most recent work on organizational resilience, which might serve as a strong foundation for future empirical studies.

9.0 Appendix

9.1 Questionnaires

Stage	Antecedents	Indicators	Items / Questions
Anticipation	Knowledge-based	Sufficiency	My university has sufficient knowledge to anticipate the possible occurrence of a disaster or catastrophe.
		Verification	My university has verified the available knowledge to accurately predict the emergence of potential disaster/catastrophe.
		Sharing	Our organization's culture of knowledge sharing that enables us to anticipate the possible emergence of a disaster or catastrophe.
		Training	Our people have received training programmes that prepare them for the potential occurrence of a disaster or catastrophe.
		Utilization	Our top management utilised available information to prepare them to make the

			best decisions in anticipation of a potential disaster or catastrophe.
Resource Availability	Sufficiency		My university has sufficient resources (human, financial, technical etc.) to anticipate the possible occurrence of a disaster or catastrophe.
	Quality		My university has quality resources (human, financial, technical etc.) to anticipate the possible occurrence of a disaster or catastrophe.
	Deployment		My university has deployed the right resources (human, financial, technical etc.) for the anticipation of the possible occurrence of a disaster or catastrophe.
	Capacity Building		Our resources (financial, technical, etc.) have been allocated to a capacity building agenda for our people in order for them to be prepared in the event of a disaster or catastrophe.
	Assessment		We have a system (e.g., guidelines, procedures, etc.) in place to assess our organization's capacity and capability in the event of a disaster or catastrophe.
Social Resources	Leadership Capability		Our leadership is capable of anticipating and managing undesired situations in the event of a disaster or catastrophe.
	Support & Coordination among workers		Our people are ever ready to give support and coordinate efforts in anticipation of a disaster or catastrophe.
	Resource Interchange		We have a system (e.g., guidelines, procedures, etc.) in place that enables interchanges of resources between units and departments in anticipation of a disaster or catastrophe.
	Information Sharing		We have a system (e.g., guidelines, procedures, etc.) in place that enables sharing of information between units and departments in anticipation of a disaster or catastrophe.
	Assessment		We have a system (e.g., guidelines, procedures, etc.) in place to assess our resources' capability in anticipation of a disaster or catastrophe.
Power-based	Availability of power		In the event of a disaster or catastrophe, our top management has the authority to make risky decisions.
	Empowerment		Each department and unit is empowered to make preparations and decisions in anticipation of a disaster or catastrophe.
	Accountability		Each department and unit is accountable for their preparations and decisions in anticipation of a disaster or catastrophe.
	Support for execution of power		Everyone in the organisation fully supports top management in exercising their authority in the event of a disaster or catastrophe.
	Check-and-balance of power (avoidance of power abuse)		We have a system (e.g., guidelines, processes, etc.) in place that serves as a check and balance on the power granted to the top management in the event of a disaster or catastrophe.

Coping	Knowledge-based	Availability/sufficiency	My university has sufficient knowledge to cope with the possible occurrence of a disaster or catastrophe.
		Verification	My university has verified the available knowledge to cope with the emergence of potential disaster/catastrophe.
		Sharing	Our organization's culture of knowledge sharing that enables us to cope with the possible emergence of a disaster or catastrophe.
		Distribution (via Training)	Our people have received training programmes that prepare them to cope with the potential occurrence of a disaster or catastrophe.
		Utilization	Our top management utilised available information to cope with a potential disaster or catastrophe.
	Resource Availability	Sufficiency	My university has sufficient resources (human, financial, technical etc.) to cope with the possible occurrence of a disaster or catastrophe.
		Quality	My university has quality resources (human, financial, technical etc.) to cope with the possible occurrence of a disaster or catastrophe.
		Deployment	My university has deployed the right resources (human, financial, technical etc.) to cope with the possible occurrence of a disaster or catastrophe.
		Training (capacity building)	Our resources (financial, technical, etc.) have been allocated to a capacity building agenda for our people to cope with the possible occurrence of a disaster or catastrophe.
		Assessment	We have a system (e.g., guidelines, procedures, etc.) in place to assess our organization's capacity and capability that helps the organization to cope with the possible occurrence of a disaster or catastrophe.
	Social Resources	Leadership capability	Our leadership is capable of coping with undesired situations in the event of a disaster or catastrophe.
		Support & Coordination among workers	Our people are ever ready to give support and coordinate efforts in coping with a disaster or catastrophe.
		Resource Interchange	We have a system (e.g., guidelines, procedures, etc.) in place that enables interchanges of resources between units and departments in coping with a disaster or catastrophe.
		Information Sharing	We have a system (e.g., guidelines, procedures, etc.) in place that enables sharing of information between units and departments in coping with a disaster or catastrophe.
		Assessment	We have a system (e.g., guidelines, procedures, etc.) in place to assess our resources' capability in coping with a disaster or catastrophe.
	Power-based	Availability of power	In the event of a disaster or catastrophe, our top management has the authority to cope with making risky decisions.

		Empowerment	Each department and unit is empowered to make preparations and decisions to cope with a disaster or catastrophe.
		Accountability	Each department and unit is accountable for their preparations and decisions to cope with a disaster or catastrophe.
		Support for execution of power	Everyone in the organisation fully supports top management in exercising their authority in order for them to cope with in the event of a disaster or catastrophe.
		Check-and-balance of power (avoidance of power abuse)	We have a system (e.g., guidelines, processes, etc.) in place that serves as a check and balance on the power granted to the top management that allows them to cope with the event of a disaster or catastrophe.
Adaptation	Knowledge-based	Availability/sufficiency	My university has sufficient knowledge to adapt with the possible occurrence of a disaster or catastrophe.
		Verification	My university has verified the available knowledge to adapt with the emergence of potential disaster/catastrophe.
		Sharing	Our organization's culture of knowledge sharing that enables us to adapt with the possible emergence of a disaster or catastrophe.
		Distribution (via Training)	Our people have received training programmes that prepare them to adapt with the potential occurrence of a disaster or catastrophe.
		Utilization	Our top management utilised available information to adapt with a potential disaster or catastrophe.
	Resource Availability	Sufficiency	My university has sufficient resources (human, financial, technical etc.) to adapt with the possible occurrence of a disaster or catastrophe.
		Quality	My university has quality resources (human, financial, technical etc.) to adapt with the possible occurrence of a disaster or catastrophe.
		Deployment	My university has deployed the right resources (human, financial, technical etc.) to adapt with the possible occurrence of a disaster or catastrophe.
		Training (capacity building)	Our resources (financial, technical, etc.) have been allocated to a capacity building agenda for our people to adapt with the possible occurrence of a disaster or catastrophe.
		Assessment	We have a system (e.g., guidelines, procedures, etc.) in place to assess our organization's capacity and capability that helps the organization to adapt with the possible occurrence of a disaster or catastrophe.
	Social Resources	Leadership capability	Our leadership is capable of adapting with undesired situations in the event of a disaster or catastrophe.
		Support & Coordination among workers	Our people are ever ready to give support and coordinate efforts in adapting with a disaster or catastrophe.
		Resource Interchange	We have a system (e.g., guidelines, procedures, etc.) in place that enables interchanges of resources between units and

			departments in adapting with a disaster or catastrophe.
		Information Sharing	We have a system (e.g., guidelines, procedures, etc.) in place that enables sharing of information between units and departments in adapting with a disaster or catastrophe.
		Assessment	We have a system (e.g., guidelines, procedures, etc.) in place to assess our resources' capability in adapting with a disaster or catastrophe.
	Power-based	Availability of power	In the event of a disaster or catastrophe, our top management has the authority to adapt with making risky decisions.
		Empowerment	Each department and unit is empowered to make preparations and decisions to adapt with a disaster or catastrophe.
		Accountability	Each department and unit is accountable for their preparations and decisions to adapt with a disaster or catastrophe.
		Support for execution of power	Everyone in the organisation fully supports top management in exercising their authority in order for them to adapt with in the event of a disaster or catastrophe.
		Check-and-balance of power (avoidance of power abuse)	In the event of a disaster or catastrophe, our top management has the authority to adapt with making risky decisions.

10.0 Declarations

10.1 Conflict of interests

No potential competing interest was reported by the authors.

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4 ASSESSING SUSTAINABLE LITERACY AMONG LEARNERS AT OPEN UNIVERSITY MALAYSIA

¹Che Leh, A., ²T Subramaniam, T., ²Mohamed, A., Syed Abd Latif, S.R. & ²Hassanor, M.T.

¹azmi_cheleh@oum.edu.my,

² Open University Malaysia, Malaysia

ABSTRACT

Sustainable Development Goals are universal that concerns every human being. Therefore, participators of industrial sectors and the public sector that is essential. Creating awareness can serve as a tool for advocacy. This study targets adult learners studying at Open University Malaysia. The Open University Malaysia is well-positioned to play an active role in promoting sustainability literacy. In 2018, OUM introduced 17 SDGs through its university course (OUMH1603: Study Skills for the 21st Century) to all diploma and undergraduate students. This 10-topic course focuses on 21 st-century soft skills, literacy skills, the 4Cs (Creative Thinking, Critical Thinking, Collaborative and Communication Skills), and Global Citizenship Education and Environmental Education. The objectives is to address the sustainability problems facing the world and focus on the three pillars of sustainability, namely the environment, economy, and society. The objectives of this study are, to analyse the understanding of the sustainability concept and to evaluate the knowledge of the 17 SDGs. A questionnaire designed to obtain qualitative data will be piloted in this study. Respondents are new diploma and undergraduate learners enrolled an OUMH1603 course. Data will be collected during the 3rd week of the semester. Cleaned data will be analysed using a statistical tool.

Keywords: Attitude, Awareness, Knowledge, Sustainability Development Goals, Sustainability Literacy, Three Pillars of Sustainability

1.0 INTRODUCTION

Sustainable development goals (SDGs) are global in nature. These are universal goals that concerns every human being. Therefore, participations of industrial sector and the public are important. Creating awareness can serve as a tool for advocacy. It is a precursor to participation, and more importantly active participation through which an individual can be inspired, grow empathy and compassion. An effective way to create awareness in areas relating to global environment and issues is through knowledge dissemination in the specified area; through literacy (defined as knowledge/competence in a specified area). Sustainable Literacy is the knowledge and understanding of the inter, skills and mindsets that allow individuals to become deeply committed to building a sustainable future and assisting in making informed and effective decisions to this end (United Nations, 2016). Therefore, SDGs which are goals adopted the United Nations in 2015 as response to the universal call to action towards creating a better and a more sustainable future for all, are important part of the body of knowledge for sustainable development. Upmost important is the understanding of the concept of sustainability.

As an Open Distance Learning (ODL) provider, Open University of Malaysia (OUM) is well-positioned to play an active role in promoting sustainability literacy. In

2018, OUM introduced the 17 SGD through its university course (OUMH1603: Learning Skills for 21st Century) to all diploma and bachelor learners. The course comprising of 10 topics is focused on 21st century soft skills, literacy skills, 4Cs (Creative Thinking, Critical Thinking, Collaborative and Communication Skills), and Global Citizenship Education and Environmental Education. This research is motivated by the intention to widen the reach out in the university's effort to raise the awareness on SDGs. The aim is advocate to the university community to become active participants of the global drive to create a better and a more sustainable future for all through research on sustainability literacy and education. Understanding the concept of sustainability would enable individuals to make better decisions on the issues in their private and professional lives. SDGs highlight important aspects of our lives that very often slips our mind. It promotes global awareness (a theme highlighted under the 21st Century Skills). It can

help to advocate sustainable development practices.

1.1 Problem Statement

The three pillars of sustainability are environmental, economic, and social. These three pillars are interdependent and refer to the concept of sustainability as it relates to the planet and its inhabitants. Environmental sustainability refers to the protection and preservation of natural resources and ecosystems. Economic sustainability refers to the ability of an economy to support and maintain its activities and growth over the long term. Social sustainability refers to the ability of a society to provide for and support its members, both now and in the future (Barbier, 2018). Together, these three pillars form the foundation of sustainable development and are key to ensuring a healthy and prosperous planet for all.

Environmental deterioration has resulted from rapid urbanisation and the public's desire to live a luxurious modern lifestyle. Environmental catastrophes that impair the quality of life include hazardous waste creation, climate change, environmental degradation, and ecosystem breakdown, to mention a few. The main causes of these occurrences are sparked by human avarice being satisfied by aggressive economic operations that ignore environmental implications (Mei et al., 2016). Department of Environment, (2020) report that a total of 366 Environmental Impact Assessment (EIA) reports were received and reviewed by the Department of Environment (DOE) in 2020 (Figure 1.1). Of this figure, 316 (86%) were EIA reports of activities that came under the First Schedule of Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, while 50 (14%) were reports of activities under the Second Schedule of the Order.

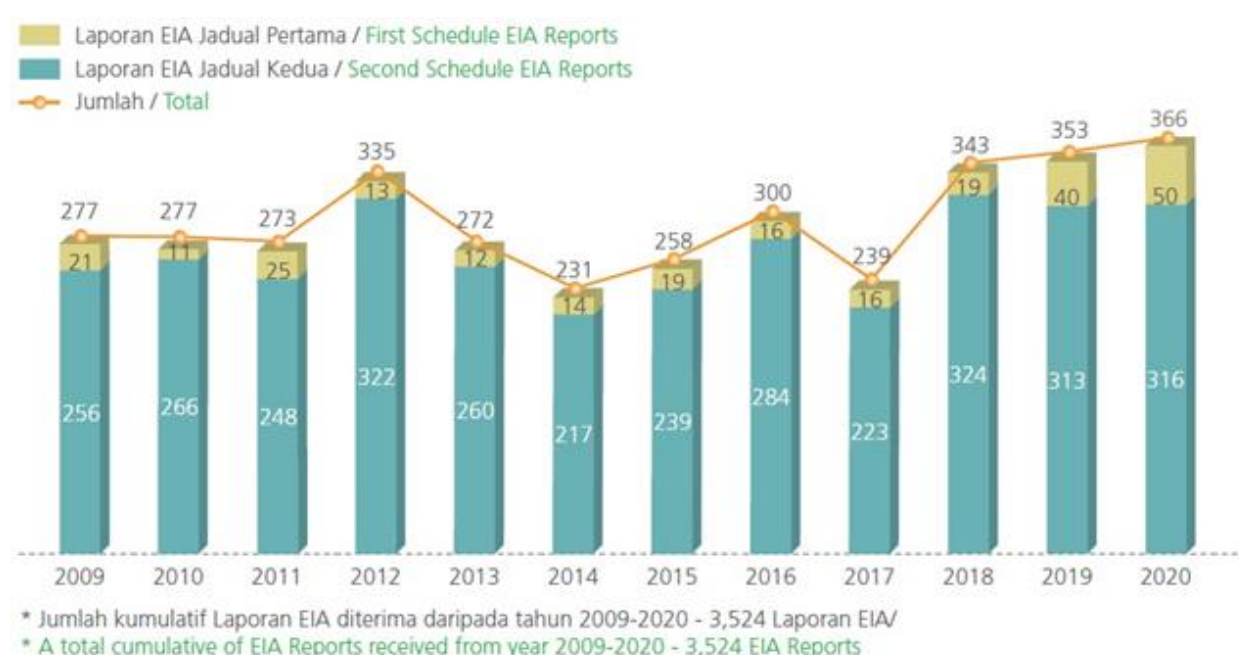
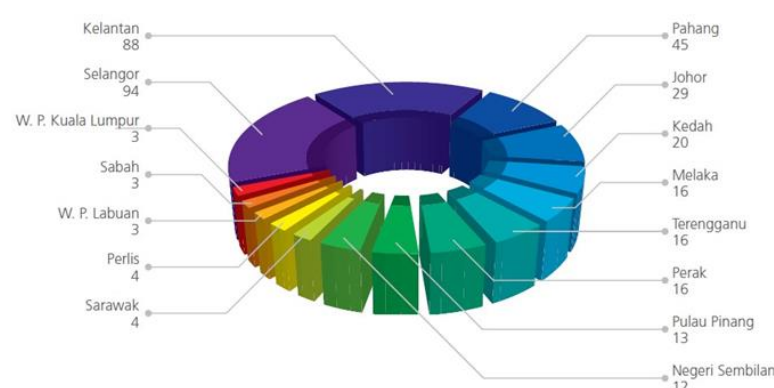


Figure 1: Cumulative EIA Report

Source: Department of Environment Malaysia. Annual Report 2020

Selangor received the highest number of EIA reports in 2020, with 94 (26.0%) reports, Kelantan with 88 (24.4%) reports and Pahang with 45 (12.5%). Figure 1.2 shows the details and a comparison of the status of the EIA Reports with the number of reports received by the DOE. Figure 1.3 displays the number of EIA reports generated with regard to prescribed activities. Forestry related activities had the most reports in 2020 with 120 (28.8%) reports, followed by activities related to waste treatment and disposal with 97 (23.3%) and activities related to industries with 38 (9.1%) reports. Meanwhile, three (3) EIA reports for activities related to offshore oil and gas field development within the area of the Economic Exclusive Zone (EEZ) were received - two (2) in Sarawak and one (1) in Kelantan. In 2020, a total of 744 enforcement actions were issued by the DOE. The enforcement actions consist of 525 notices and 205 compounds, while 37 cases were charged in court for not complying with the conditions of EIA approval (Department of Environment Malaysia, 2020).



50.4% daripada jumlah laporan EIA adalah aktiviti di Selangor dan Kelantan
 50.4% of the total EIA reports received were for activities in Selangor and Kelantan

Figure 2: EIA Report by State

Source: Department of Environment Malaysia, Annual Report 2020



Figure 3: EIA Report by Activity

Source: Department of Environment Malaysia. Annual Report 2020

In the face of overwhelming environmental issues, urbanization, industrialization, deforestation, rising global temperatures, and biodiversity degradation, policymakers have struggled to achieve any progress towards tackling the environmental issues due to the deficiency of sustainability literacy (Keles, 2012). Due to the human behaviour causes environmental degradation, all parties must consider the need of raising a generation of people who are not just worried about the environment but also actively responsible for it (Dahalan et al., 2020). It is thus necessary for them to show concern and transform their behavior and attitudes in terms of their daily interaction with the environment to a more positive form so that both entities can benefit. Indeed, this is crucial because a high level of sustainability literacy can lead to a positive outcome (Dahalan et al., 2020).

A sustainable economy is one that can support itself and meet the needs of the present without compromising the ability of future generations to meet their own needs. Technology can play a role in supporting a sustainable economy by helping to reduce waste and increase efficiency, as well as by providing new and innovative solutions to the challenges faced by society. Said et al., (2022) state that renewable energy technologies such as solar and wind power can help to reduce our reliance on fossil fuels. This means that the economy must operate within the natural limits of the planet and use resources efficiently and responsibly. A sustainable economy must also provide for the well-being of all people and communities, including those that are

disadvantaged or marginalized. This requires addressing issues of inequality and promoting social and economic justice (Bastianoni et al., 2019).

Nevertheless, there is among the problems much to be done to increase the awareness for individuals to have greater ownership of their responsibility towards awareness of sustainability. Therefore, education has a special role in all its forms, starting from primary levels to higher education. The United Nations Sustainable Development Goals (SDGs) provide an excellent opportunity to expand education for sustainable development (ESD) globally (Shiel et al., 2016). ESD is defined as a learning process or approach to teaching based on standards and principles that train different kinds of people to plan, cope and find solutions to problems that threaten the sustainability of our planet (UNESCO, 2016).

In conclusion sustainability literacy is the understanding of the interconnected nature of social, economic, and environmental systems, and the ability to apply this understanding to make informed decisions that promote sustainability. This can be fostered through education by teaching students about the principles of sustainability, the challenges facing our planet, and the actions that individuals and communities can take to protect the environment and promote long-term social and economic well-being. This can involve integrating sustainability concepts into the curriculum across a variety of subjects, as well as providing opportunities for students to engage in hands-on learning experiences, such as environmental service projects and sustainability-focused research. Sustainability literacy is an important skill for the 21st century, as it can help individuals and communities make informed decisions that support a sustainable future.

1.2 Research Objectives

This research is designed to assess the following among OUM undergraduate learners:

- i. To analyse the understanding of the sustainability concept.
- ii. To evaluate the knowledge of the 17 SDGs.

2.0 LITERATUR REVIEW

2.1 The Concept of Sustainability

The ability to be sustained, supported, upheld, or confirmed is defined as "the quality of not being damaging to the environment or depleting natural resources, and so supporting long-term ecological balance" in the natural world (Guterres et al., 2021). Both simple and complex, ambiguous and clear-cut, distinct and universal, agreed upon and challenged, political and impartial, sustainability is both simple and complex (Burns, 2016). Rather than being a passing trend, the concept of sustainability has been adopted by a diverse set of individuals and institutions (Portney, 2001). The contentious ideas of sustainability and sustainable development arose largely as a result of international institutions' political and administrative procedures (Burns, 2016).

2.1.1 Principles of Sustainability

Sustainable development can be seen of as a way to achieving sustainability, but sustainability is the ultimate aim and guiding principle. Regarding the origins of the sustainability concept, there are a few crucial elements to consider. Environmental sustainability, economic sustainability, and social justice sustainability are often regarded as three dimensions or "pillars" of sustainability. In actuality, these pillars are not simply or precisely defined. The Brundtland Report, issued in the 1960s and 1970s amid growing global realisation of the ecological and planetary limits of growth, inspired the three pillars structure (Hodson & Marvin, 2017). The Brundtland Report popularised the concept of sustainable development, and it is recognised as "the first serious attempt to link poverty to natural resource management and environmental conditions" (Pretty et al., 2007). With the Brundtland formulation and a number of subsequent key international conferences on environment and development, such as the United Nations Conference on Environment and Development (UNCED) in 1992, also known as the Rio Earth Summit, the multidimensional concept of sustainability continued to spread. Agenda 21, a nonbinding treaty and agreement on the normative principles of sustainable development, was one of the outcomes of the Rio Earth Summit, which also resulted in a number of internationally binding agreements, including the Convention on Biological Diversity in 1995, the Kyoto Protocol in 1998, and the 2016 Paris Agreement (Pretty et al., 2007; United Nations, 2016). As debates among international organisations and policymakers shifted toward the importance of cities, Agenda 21 united the local with the global (Hodson & Marvin, 2017).

2.1.2 Sustainability Literacy

Sustainability literacy can be defined as the ability to put information about sustainability into practise (Stibbe, 2009). Due to the learning of environmental problems, which allows for increased awareness of possible solutions, sustainability literacy is intrinsically easier to teach in the domains of environmental science and sustainability (Heeren et al., 2016). Sustainability literacy refers to a person's "knowledge, abilities, attitudes, and traits that enable them to take informed action for the benefit of themselves and others, now and in the future" (Diamond & Irwin, 2013). "The ability and inclination to engage in thinking, problem solving, choice making, and actions associated with attaining sustainability" is defined as "the ability and disposition to engage in thinking, problem solving, decision making, and activities associated with achieving sustainability" (Nolet, 2009). The concept of sustainability has developed over time, as has our understanding of it. Today, the term "sustainability" has a far more precise connotation, one that is tied to both human growth and environmental concerns (Visser et al., 2010). It is, however, still debatable due to similarities with concepts such as human development, sustainable development, environmental management, and ethics, to name a few (Thompson, 2011). People have a common assumption that environmental literacy and sustainability literacy are synonymous, in part because their differences are difficult to separate. It's important to remember that sustainability literacy encompasses both environmental and civic engagement and social responsibility components (Rowe, 2002).

2.1.3 Conceptual Framework

The variables that would influence literacy towards sustainability would be the awareness, knowledge, and attitudes. In the context of sustainability literacy, an individual with increased awareness on sustainability and its issues will lead to an increased knowledge and positive attitudes towards sustainability. A sustainability literate person, according to the worldwide non-profit consultancy Forum for the Future, should "understand the need for shift to a sustainable way of doing things, both individually and collectively." Furthermore, such a person should "possess adequate knowledge and abilities to make decisions and take actions that promote long-term development." Furthermore, sustainability literacy should enable one to "recognise and praise the decisions and behaviours of others that promote sustainable development"(Parkin et al., 2004). Sustainability literacy can also be defined as "the information, skills, and understanding required to shape a more sustainable future" (Blewitt, 2009).

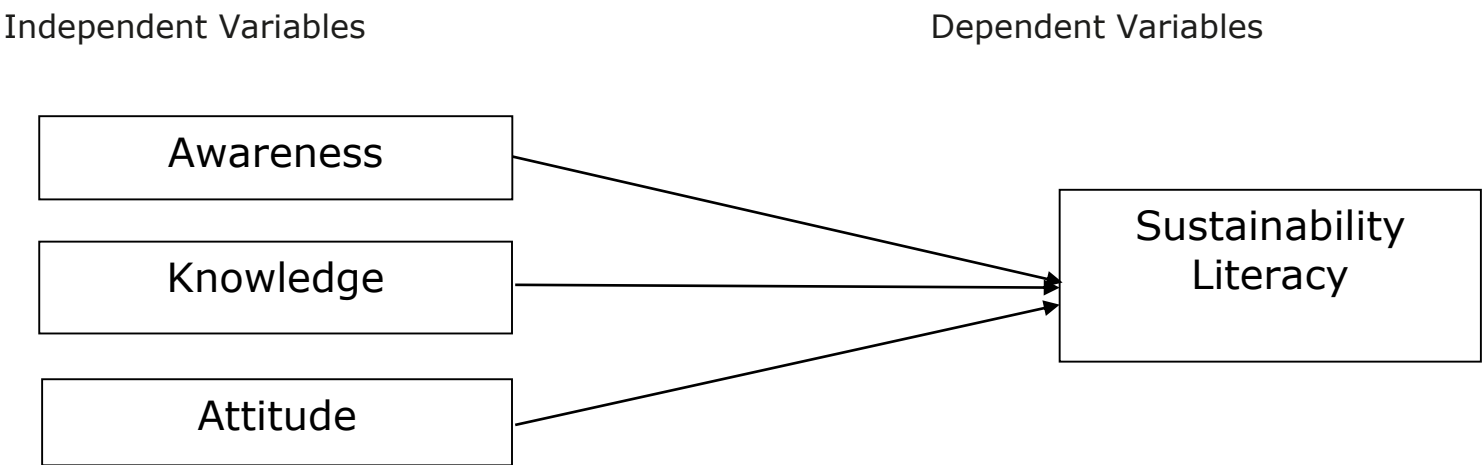


Figure 4: Conceptual Framework for Sustainability Literacy

2.2 Sustainability Development Goals (SDGs)

The Sustainable Development Goals run from 2016 to 2030 and are formally the goals of the United Nations' 'Transforming our world; the 2030 Agenda for Sustainable Development', an agenda which sets out the vision, principles and commitments to a fairer and more sustainable world for all (Morton et al., 2017). The project of Sustainable Development Goals started since Millennium Development Goals (MDGs) ended in 2015 with some notable results: reduction in poverty, increase in primary education enrolment and gender parity, fall in child and global maternal mortality, and better access to sanitation (Jati et al., 2019). The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a set of objectives within a universal agreement to end poverty, protect all that makes the planet habitable, and ensure that all people enjoy peace and prosperity, now and in the future. The Goals were adopted by all member states of United Nations formally in 2015, for the period 2016 to 2030 to address the overwhelming empirical and scientific evidence that the world needs a radically more sustainable approach (Morton et al., 2017).

The formal resolution adopted by the UN General Assembly in September 2015 was published on 21 October 2015. The UN resolution refers to five 'areas of critical importance'; sometimes known as the 5 'P's, these are People, Planet, Prosperity, Peace and Partnerships (Table 1). The goals were launched with the strap-line of 'Ensuring that no-one is left behind' with its

implication that development and levelling up will be the keys to progress by 2030 (Morton et al., 2017). The SDGs comprise 17 goals and 169 targets include ecological, social, and economic aspects (Jati et al., 2019). The SDGs (Table 2), ranging from "the wellbeing of every individual to the health of the planet, from infrastructure to institutions, from governance to green energy, peaceful societies to productive employment" with a number of targets associated with each goal. In total, there are 17 SDGs, and 169 associated targets, in what is a comprehensive and ambitious vision for the future and the goals embrace a wide range of environmental, social and economic issues, including climate change, energy, water stewardship, marine conservation, biodiversity, poverty, food supply and security, sustainable production and consumption, healthcare, education, gender, equality, peace and economic growth (Jones et al., 2017).

Table 1 Summary of the UN’s 17 Sustainable Development Goals, linked to the five Areas of Critical Importance (5P’s)

People	– No Poverty (Goal 1) – Zero Hunger (Goal 2) – Good Health and Well-being (Goal 3) – Quality Education (Goal 4) – Gender Equality (Goal 5) – Clean Water and Sanitation (Goal 6)
Planet	– Climate Action (Goal 13) – Life below Water (Goal 14) – Life on Land (Goal 15)
Prosperity	– Affordable Clean Energy (Goal 7) – Decent Work and Economic Development (Goal 8) – Industry, Innovation and Infrastructure (Goal 9) – Reduce Inequalities (Goal 10) – Sustainable Cities and Communities (Goal 11) – Responsible consumption and production (Goal 12)
Peace and partnership	– Peace, Justice and Strong Institutions (Goal 16) – Partnerships for the Goals (Goal 17)

United Nation’s blueprint that craves better world by 2030 has set the 17 goals to pursue, (1) no poverty; (2) zero hunger; (3) good health and well-being; (4) quality education; (5) gender equality; (6) clean water and sanitation; (7) affordable and clean energy; (8) decent work and economic growth; (9) industry, innovation and infrastructure; (10) reduced inequalities; (11) sustainable cities and communities; (12) responsible consumption and production; (13) climate action; (14) life below water; (15) life on land; (16) peace, justice and strong institutions; (17) partnership for the goals (Jati et al., 2019).

Table 2 Sustainable Development Goals

No.	Goals
1.	End poverty in all its forms everywhere
2.	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3.	Ensure healthy lives and promote well-being for all at all ages
4.	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5.	Achieve gender equality and empower all women and girls
6.	Ensure availability and sustainable management of water and sanitation for all
7.	Ensure access to affordable, reliable, sustainable and modern energy for all
8.	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9.	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10.	Reduce inequality within and among countries
11.	Make cities and human settlements inclusive, safe, resilient and sustainable
12.	Ensure sustainable consumption and production patterns
13.	Take urgent action to combat climate change and its impacts
14.	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15.	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16.	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17.	Strengthen the means of implementation and revitalize the global partnership for sustainable development

Source: <https://sustainabledevelopment.un.org> (2015)

2.2.1 Sustainable Development Goals Agenda

The 2030 Agenda is global, transformative, and based on human rights. It is an ambitious action plan for nations, the United Nations, and all other actors. The Agenda is the most comprehensive plan to date for eradicating extreme poverty, reducing inequality, and safeguarding the environment. 2030 Agenda is a global commitment towards a more sustainable, resilient and inclusive development. The global indicator framework adopted by the United Nations General Assembly comprises of 244 global indicators. The indicator framework has been reviewed in 2019 and presented to the 51st United Nations Statistical Commission (UNSC) in March 2020. Currently, there are 247 SDG indicators agreed and adopted for monitoring of 2030 Agenda (Department Of Statistics Malaysia, 2020). The Sustainable Development Goals (SDGs) are a set of global goals for fair and sustainable health at every level: from planetary biosphere to local community. The aim is to end poverty, protect the planet and ensure that all people enjoy peace and prosperity, now and in the future (Morton et al., 2017).

2.2.2 Sustainable Development Goals Challenges

The Sustainable Development Goals (SDGs) are a wide range of global sustainable development targets for the environment, society and economy. In launching the SDGs, the United Nations called on all member states to embrace what are an ambitious and demanding set of challenges but it also emphasised the vital role that businesses, would have to play if these challenges were to be met (Jones et al., 2017). In 2020, the global extreme poverty rate rose for the first time in over 20 years. Hundreds of millions of people were pushed back into extreme poverty and

chronic hunger. The COVID-19 pandemic has interrupted one or more essential health services and poses major health threats beyond the disease itself. It has wreaked havoc worldwide on children's learning and well-being, and women have suffered a disproportionate share of job losses and increased care work at home (United Nation, 2021). To address the vulnerabilities exposed by the pandemic, Governments and the international community should make structural transformations and develop common solutions guided by the SDGs. These include significantly strengthening social protection systems and public services (including health systems, education, water, sanitation and other basic services); increasing investments in science, technology and innovation; creating fiscal space in developing countries; taking a green-economy approach and investing in clean energy and industry; and transitioning to sustainable food systems (United Nation, 2021).

The economic, social and environmental concerns considered in the definition of these 17 objectives can no longer be dealt with in a separate and independent way (Lozano, 2008; Setó-Pamies & Papaoikonomou, 2016). These objectives have to be approached in an interdisciplinary way, with all actors assuming their share of responsibility (individuals, companies, private and public organizations and institutions, and governments). In this sense, universities are called upon to play a relevant role in the development of these objectives, since they are important agents for the integral development of future citizens (Piza et al., 2018). Higher-education institutions (HEIs) play an essential role in providing future professionals with the necessary skills and competencies to respond to the sustainability challenges identified in increasingly complex and global contexts (Lozano et al., 2015). They can become catalysts for change and must play an increasingly important role in helping students to become responsible and active citizens, with a clear vision of the future challenges of sustainability (Aktas et al., 2015). If achieved, the SDGs will secure an improved level of health, development, and global justice. However, if the international community fails to live up to its commitments, an untold number of people will likely perish prematurely, people's opportunities to thrive will be cut off, social dynamics will continue to leave people behind, and unsustainable environmental pathways will create risks to the health and well-being of generations to come (Friedman & Gostin, 2016).

3.0 METHODOLOGY

The research employs quantitative methodology using a survey instrument. The survey instrument created using Google form consists of three sections. The first section of data collected on the demographic characteristics of learners such as gender, age, faculty, employment industry and their role in their organisation. The second section focuses on finding out more specific knowledge and awareness about sustainability, sustainable development and SDGs. The survey's final section consists of an assessment of the learner's attitude towards SDGs.

A pilot study was conducted to test the survey instrument. One course from each faculty was selected and learners were approached through the course leaders. From the total of four courses, a total of 23 responses were obtained. The responses were lower than the 30 responses that were targeted. The analysis of the data from the pilot led to no correction of the survey instrument.

The target population of the respondents are the new learners enrolled in OUM bachelor degree programmes in the May 2023 semester who are attending the required a university compulsory course OUMH1603 Learning Skills for 21st Centuries. The total population was at 1,311 learners. Data obtained was only from 165 respondents, 12.6%. These data were cleaned, and analysed using SPSS.

4.0 DATA COLLECTION & DISCUSSION

This section will present and discuss the data obtained, analysis and the findings. The findings will determine whether the objectives of this research have been achieved or otherwise. These questionnaires have been sent to the May 2023 intake students at Open University Malaysia. The total number of students for the May 2023 intake is 1,311 students for the bachelor's program which includes 4 faculties, namely Faculty of Business Management (FBM), Faculty of Education (FOE), Faculty of Social Sciences & Humanities (FSSH) and Faculty of Technology & Applied Sciences (FTAS). The distribution of questionnaire based on the work by Krejcie & Morgan (1970), for population around 1,300, the appropriate number of sampling is 297. The questionnaires were distributed to all 1,311 OUMH1603 learners by postings in the announcement section under myInspire, the learning management system platform at OUM platform. The data collection was carried out over 21 days and the number of learners who responded this survey was 165. This is slightly lower value compared to the required 297 respondents. The number of respondents after data cleaning is even lower at 157, 52.9%. Nevertheless, the focus of this study is limited to descriptive statistics as such the number of respondents is sufficient. Table 1 presents respondent's demographic data.

The purpose of demographic data is to identify whether or not the sample is a representation of the population. The percentage of the gender where female learners which is close to 60% corresponds to the gender ratio of the OUM learner population. The age distribution also indicates the shift in the age towards younger generation observed amidst OUM learners. Meanwhile, the distribution amidst the industry also represents the pattern observed amidst the programmes offered at OUM, and not the actual industry distribution in the country. The observation on the role that the learners play at their organisation supports the curriculum design at OUM that introduces management courses in most programmes.

Table 1 Respondents Demographic

Demographic Data	Particulars	Percentage
Gender	Male	36.9%
	Female	63.1%
Age	≤ 25 years old	28.0%
	26-30 years old	21.0%
	31-35 years old	26.1%
	36-40 years old	13.4%
	41-45 years old	6.4%
	46-50 years old	1.3%
	51-55 years old	2.5%
	56-60 years old	1.3%
Faculty	FBM	29.9%
	FOE	25.5%
	FSSH	19.7%
	FTAS	24.8%
Industry	Education/Training	17.8%
	Government	15.9%
	Health Care	14.0%
	Manufacturing	9.6%
	Trading/Services	5.1%
	IT	5.1%
	Finance and Economic	5.7%
	Marketing/Advertising	5.7%
	Construction	3.8%
	Others	17.3%
Role	Management	55.4%
	Technical	32.5%
	Leadership	12.1%

Data in Table 2 represents the level of knowledge and awareness of the sustainability concept among the respondents. The lowest mean across all item is for item 2 at 3.76, "Sustainable development is about sustaining a business at all cost". Ideally the value should be much lower. This raises a concern about the learners' understanding of the item as well as the sustainability concept. Focus group session using interview can be used to analyse the responses for the item. All other

items are above 3.90; showing a good understanding of the concept. The highest score is for item 6, "Sustainable Development requires integrated decision-making" at 4.20 with the lowest standard deviation value at 0.757. This suggests that the understanding of the sustainability concept roots from work experience that necessitates the need to collaborate and integrate in making informed decisions at workplace. Further exploration on the source of knowledge and awareness is needed to understand this finding further. This study indicates that the learners at OUM, being working adults have a good level of understanding of the sustainability concept among OUM adult learners.

Meanwhile, the knowledge and awareness of the 17 SDGs depicted in Table 3. Data obtained shows that only half of the respondents are have in-depth knowledge, while 70% of the respondents have the skills to contribute to the goals. The difference in percentage between knowledge and skill only indicate the need to educate the respondents in specific areas related to the 17 goals. This will be pursued in the next phase of this study.

Table 2 Respondents Knowledge and Awareness

Question	Mean	Std. Deviation
I am familiar with the term sustainability	3.91	0.908
Sustainable development is about sustaining a business at all cost	3.76	0.962
Sustainable Development ensures that there is no negative impact on the environment.	4.00	0.906
Sustainable Development emphasise on equal considerations on triple bottom line (People, Planet and Profits) impacts	4.11	0.797
Sustainable Development gives greater weight to the environment in public decision-making	4.01	0.820
Sustainable Development requires integrated decision-making	4.20	0.757
Sustainable Development is about ensuring that we leave the planet better than when we find	3.92	1.056

Table 3 Respondents Knowledge on SDGs

Questions	Yes	No
I have in depth knowledge of these goals	54.1%	45.9%
I have skills to contribute to the achievement of these goals	70.1%	29.9%

Further exploration into the respondent's roles in their contributions in terms of supporting each of the 17 SDGs goals is shown in Table 3. On average close to 29% have more than one role that they contribute to all 17 goals. Goal 16 and 17 being the only two goals with close 37% respondents having more than one role. Highest contributions are made either at Workplace or Community/Public. Table 4 reveals that highest contributions mostly are at workplace under SDG 3, SDG 4, SDG 5, SDG 6, SDG 7, SDG 8, SDG 9, SDG 10, SDG 12, SDG 13, SDG 16, and SDG 17. Meanwhile highest contributions to Community and Public are found under SDG 1, SDG 2, SDG 6, SDG 11, SDG 14, and SDG 15. The pattern under SDG 1, and SDG 2 is somewhat understandable due to the focus on community projects are often to reduce poverty and hunger. It is rather interesting to find highest contributions for clean water and sanitization also made to Community/Public. This is also similar for SDG 11, SDG 14, and SDG 15, Life above Water and Life above Land. This shows that respondents at large care about people and community, as well as about life of other beings. This reflects well on the respondents as caring individuals.

Lowest contributions are largely found under contribution to non-governmental or non-profit organisations. Perhaps the impacts of these organisations in Malaysia and the reasons behind them must be explored further. The pattern is different for SDG 1, SDG 2, and SDG 7, where the lowest contributions are found under contributions to professional bodies. This pattern is again understandable under SDG 1, and SDG 2; given that professional bodies are less engaged in efforts of reducing poverty and hunger. The question is why contributions to professional bodies are lowest in SDG 7, Affordable Clean Energy. The role of professional bodies in the energy sector must be explored further.

Overall the engagement of respondents in terms of the contributions they make range from 23.0% to 58.8%. On average, the highest contributions are made at workplace (a mean of 48.3%), followed by contributions to community/public with a mean of 43.2%, contributions to professional bodies at a mean of 31.8%, and contributions to non-governmental or non-profit organisations with a mean value at 28.9%. Highest percentage value of contributions is the contributions at workplace under SDG 17. This is a good sign as it shows high degree of partnerships in achieving SDGs. While the extent of participation in sustainable development practices among the respondents reflected by an overall mean of 38% is encouraging, efforts must be taken to increase participations in every role and in all 17 SDGs to ensure that the country can achieve the targets in all 17 SDGs by 2030.

Table 4 Respondents Contribution to SDGs

17 SDGs	Contributions at Workplace	Contribution to Professional Bodies	Contribution to Non-governmental or Non-profit Organisations	Contribution to Community /Public
SDG 1: No Poverty	39.4%	23.0%	36.4%	48.5%
SDG 2: Zero Hunger	33.9%	28.5%	29.1%	47.9%
SDG 3: Good Health and Wellbeing	51.5%	33.3%	24.8%	43.6%
SDG 4: Quality Education	48.5%	37.0%	26.7%	45.5%
SDG 5: Gender Equality	57.0%	28.5%	26.7%	41.2%
SDG 6: Clear Water and Sanitisation	48.5%	32.7%	26.7%	52.7%
SDG 7: Affordable Clean Energy	50.9%	29.7%	31.5%	41.2%
SDG 8: Decent Work and Economic Growth	54.5%	27.3%	26.1%	34.5%
SDG 9: Industry, Innovation and Infrastructure	55.8%	29.7%	24.8%	32.1%
SDG 10: Reduce Inequalities	57.6%	27.9%	27.3%	38.8%
SDG 11: Sustainable Cities and Communities	41.8%	33.3%	24.2%	51.5%
SDG 12: Responsible Consumption and Production	50.9%	34.5%	29.7%	33.9%
SDG 13: Climate Change	46.7%	34.5%	30.3%	44.8%
SDG 14: Life Below Water	34.5%	32.7%	31.5%	43.0%
SDG 15: Life Above Land	39.4%	35.2%	31.5%	44.8%
SDG 16: Peace, Justice and Strong Institution	52.1%	38.2%	33.3%	50.3%
SDG 17: Partnership for Sustainable Development	58.8%	35.2%	31.5%	40.0%

In terms of learner's attitude towards SDG, most learners (more than 85%) are equally concerned about the achievement of the SDGs and in finding effective solutions towards

contributing to SDGs. Table 5 shows the level of the attitude of the respondents towards SDGs. A positive attitude is a good indication that the respondents are likely keen to increase their knowledge and skills, and possibility their engagement in actions towards achieving the targets under the SDGs.

Table 5 Respondents Attitudes Towards SDGs

Question	Yes	No
I'm concerned about the achievement of SDGs	87.3%	12.7%
I'm looking for an effective solution to contribute to SDGs	88.5%	11.5%

5.0 CONCLUSION

This study explores the knowledge and awareness of adults of the concept of sustainability and the 17 SDGs using OUM adult learners as a target population. Target population all diploma and bachelor students for the May 2023 cohort. OUM adult learners are well distributed throughout the country to represent the nation. Greater sample size would have improved the reliability of the findings presented here. The SDGs are universal goals that concerns every adult across the different roles that they play within the industry and the community they engaged with. The survey instrument was designed to obtain quantitative data measures the knowledge and understanding of the sustainability concept, knowledge and skill in SDGs, contributions made across four different roles relating to workplace, professional bodies, non-governmental or non-profit organisations, and the community/public. Questions were also included to gauge the attitude of the respondents towards SDGs. Findings shows a positive pattern with much room for improvement across all 17 SDGs and the four different contributions that the adult are engaged with. The understanding of the sustainability concepts is positive with a mean ranging between 3.76 to 4.20. Meanwhile, 54% respondents have attested to having in-depth knowledge, and more respondents have attested to having the skills (70%). This is further explored by analysing the contributions made. The extent of participation in sustainable development practices among the respondents reflected by an overall mean of 38%, where the percentages range from 23.0% to 58.8%. One average, the highest contributions are made at workplace (a mean of 48.3%), followed by contributions to community/public with a mean of 43.2%, contributions to professional bodies at a mean of 31.8%, and contributions to non-governmental or non-profit organisations with a mean value at 28.9%. Understanding of these patterns will help in developing strategic solutions in increasing participations in across every role and in all 17 SDGs towards the achievements of SDG targets in the country. Creating awareness through studies as this can also serve as a tool for advocacy.

6.0 ACKNOWLEDGEMENTS

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5 AWARENESS AND READINESS FOR MOBILE LEARNING IMPLEMENTATION IN KOLEJ POLY-TECH MARA BATU PAHAT

Marwan, M.E

Kolej Poly-Tech MARA Batu Pahat erwandy@gapps.kptm.edu.my Sri, Gading, Batu Pahat, Malaysia

Suhaimi, S., Husain, N.M. suhazlan@fskik.upsi.edu.my, masharah@fskik.upsi.edu.my
University Pendidikan Sultan Idris Tanjung Malim, Perak, Malaysia

Fuad, N. norfaiza@uthm.edu.my

Universiti Tun Hussein Onn Malaysia Parit Raja, Batu Pahat, Malaysia

ABSTRACT

Mobile communication provides us constant, borderless connectivity to the outside world. The mobile learning is a type of learning that uses this mobile communication technology. In order to improve the teaching and learning process, educational institutions must keep up with the most recent technology developments. Mobile learning is a developing trend in the world of education. It is a method that communicates learning materials with mobile device technology. This paper discusses the awareness and readiness of mobile learning implementation in Kolej Poly-Tech MARA (KPTM) Batu Pahat. The aim of this paper is to examine the current state of mobile learning readiness in KPTM Batu Pahat and identify areas of improvement. The study was conducted through a survey of 400 students. The results showed that the majority of students were aware of mobile learning and its potential benefits. However, there were concerns about the availability of mobile devices and the lack of technical support. Overall, the study highlights the importance of preparing and equipping educational institutions for mobile learning implementation and provides recommendations for KPTM Batu Pahat to improve its readiness in this area.

Keywords: mobile learning, awareness, readiness, teaching and learning

1.0 INTRODUCTION

Smart phones and tablets have evolved into portable learning tools with enormous potential used for both traditional classrooms and outdoor education (Fu & Hwang, 2018) and (Chang & Hwang, 2019). Researchers refer to a learning style as "mobile learning" when it makes use of mobile technology to help or support the learning process. It is now feasible to deliver e-learning on personal mobile devices regardless of time or location because to the rapid growth of mobile learning (UNESCO, 2019).

Mobile learning will be used at KPTM Batu Pahat as a standard for innovative teaching strategies. The observation indicates that no KPTM branch has ever employed this strategy. There are several problems with the teaching and learning environment at KPTM Batu Pahat. Initially, the timetables of both the lecturers and the students are condensed. Students' attentiveness in class may suffer as a result of having to hustle to get to class. The lecturers struggle when they don't have enough time to be ready for class. Second, there are usually concerns with a lack of available courses or lecture halls since there are more students than there are classrooms or lecture halls available. Finally, the majority of students commonly criticise how hefty and thick their textbooks or references are, which has a bad influence on their learning. Fourth, especially in the wake of the Covid 19 outbreak, students appear to be at ease with virtual learning.

Without attending traditional lectures or attending classes, they frequently study alone and remotely. Another advantage of integrating mobile learning among students is that they always stay up to speed on the newest technology and have a strong desire to buy a mobile device.

2.0 MOBILE LEARNING

Mobile learning is the term now often used to describe the use of mobile devices in teaching and learning (Grant, 2019). Together with its potential pedagogical advantages, such as raising students' motivation, success, and communication, mobile device use in education is taken into consideration. Mobile learning may be described as the facilitation and augmentation of the learning process using mobile devices anytime and everywhere. Mobile learning may be described as the help and augmentation of the learning experience using mobile devices wherever and whenever (Baydas & Yilmaz, 2018). Numerous benefits come with mobile learning, including continuous, ongoing, flexible learning, time for reflection, support for both informal and formal learning, support for personalization, availability, pervasiveness, contextuality, and relevance, as well as support for user-generated content (Zhang, 2015) (Sullivan, Slater, Phan, Tan, & Davis, 2019).

The degree of acceptability and desire to utilise mobile devices in learning sessions is the definition of mobile learning readiness (Christensen & Knezek, 2018). The use of technology in the classroom is impacted by educators' pedagogical views (Ertmer, 2005), but it also depends on their degree of comfort, preparation, attitudes, and beliefs, as well as their exposure to information technology (Ditzler, Hong, & Strudler, 2016) (Kim & Kim, 2016). Because of the huge developments in mobile technology and apps, people are more inclined to utilise mobile devices in their daily lives. The International Telecommunication Union says that the number of mobile device users has increased significantly in recent years (ITU, 2021). This circumstance is connected to the features, conveniences, and services provided. People have used the Internet in the past to effectively do tasks, aid with transactions, obtain information, and enjoy themselves using mobile devices and related technologies.

2.1 Implementation of Mobile Learning in Higher Education Institutions

Practically, every student owns a mobile device, whether it be a laptop, tablet, smartphone, or PDA. Students frequently utilize tablets and smartphones for social media interactions. The majority of students take notes, read books, check their emails, communicate, and discuss while riding the bus, train, or sitting in a restaurant. These gadgets may be used in many places for their mobility where the pervasiveness of these technologies cannot be denied. In addition to being aware of the types of activities, students and lecturers in higher education institutions should accept mobile learning and be aware of its advantages and disadvantages (Hrastinski & Dennen, 2019). While at higher education institutions, mobile devices are becoming increasingly important to students' academic lives. The most crucial elements that make mobile learning more appealing to students and lecturers are flexibility, engagement, interaction, and convenience (Zhou & Li, 2021).

Currently, numerous institutions of higher education utilize mobile technologies to enhance their teaching and learning process. This involves developing mobile-optimized versions of their websites or constructing separate mobile applications (Kim M. , Kim, Khera, & Getman, 2014). Despite this, students are seldom requested to perform tasks using their mobile devices. Additionally, the majority of higher education providers explicitly forbid the use of mobile devices in classrooms, and students are infrequently prompted to use mobile web browsers to search for information during lectures. The portability and accessibility of mobile devices make them useful learning tools (Rodriguez-Gomez, Rodriguez-Ariza, & Lopez-Belmonte, 2020). Mobile devices must function as an efficient teaching tool and be used in all learning activities, both inside and outside of the classroom. More data on student and lecturer understanding and acceptability of mobile devices as learning aids is needed in order to properly implement mobile learning in the learning and teaching process (Park & Jo, 2015).

2.2 Awareness and Readiness of Mobile Learning in Malaysia

Mobile learning has gained increasing attention in Malaysia in recent years due to the

growth of mobile technology and the increasing demand for flexible and accessible learning. There have been several studies on mobile learning awareness in Malaysia, which have explored various aspects of the topic. According to Ibrahim and Jaafar (2021), a meta-analysis has been done to examine the level of mobile learning awareness among Malaysian higher education students. The study found that overall, students have a high level of awareness of mobile learning, but there are variations across different disciplines and programs. A study that investigates the factors that influence mobile learning acceptance among Malaysian higher education students has been performed and found that perceived usefulness, ease of use, and self-efficacy were significant factors that influenced students' intention to use mobile learning (Yusoff, Hussain, & Ahmad, 2017). The other study performed by Zainuddin and Halili (2016) found that the flipped classroom approach has the potential to improve students' engagement and learning outcomes, but there are also challenges that need to be addressed.

Mobile learning readiness refers to an individual's or an organization's preparedness to adopt and utilize mobile devices and technologies for learning purposes (Kukulka-Hulme & Traxler, 2013). There have been several studies on mobile learning readiness in Malaysia, which have explored various aspects of the topic. Alias, Mohamad and Baharom (2019) discovered that a conceptual framework for mobile learning readiness among Malaysian university students includes four dimensions: technological, pedagogical, psychological, and social. The study suggests that these dimensions are important factors that influence students' readiness to adopt mobile learning. While, the relationship between mobile learning readiness and student satisfaction in Malaysian higher education includes factors such as technical skills, device ownership, and perceived usefulness, is positively related to student satisfaction with mobile learning (Yuen & Lim, 2018). For Malaysian polytechnic students, there are factors that influenced the mobile learning readiness such as perceived ease of use, perceived usefulness, and self-efficacy, has a significant impact on students' intention to use mobile learning (Kho & Lim, 2017).

3.0 METHODOLOGY

This study includes the creation and validation of a survey that analyses KPTM Batu Pahat students' knowledge of and acceptance of mobile learning. This study included an overall sample of 400 students from various courses. There are two phases to this research. The first phase of the study involved presenting the study's overall findings and having learners discuss the adoption, creation, and diffusion of mobile learning. This phase featured a formal discussion that explained the concept of mobile learning and reviewed the survey methods and objectives with all the participated students and lecturers. There are two primary components to the discussion. The study's goals are explained in depth in the first section, along with the significance of the trials and the necessity of widespread acceptance, development, and use of mobile learning. The study's methodology and processes are covered in the second section. The second phase of the study involved survey research with five sections: background of demographic, experience of using Internet, experience of E-learning, experience of using mobile device, and experience of using mobile learning. General demographic data is presented in the first section. This section will be enquiring about a person's gender, age, and field of study. The second component asks about Internet usage, the third asks about E-learning knowledge, the fourth inquiries about mobile device usage, and the fifth inquiries about mobile learning experience, asking people if they have ever used a mobile device for learning. The willingness of the participants to use mobile devices for educational reasons has also been questioned.

4.0 RESULTS AND DISCUSSIONS

The survey questions about awareness and readiness of mobile learning are analysed and assessed based on the student answers. By evaluating and analysing students' demographic backgrounds and experiences with the Internet, E-learning, mobile devices, and mobile learning, the research gave a systematic insight into the students' knowledge of and preparation for mobile learning. The formal discussion phase's goal was to aid participants in gaining a systematic understanding of the mobile learning context. The participants were engaged in the survey and posed a variety of questions concerning the adoption, development, and diffusion of mobile learning, in particular the study aims and

methodological methods. The goal of the discussion phase was to enhance and clarify learners' knowledge and comprehension of the mobile learning context. According to the findings, more than 75% of participants expressed a strong interest in adopting mobile devices for learning. The following subsections comprise the results and commentary.

4.1 Background of Demographic

In this part the participators were asked about their gender.

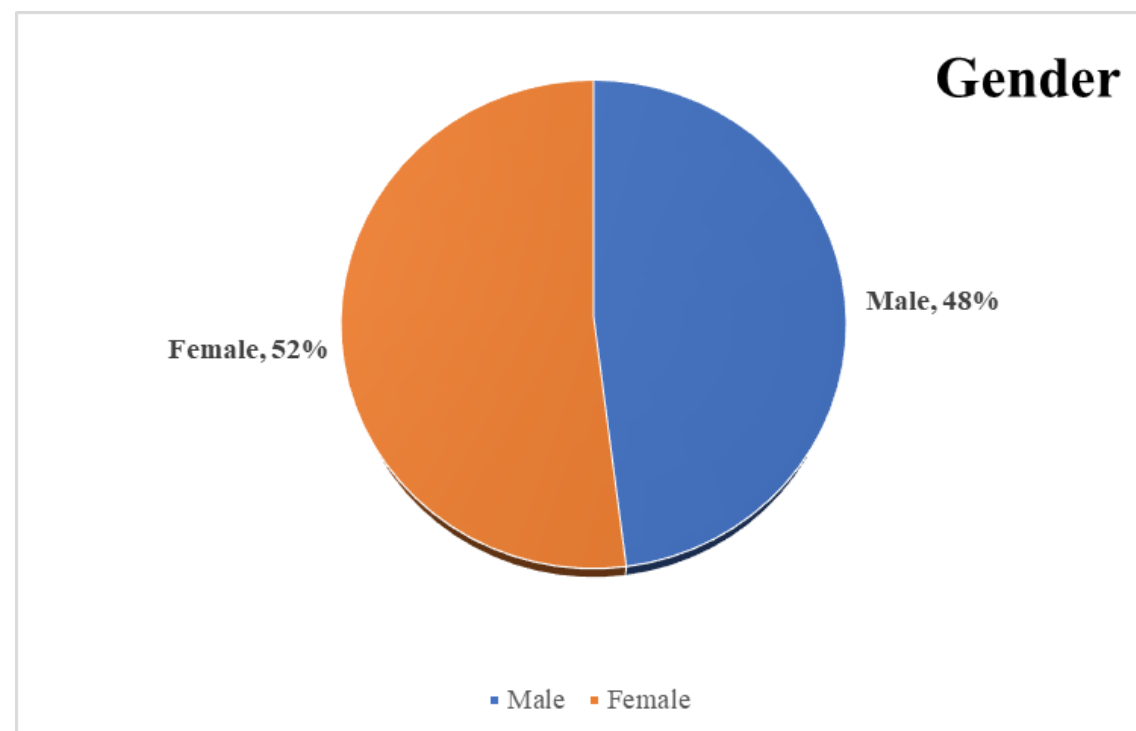


Figure 1: Gender distribution

There are about 48% of 400 students are males and around 52% are females. The students age distribution is as shown in Figure 2. As a result of the age distribution, the most of the students are youngster with about 45% of students are from age 18 to 20 years old and the lowest number of students are from age 24 to 26 years old.

According to Figure 3, a survey of 400 students shows that the Diploma in Human Resource Management had the most participation, accounting for 31.5% of all students. The Diploma in Computer Graphic and Design programme, which had 31% of the students, came in second place. In addition, the third most participation is Diploma in Computer System and Networking, had 21% of the students polled. Lastly, 16.5% of the students polled were enrolled in the Diploma in Information Technology programme.

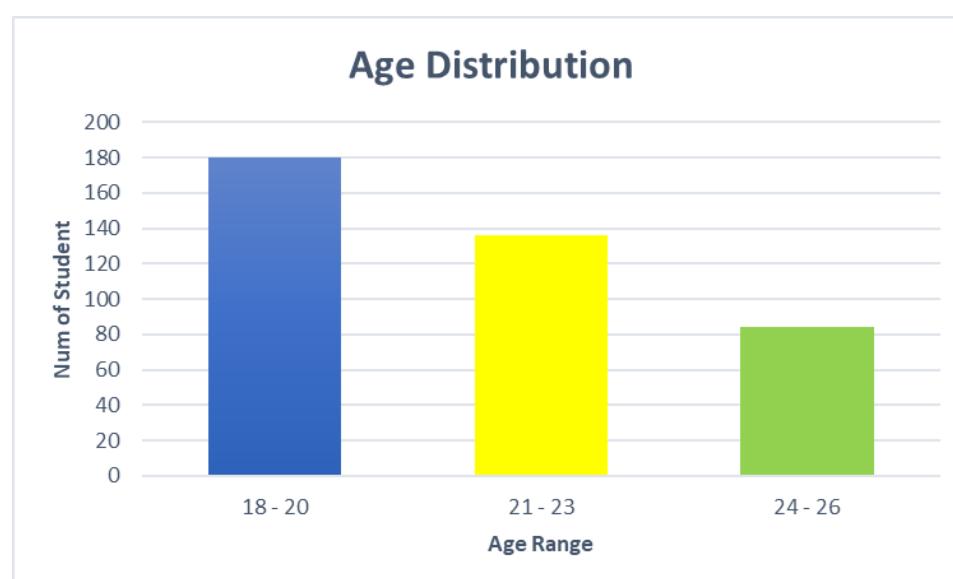


Figure 2: Age distribution

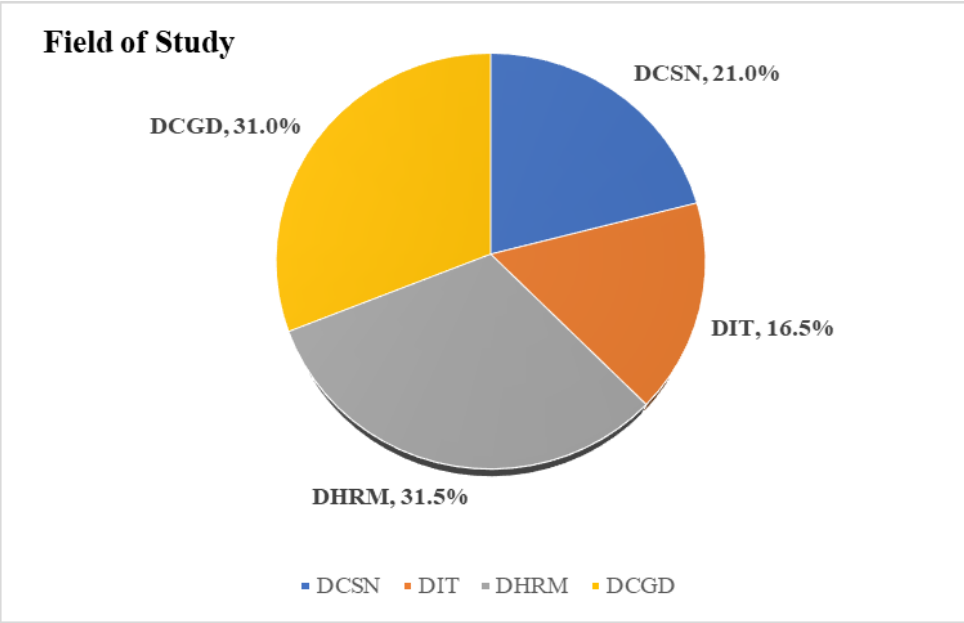


Figure 3: Field of study

4.2 Experience of Using Internet

In this part of survey, students were asked questions to reveal the extent of their experience when using the internet.



Figure 4: Experience of using Internet

Based on the survey results in Figure 4, it can be inferred that every single student who participated in the study has utilized the internet at some point in their lives. This implies that the usage of the internet among students is ubiquitous and nearly universal. These findings suggest that the internet has become an integral part of modern life and

education, and that students are relying on it to access information and resources for various purposes, including academic research, social networking, entertainment, and more. Additionally, these results may be useful for educators, policymakers, and businesses that are seeking to better understand how students engage with the internet and how it affects their behaviours, attitudes, and performance.

4.3 Experience of Using E-Learning

In this part, the experience of using E-learning was investigated. According to the survey results in Figure 6, a majority of the students, or 86.5%, reported having previous experience with E-learning, which suggests that this form of learning has become increasingly popular in recent times. On the other hand, a minority of the participants, or 13.5%, indicated that they had limited or no experience with E-learning, indicating that there is still room for growth and expansion in this area. In summary, the survey revealed that most respondents have tried E-learning, while a smaller portion of them have not yet had the opportunity to use it extensively in their learning process

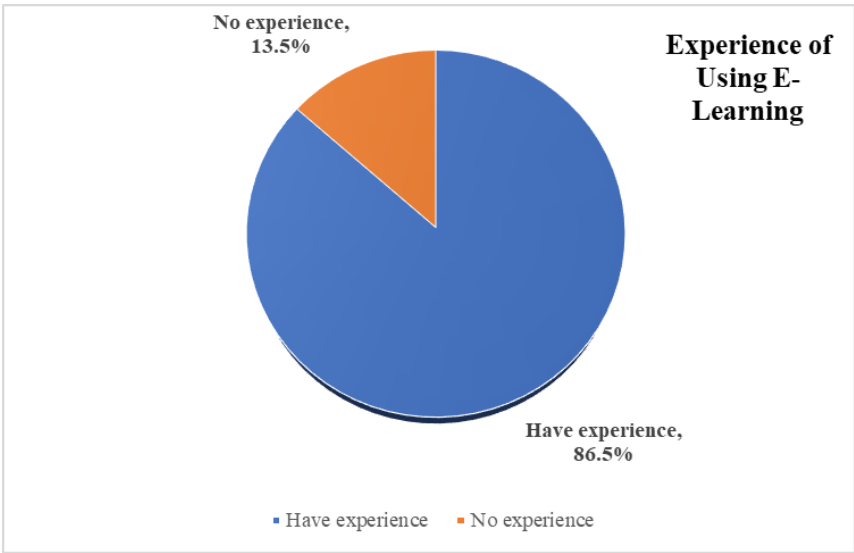


Figure 6: Experience of using E-Learning

4.4 Experience of Using Mobile Device

Based on the findings presented in Figure 7, it can be concluded that every student possesses some type of mobile device, such as a smartphone, tablet, personal digital assistant (PDA), or laptop and have the experience of using mobile device.



Figure 7: Experience of using mobile device

4.5 Experience of Using Mobile Learning

In the part related to experience of using mobile learning, the students' understanding and experience to mobile learning was investigated.

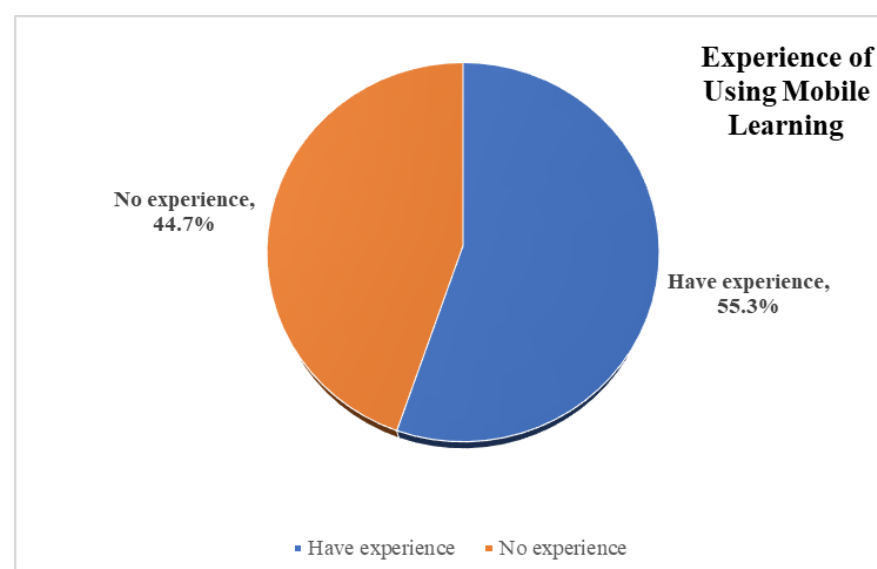


Figure 8: Experience of using mobile learning

According to the survey results, a majority of the participants, specifically 55.3%, reported having prior experience with mobile learning or familiarity with using mobile devices for educational purposes. In contrast, 44.7% of the respondents reported not having any experience with mobile learning.

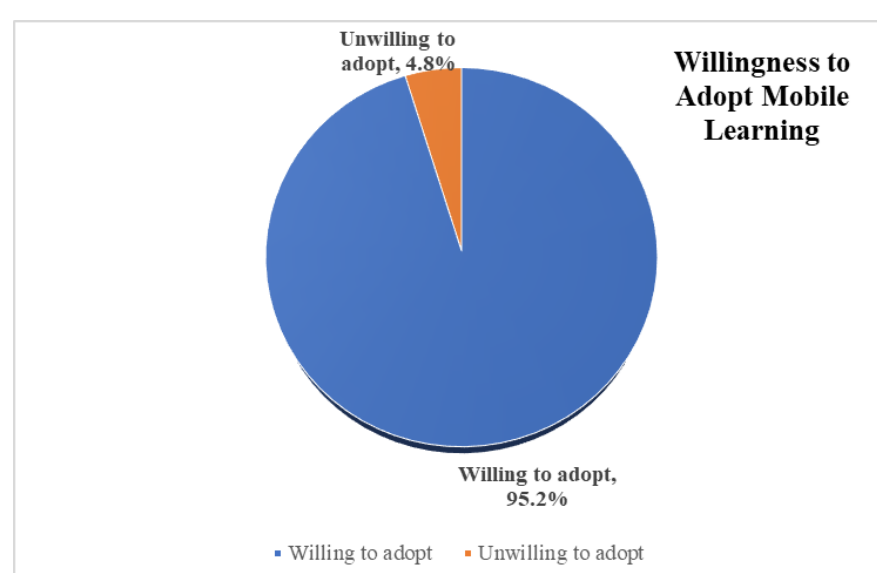


Figure 9: Willingness to adopt mobile learning

Furthermore, the students were also asked about their interest in using mobile devices for learning purposes. The survey revealed that a significant portion of the participants, specifically 95.2%, expressed their willingness to utilize mobile learning as a tool for their education. Only a small minority, specifically 4.8%, reported being unwilling to adopt mobile learning due to various reasons.

4.6 Discussion of the Results

The initial findings of the research revealed a significantly high level of awareness and acceptance of Internet, E-learning, and mobile learning among students at KPTM Batu Pahat. This indicates a strong interest in the use of mobile devices as learning tools. The positive attitude towards mobile learning leads to a behavioural intention to use mobile devices for learning purposes both in and outside the classroom. It has been widely reported in various research studies that the use of mobile learning in higher education is gaining significant interest from both students and lecturers. (Lee & Choi, 2021) (Liu & Li, 2022) (Mubarak & Zeki, 2022)

Moreover, the use of mobile technologies in the learning process inside the classroom has received positive feedback from students in many research studies (Li, Li, Li, & Li, 2021) (Yusuf & Balogun, 2021). This indicates that students are interested in utilizing their mobile devices for educational purposes, and that the use of mobile learning or mobile devices as learning tools in the formal education sector is becoming increasingly widespread. This is due to various reasons such as user behaviour, ease of access to information, and educational benefits.

Furthermore, the study revealed that students and lecturers believe that the use of mobile devices as learning tools can enhance the learning experience by providing instant access to learning materials and resources, promoting active engagement in the learning process, and increasing flexibility and convenience in learning. Lecturers can also utilize mobile learning to create personalized and interactive learning experiences that cater to the diverse learning needs of individual students. The use of mobile devices as learning tools also aligns with the current trend of incorporating technology in education, which prepares learners for the demands of the digital age.

Overall, the research highlights the importance of mobile learning as a valuable educational tool that can enhance the learning experience for both lecturers and students. It emphasizes the need for higher education institutions to recognize and embrace the potential of mobile learning and to provide appropriate support and resources to facilitate its effective integration in the learning process.

From the survey, there are several concerns that should be taken into consideration when implementing mobile learning in KPTM Batu Pahat. Some of these concerns include:

Access and Equity: Not all students may have access to smartphones or other mobile devices required for mobile learning. There is also a possibility of inequitable distribution of mobile technology across students, leading to disparities in learning outcomes.

Technical Issues: Technical issues, such as device compatibility, connectivity issues, and software/hardware incompatibilities can affect the implementation of mobile learning.

Pedagogy: The design of mobile learning courses needs to be carefully considered to ensure that they are aligned with pedagogical goals and objectives. There is a concern that mobile learning may promote passive learning rather than active learning.

Privacy and Security: Personal information and sensitive data may be at risk during the implementation of mobile learning. There is a need to ensure that privacy and security measures are in place to protect student data.

Cost: Implementing mobile learning may require additional resources, such as the development of mobile applications, software, and technical support. This may increase the cost of education for students and institutions.

Addressing these concerns requires careful planning, collaboration, and a commitment to innovation and continuous improvement in KPTM Batu Pahat.

5.0 CONCLUSIONS

This study underlines the significance of being prepared for the introduction of mobile learning in higher educational institutions. According to the study done at Kolej Poly-Tech MARA Batu Pahat, lecturers and students are generally aware of mobile learning and its potential advantages. Yet, there are still certain things that may be done better, such the accessibility of mobile devices and the availability of technical assistance. Kolej Poly-Tech MARA Batu Pahat and other educational institutions must thus get ready for mobile learning implementation in order to improve the learning process and fulfil students' changing demands in the digital era. The research study was specifically aimed at exploring the perception and acceptance of mobile learning among higher education students. Therefore, it is important to note that the findings of this study should not be generalized to younger age groups. The attitudes and behaviour towards mobile learning may vary among different age groups and educational settings, and thus, further research is needed to investigate the use of mobile learning among younger students. In future work, the researchers plan to conduct a detailed statistical analysis using SPSS software, such as cross-tabulation, t-tests, and regression analysis, to provide further

support for their research findings. This will enable them to examine the relationships and associations between different variables, identify any significant patterns or trends, and draw more accurate conclusions. Such an approach will enhance the validity and reliability of the research results and provide a more comprehensive understanding of the factors influencing the acceptance and adoption of mobile learning among higher education students.

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6 GAME BASED LEARNING: A REVIEW OF INTERFACE DESIGN IN EDUCATIONAL GAME FOR EARLY SCHOOL STUDENTS

Mohd Iftitah Bin Jamil iftitah@gapps.kptm.edu.my
Kolej Poly-Tech MARA Batu Pahat Malaysia

ABSTRACT

In explaining the education system in the millennial era for the better way, it drives education towards the digital techniques using game-based learning in teaching and learning. However, the development of educational game is developed must be intuitive, responsive, and designed with the target audience in mind in terms of interface design. The development of application in games-based learning giving emphasis on interface design to attract the interest of early students. The interface design in educational games designed in collaboration with educator and expert in game developer experts will ensure that it aligns with current best practice in early school education. It refers to the design of the visual and interactive components of the game that enable users to navigate, interact and learn within the game environment. The interface design incorporates elements that motivate and captivate early learners such as appropriate objects, appropriate colors, placement of objects and games layout. This review which uses non-empirical method on one type of education game which is Belajar Menulis ABC, Suku Kata Dan Perkataan will be observed through personal observation method by using the elements of interface design in games. This non-empirical study suggest that the educational game was well-received by early students and that they were able to learn and retain in teaching and learning educational concepts using game-based learning with well-designed interface. It can be a valuable tool for early education techniques.

Game Based Learning, Educational Game, Early Students, Game Interface Design

1.0 INTRODUCTION

The entire educational system is undergoing significant changes as can be seen over the past ten years in a world full of technological advancements. The education system, which began with traditional education in the classroom and progressed through Open Distance Learning and Game Based Learning, is seen as elevating education towards more digital and creative learning. Game based learning can play a significant role in the teaching and learning process because they help early education students become more engaged in academics than they might have been with traditional teaching methods like using a book and a white board. Therefore, it is appropriate that this system be widely used in order to help early students achieve effective learning. Based on the cognitive theory of teaching, a learning process element like a game technique can increase student recognizable, focus, and observational skills more than the traditional method of using a book and white board (Esa, A., Mohamad, B., Mukhtar, S. N., 2007).

Aayeshah, W. (2021), state that the game in education can be used in the learning process as a source of teaching and learning also as tools for students to interact, provide feedback, and develop their social and mental skills. If these students are able to give feedback and grow intellectually, it may also result in early students who are able to master the lessons taught while also having a significant positive impact on the local educational system. However, there are issues with early students and also for educators not being aware of the effectiveness game-based learning as well as a lack of information on how the interface design in educational games will affect students' ability in the learning process.

Besides, interface design in educational games for early school students is a critical aspect of game-based learning. The interface must be designed in a way that is intuitive, easy to use, and visually appealing to keep students engaged and motivated. Christopher Hoadley and Fengfeng Ke (2009) explain of how inappropriate and how poorly designed game interfaces can have a negative impact on cognitive skills and health to early students. In order to avoid having a negative impact on users, process of developing games for education should emphasize the design of the interface in matters of kids. Early students are capable to accept and learn the learning process presented if the interface design of the game is well produced. In other words, students are more likely to notice the interface design the first time they play a game. The thoughtfully designed setup has the power to inspire students' imagination (Soylucicek. S., 2012).

Education game can provide users with a better experience if it has a visually appealing and well-designed interface for learning especially early students. As a result, when discussing the interface design, some resolve is required to be present throughout the creation of this education game. A certain types of element is required to design educational and learning games in order to assess whether or not they are appropriate for children. Since kids are more interested in playing games with appealing good interface, graphic design is essential (Yope Bintang Anugerah & Cucuk Wawan Budiyo, 2017)

This Paper will review the game-based learning with interface design was well received in teaching and learning process for early school students. The main thing that the developer of the learning games must do in order to implement the total learning process based on the game, or GBL, is not just the contents and gameplay, but should be directed towards the perfection of the interface design in order to ensure that the teaching and learning process can run smoothly and increase students' interest in the learning process.

2.0 GAME BASED LEARNING

Game based learning is an educational approach that uses video games or game-like activities to teach a specific subject or skill. The goal of game-based learning is to engage and motivate learners while promoting active participation, problem-solving, and critical thinking. Game based learning is an innovative teaching method that uses games and game mechanics to facilitate learning. It has been gaining attention in recent years due to its potential to enhance student engagement and motivation, as well as to promote learning outcomes. Game based learning is crucial to both learning and the educational system. Due to the nature of children, who enjoy play and entertainment, the use of conventional learning methods will result in students not learning in an effective way. Particularly when using computer games as training tools in educational activities, games-based learning system assist students in learning in a fun way (Soylucicek, S., 2012).

Game based learning is often defined as a learning approach that uses game design elements and mechanics in non-game contexts, such as education and training. According to Dicheva et al. (2015), game-based learning can be characterized by four key components: game context, game mechanics, game narrative, and game technology. Game context refers to the game world and its rules, while game mechanics are the actions and interactions that players engage in within the game. Game narrative refers to the storyline and characters of the game, and game technology includes the tools and platforms used to develop and deliver the game. According to Hsin-Yuan Huang. D. & Soman. D. A. (2013), education systems with game-based learning elements can offer students a creative and adaptable environment, which makes it easier for them to learn new things. Learning processes and learning methods that incorporate game elements can help students mind grow as well as increase their interest in learning things like spelling, counting, and reading (Sayed Yusoff B Syed Hussain, et al., 2013).

One study by Boyle et al. (2016) investigated the effectiveness of game-based learning compared to traditional teaching methods. It showed that students who received game based instruction had better learning outcomes and retention compared to those who received traditional instruction. Similarly, another study by

Tsekleves et al. (2014) explored the use of game based learning in medical education. The study found that game-based learning was effective in improving medical students’ knowledge and skills, and that it was well-received by the students.

According to a study by Sitzmann et al. (2011), game-based learning can improve learner motivation and engagement, which can ultimately lead to better learning outcomes. Furthermore, a study by Hwang et al. (2019) investigated the use of a game-based learning platform in a college-level computer programming course. The results showed that students who used the platform had higher motivation and better learning outcomes compared to those who received traditional instruction. Similarly, in a study by Hainey et al. (2016), it was found that game-based learning can lead to higher levels of enjoyment and interest in learning, which can translate into increased knowledge retention.

2.1 Game Interface Design

Game interface design is an important aspect of game development, as it can impact the user experience and ultimately affect the success of the game. Yelland and Gilbert (2011) claim that young children, such as early students, can comprehend and concentrate while playing a game if it has a well-designed gameplay and good interface. This show that engaging user interfaces and engaging gameplay in games can help and inspire early students to be more interested in learning process and their teaching lessons.

Game interface design involves the visual and interactive elements of the game that allow players to interact with the game world and its mechanics. According to Gelineau and Tondreau (2013), effective game interface design should prioritize usability, clarity, consistency, and player feedback. Usability refers to the ease of use of the interface, while clarity and consistency refer to the visual and interactive design of the interface. Player feedback refers to the cues and prompts that the game provides to the player to indicate progress, actions, and results.

One of the key benefits of effective game interface design is that it can enhance player engagement and immersion. According to Nacke et al. (2013), game interfaces that are intuitive, responsive, and aesthetically pleasing can contribute to a more immersive and enjoyable player experience. This can lead to increased player retention and satisfaction. Effective game interface design can also improve player performance and learning. According to Chiasson et al. (2012), game interfaces that provide clear and consistent feedback can help players to learn game mechanics and improve their performance.

An object or visual can be said to have been designed with the user interface in mind. It's critical to consider the user's gaming experience. According to Björk and Holopainen (2005), game interfaces should be designed with consideration for the target audience, gameplay mechanics, and player goals. Johan Redstrom, (2006) state that the design itself is crucial as a means of user interaction with the gameplay. Also, SoyLucicek, S, (2011) explain the process of playing when using a good visual interface can help students respond emotionally quickly, draw them in, and keep them interested. Meanwhile, the quality of games interface design will instruct and draw students’ attention as it plays out (Fengfeng Ke, Kui Xie and Ying Xie, 2016).

3.0 NON-EMPIRICAL METHOD

A non-empirical method is a method of research or inquiry that does not rely on the collection and analysis of empirical data. Non-empirical methodology will be used in this study because it will enable the collection of data for this writing. This non-empirical method is frequently used to obtain results without going through a formal process of data collection and analysis. Findings from non-empirical methods are derived from the process of individual observation, reflection on current affairs, and/or the authority of or experience. As a result, this non-empirical method will be used in this study's research. This is demonstrated in the clear non-empirical method figure in Fig. 1 below.

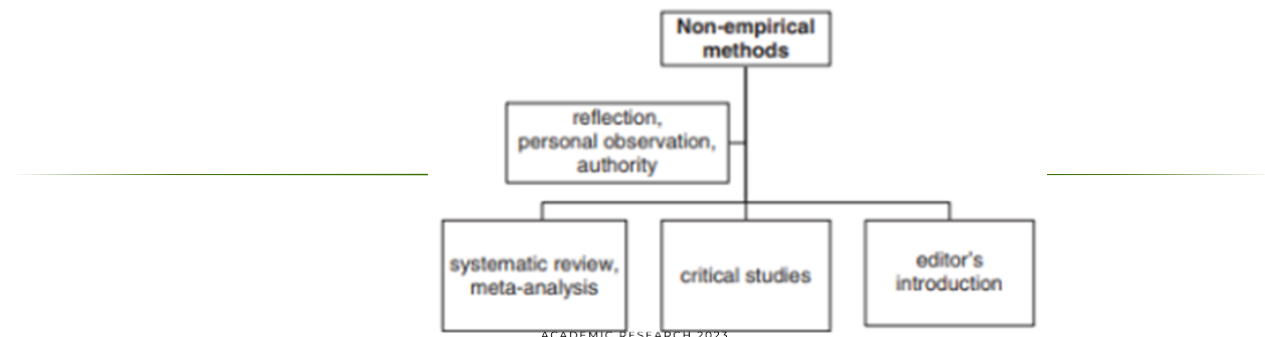


Figure 1: Non-empirical method (Viorela Dan, 2017)

3.1 Game Interface Design Review

The game selected is education game called Belajar Menulis ABC, Suku Kata DAN Perkataan. This mobile game was developed in 2018. This education game created by Syumul Studio is a regional game that emphasizes alphabetic introduction and learning techniques for early students. This game interface design layout makes use of animal pictures and icons to demonstrate something special to attract early students’ attention.

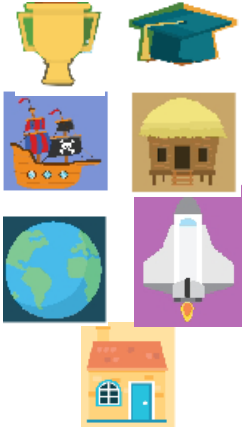


Figure 2: Belajar Menulis ABC, Suku Kata Dan Perkataan

This visual that will be review divided into five elements, namely by appropriate of colors, placement of objects, games layout and appropriate objects. Each of these elements will be reviewed and made observations each based on the educational game that have been selected.

Table 1: Game Interface Design Visual Review

ELEMENT	VISUAL SUBJECT	VISUAL REVIEW
Placement of Objects		Through this education game, can be seen in each interface using a placement object that describes the animal with its placement in an area or place.
Appropriate of Colors		The use of color in this education game can be seen using a lot of pastel or soft colors in each interface. The use of these pastel colors is seen to be used in many tones of color and at the same time brings a slightly different color perspective in this application.

Appropriate Objects		In this education game, the developer chooses to use objects in the form of illustrations to illustrate visually to the user. The objects used are also slightly different.
Games Layout		The use of layout games for this education game interface uses method such as maps or travel. It is arranged to depict the player is having an adventure in the game.

From this review, it shows that this educational game is designed to be targeted for early students, so it is very important to ensure the elements in the interface design of education game can give great results and impact to children who want to play.

4.0 CONCLUSION

As a conclusion, our nation has planned in Malaysia's education planning to use a game-based learning approach to make the educational system more technological and dynamic. This system is thought to be very intriguing for providing early students with a new environment to better understand the learning process. However, game application development process should apply design-related elements to attract the students. Design in this context refers to the process of creating educational games that are tailored to the needs of early learners.

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7 VALIDITY AND RELIABILITY OF LECTURER LEADERSHIP STYLES QUESTIONNAIRE

Muhammad Faizal Kutip muhammad_faizal@gapps.kptm.edu.my Kolej Poly-Tech
MARABangi, Malaysia

Zarizi Ab Rahman zarizi@uitm.edu.my Faculty of Education
Universiti Teknologi MARA

ABSTRACT

In the modern age, leadership is one of the teaching competencies in teaching and learning that influences students' engagement in higher learning. However, leadership styles demonstrated by lecturers may be interpreted differently across different cultures and populations. Hence, there is a need to establish new instrumentation with strong validity and reliability evidence of lecturer leadership styles questionnaire according to the sample size, language, and acceptance of respondents. This study involved undergraduate students of the Faculty of Sport Science, UiTM from the Arau, Shah Alam, Seremban 3, and Jengka campuses. There are 410 undergraduate students involved in this study. There are 44 items of the Lecturer Leadership Styles Questionnaire undergone the process of constructing validity and reliability by employing the Exploratory Factor Analysis (EFA) and Cronbach Alpha model. After going through the process, 37 items of the Lecturer Leadership Styles Questionnaire were accepted and the rest were dropped out. To verify the factor structure of a set of observed variables, Confirmatory Factor Analysis (CFA) was employed in Leadership Styles Questionnaire. CFA analysis depicted the sample data fit the measurement model of Leadership Styles (RMSEA = .050, GFI = .942, AGFI = .917, TLI = .983, NFI = .969). In a nutshell, the instruments can be applied by any educational community with the purpose to measure the lecturer leadership styles, therefore to uplift the standard of teaching and learning, and serve as a basis to future researchers who want to expand the knowledge regarding leadership styles.

Lecturer, Leadership styles, Validity, Reliability, Questionnaire

1.0 INTRODUCTION

In the 21st century learning aligned with the Industrial Revolution 4.0, the education system demands students to be hardworking and able to learn independently by utilizing their learning time in an efficient way (Abersek, 2017). The objective is to produce a graduate who has a lot of skills and is ready to face challenges and be an employable graduate (Mustapha, 2017). Soft skills such as communication, interpersonal, and problem-solving skills are the skill sets that employers are looking for, besides having excellent academic achievement (Nurita, Shaharudin & Ainon, 2004). Most students obtain some soft skills while learning in the lecture session. To obtain those kinds of skills, the proper leadership styles of lecturers are very significant. Ramsden (1992) emphasized that good teaching is to make assumptions about what and how students learn in the classroom. As everyone knows, teaching is a noble job and it is not easy to be a good lecturer. The ultimate objective of their job is to educate and guide communities, especially students.

To measure leadership styles among lecturers, the selection of appropriate instrumentation is essential. A lot of instruments have been introduced by academic scholars to examine the leadership styles among lecturers and student engagement in the classroom. For instance, the Teaching Leadership Style Scale (TLSS) by Tsai (2017) was used to measure the leadership styles of teachers in Macau. In another setting, the Multifactor Leadership Questionnaire (MLQ) was developed by Bass and Avolio (1992) to measure teacher leadership of teachers in Kathmandu, Nepal. In Malaysia, instrumentation has been developed by Afifah *et al.* (2005) with the purpose is to measure the leadership styles of lecturers in UTHM Technical and Vocational Training (TVeT).

There are many instruments to measure leadership styles among lecturers. However, the existing instruments are readily used as they will save time and resources, but they may not be readily available in terms of the language used for targeted respondents. Furthermore, improper choice of measurement scales resulted in getting inaccurate data. The wrong selection of instrumentation may compromise the research's internal validity. The problem that emerged in this study is the appropriateness of existing instrumentation only for particular populations, in terms of culture and language used. The important point is, there is a lack of research discussing lecturer leadership styles in Malaysia. Hence, there is a need to establish new instrumentation with strong validity and reliability evidence of lecturer leadership styles according to the sample size, language, and acceptance of respondents.

2.0 LITERATURE REVIEW

There are so many instruments to measure lecturer leadership styles in the classroom. All the instrumentations are only applicable to their respective populations and settings. Thus, the process of instrument adaptation of lecturer leadership styles is essential to guarantee the validity and reliability of this study. In this study, the lecturer's leadership styles include democratic, autocratic, and laissez-faire leadership styles.

2.1 Democratic Leadership Style

For leadership style instrument adaptation, there are several models developed by past researchers. In the Malaysian context, Lecturer Leadership Styles Questionnaire was developed by Afifah *et al.* (2015) purposely to measure the leadership styles used by lecturers during teaching and learning sessions in the classroom among Technical and Vocational students at University Tun Hussein Onn Malaysia. This study revealed that the leadership style preferred by students was the democratic leadership style of teaching and learning. This is because with the democratic leadership approach those lecturers were able to establish an atmosphere of shared responsibility with students and also invite students to participate in all activities in the classroom. In Croatia setting, as a whole, a high democratic leadership style in the classroom has been demonstrated as it is influenced by democratic practice within Croatian society (Kolak, 2010).

2.2 Autocratic Leadership Style

In the tertiary education setting, for instance, in Estonia, the autocratic leadership style is highly practiced because it promotes cognitive skills among students (Uibu & Kikas, 2014). However, the autocratic leadership style demonstrated by lecturers is limited. But on the other hand, some studies have examined the autocratic leadership styles practiced amongst educators, for example, the relationship between autocratic leadership styles by educators in United States public schools (Lunenburg, 2010). The result depicted that there is a negative relationship of having autocratic leadership styles to school climate, which the factors such as student engagement, teacher morale, and parental involvement. In a similar result, the study by Khan *et al.*, (2015) examine the autocratic lecturer leadership styles on student satisfaction in a university in Pakistan, and found a negative association, while transformational leadership was positively associated with the outcomes. However, there is still a lack of studies conducted in Malaysia that have discussed the relationship between autocratic leadership styles towards students' engagement in the classroom in a tertiary education setting.

2.3 Laissez-Faire Leadership Styles

There is also lack of studies discussed regarding the effects of laissez-faire leadership in education settings, whether it's from Malaysia or another country. However, there is one study found that laissez-faire leadership was negatively related to student engagement in secondary schools in the United States (Waldrip & Fisher, 2000). This study recommends that a lack of guidance or direction from educators leads to disengagement and poor performance among students and teachers. Other studies from Greece (Tsiarta *et al.*, (2017), the study found that negative association between laissez-faire leadership demonstrated by the lecturers to students' level of motivation and academic achievement. As a result, there is still a lack of studies discussing the laissez-faire leadership styles in Malaysia's education setting.

2.4 The Instrument Adaptation and Development of Lecturer Leadership Styles Questionnaire

There are limited findings of questionnaire adaptation and development process to ensure the validity and reliability of the lecturer leadership styles questionnaire. However, there is still some researcher who adapt and develop the instrumentation in general, which can also use to develop a questionnaire that measures lecturer leadership styles. For instance, Hinkin (1995) outlined the seven-step process for questionnaire development; (1) defining the construct, (2) item generation, (3) content validity, (4) pilot testing, (5) item analysis, (6) reliability and validity; and (7) finalizing the instrument. On other hand, DeVellis (2017) proposed a quite similar

Table 1: EFA for Lecturer Leadership Styles

Lecturer Leadership Styles (LLS)	Factor 1	Factor 2	Factor 3
DEMOCRATIC			
DL14 - Always provide opportunities for students to evaluate teaching and learning systems (P&P)	.895		
DL13 - Give fair decisions to the students	.871		
DL6 - Put suggestions given by us into actions	.859		
DL10- Encourage the students in making decisions	.857		
DL16 - Help students accept responsibility for completing their work	.853		
DL11 - Provide support to students under any circumstances	.852		
DL17 - Believe that students are competent in completing the task	.849		
DL12 - Collaborate with students for success in a project	.847		
DL5 - Approachable	.841		
DL15 - Implement two-way communication with their students	.839		
DL9 - Receive opinions from students	.834		
DL18 - Give assignments and monitor progress	.833		
DL4 - Lecturers are friendly	.814		
DL7 - Lecturers treat us equally	.777		
DL2 - Lecturers let us do our work in the way we think best	.759		
DL3 - Lecturers will assign us a task, and then trust us to handle it	.747		
DL1 - Lecturers like to encourage our initiatives	.745		
AL8 - Students must be given rewards or punishments to motivate them to achieve course objectives	.687		
LAISSEZ-FAIRE			
LF2 - Lecturers are absent when needed in the classroom		.934	
LF4 - Lecturers delay responding to urgent questions		.932	
LF8 - Lecturers fail to handle the students' problems until they become serious		.931	
LF3 - Lecturers avoid making decisions in the classroom		.925	
LF9 - Lecturers wait for things to go wrong before taking action		.891	
LF13 - Lecturers never ask for feedback from us		.882	
LF11 - Lecturers give us assignments without monitoring our progress		.871	
LF14 - When I ask my lecturers, they ask me to		.870	

ask another person or do it on our own

LF7 - Lecturers are lacking in giving clear instructions in which they do not explain the tasks given .866

LF1 - Lecturers avoid getting involved when important issues from students arise .862

AL12 - Lecturers do not allow us to contact him/her outside the classroom period .817

AL11 - Lecturers do not allow us to enter the classroom if we are late .739

LF10- In most situations, students prefer little input from the lecturer .699

AUTOCRATIC

LF6 - Lecturers give us complete freedom in problem-solving .583

LF5 - Lecturers give us complete freedom in decision making .544

AL10 - Lecturers want us to submit the assignments according to the due date .531

LF12 - Lecturers put trust in their students to accomplish the assignment .528

AL7 - Lecturers supervise closely each task given to us .452

AL9 - The lecturer is the absolute assessor of the achievement of students .426

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

process that includes (1) identifying the source instrument, (2) content validity, (3) pilot testing, (4) item analysis, (5) reliability and validity; and (6) finalizing the adapted instrument.

3.0 METHOD

3.1 Population and sampling

The population in this study is undergraduate students from the Faculty of Sports Science and Recreation, Universiti Teknologi MARA. Yanik (2018) stated that any kind of physical activity that involves student engagement will have a great contribution to the education system. The great sense of having this population is, mostly, they are always dealing with the hands-on assessment which leads to engagement with their lecturer and their peers as well. By considering the suggestion of renowned scholars such as Cohen (1992), Hair (2010), and Tabachnick and Fidell (2007), the researcher decided to select 410 respondents to eliminate the outliers, the incomplete responses from respondents, and the respondents who are withdrawn from this study. The researcher has chosen undergraduate students from the Faculty of Sports Science and Recreation, UiTM as the population and sampling for this study.

3.2 Data Collection and Analysis

There are several procedures that the researcher has conducted to obtain data for this study. Firstly, a set of questionnaires is created which is adopted from sources and goes through the instrumentation development process. Then, the researcher asked permission from the Head of the Program at each campus for data collection purposes. Next, the researcher met several lecturers at the respective campuses and explained the data collection procedure to them. To ensure the respondents understand the question on each item, the questionnaire is conducted by using simple language and the usage of technical jargon was avoided. Moreover, each lecturer debriefed all participants in detail. Then, the questionnaire was distributed to all respondents to answer. The responses will be kept confidential and only to be used for this study. The respondents will be given a couple of minutes during the session to complete the questionnaire. After that, the researcher collected all answers and analyzed the data by using IBM Statistical Package for Social Science (SPSS) Version 26. All of the data has gone through

a cleaning process to remove incomplete data and outliers to ensure the analysis procedure will give a clear result. In this study, statistical data analysis was used to analyze the data; namely Statistical Package of Social Science (SPSS) version 26.0 SPSS an Analysis Moment of Structure (AMOS) version 24 is a tool of data analysis that provides a large array of programs for univariate and multivariate statistical analysis.

4.0 FINDINGS

In the first place, the EFA was used to verify the number of components of the lecturer leadership styles instrument and the arrangement of the item-factor loadings. EFA was run by using 410 data, which is more than enough as recommended by Osborne (2014). For factor loadings, the minimum suppressed factor should be above 0.3 (Joseph, William, Barry & Rolph, 2014). The table below presents the retained items of three constructs of lecturer leadership styles; autocratic leadership, democratic leadership, and laissez-faire leadership after conducting an exploratory factor analysis. To identify whether the data is appropriate, the researcher is looking at the correlation coefficient matrix 0.3 as suggested by Tabachnick and Fidell (1996). Seven items were eliminated during EFA analysis due to factor loading less than 0.3 and the redundancy of factor loadings. The list of eliminated items was DL8, AL1, AL2, AL3, AL4, AL5, and AL6. Next, these items were regrouped into a new group which is democratic leadership (component one) laissez-faire leadership (component two), and autocratic leadership (component three). The new constructs and their respective items are stated below:

Table 1: EFA for Lecturer Leadership Styles

The reliability of a particular instrument is focusing on the consistency and dependability of the scores (McMillan, 2007). Cronbach Alpha has been used to identify the reliability coefficient consistency of questionnaire items (Ahmad Hashim, 2014). An alpha index value of .60 or above is acceptable for the instrumentation scale which has 10 items or more (Pallant, 2001). The table below shows the reliability analysis for the three constructs which are democratic, autocratic, and laissez-faire.

Table 2: Reliability Analysis for Democratic, Autocratic, and Laissez-Faire Leadership Styles

Construct	Democrat ic	Autocra tic	Laissez- Faire
Cronbach alpha (α)	.993	.918	.940

After EFA was conducted, all of the data were analyzed by using Analysis of a Moment Structure (AMOS) version 24. Confirmatory Factor Analysis (CFA) was employed towards 37 items of lecturer leadership styles. Figure 1 shows the unfit model of Lecturer Leadership Styles. Based on the figure above, the fitness index was unfit (RMSEA = .086, GFI = .741, AGFI = .706, TLI = .893, NFI = .861). Furthermore, the factor loading of several items did not surpass 0.50. Therefore, there is a must to have a modification to ensure that the model is fit. Any item less than 0.50 will be dropped and examined by the modification index to fix the model based on absolute fit, incremental fit, and parsimonious fit.

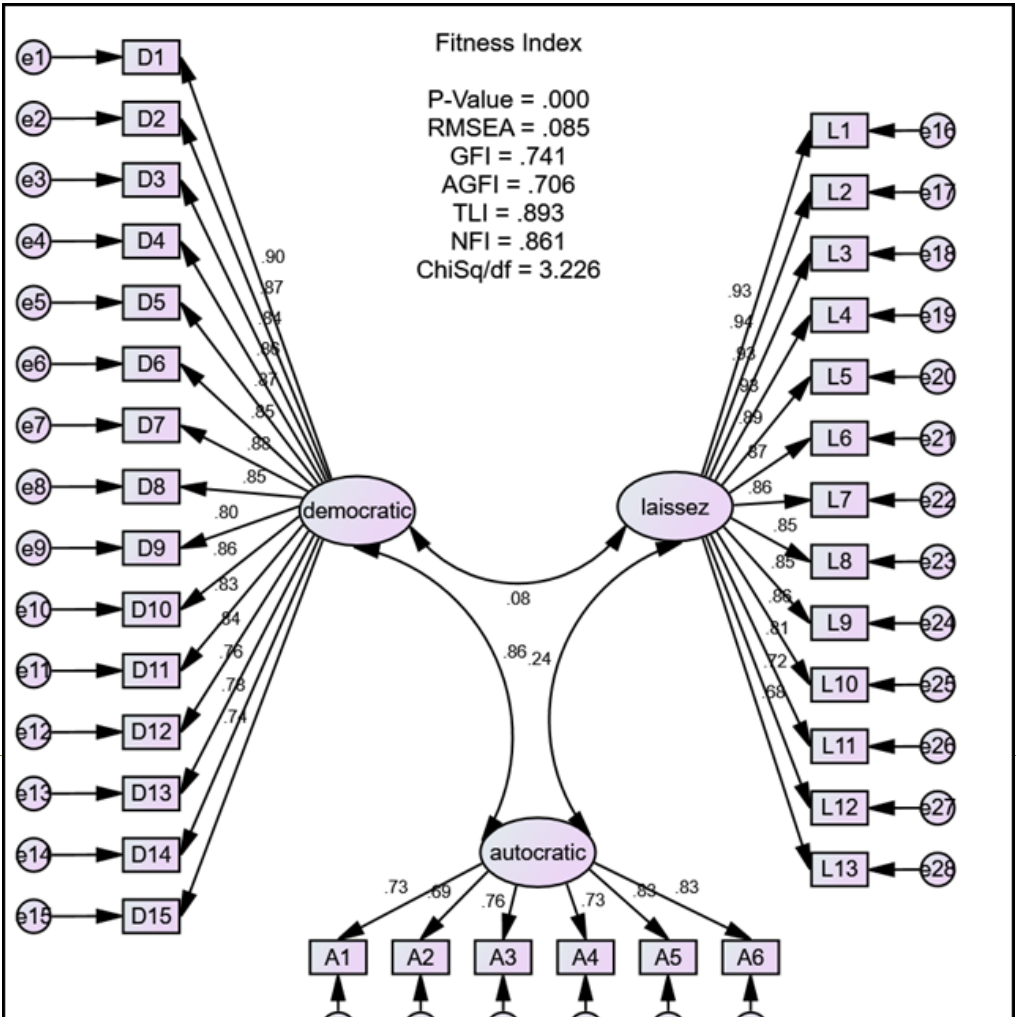


Figure 1: First Model of Lecturer Leadership Styles

Figure 2 showed 22 items of lecturer leadership styles such as D2, D3, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, L4, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, A1, A2, and A3 have been dropped. These items were dropped as the factor loading for the items is less than 0.50 and does not fit the measurement model.

The figure also showed 15 items of lecturer leadership styles such as D1, D4, D5, D6, D7, D8, L2, L3, L5, L6, L7, A4, A5, and A6 remains, as the factor loading for the listed items exceeds 0.50 and fit the measurement model. The listed constructs are democratic, laissez-faire, and autocratic leadership styles.

Based on the model, the sample data fit the measurement model (RMSEA = .050, GFI = .942, AGFI = .917, TLI = .983, NFI = .969).

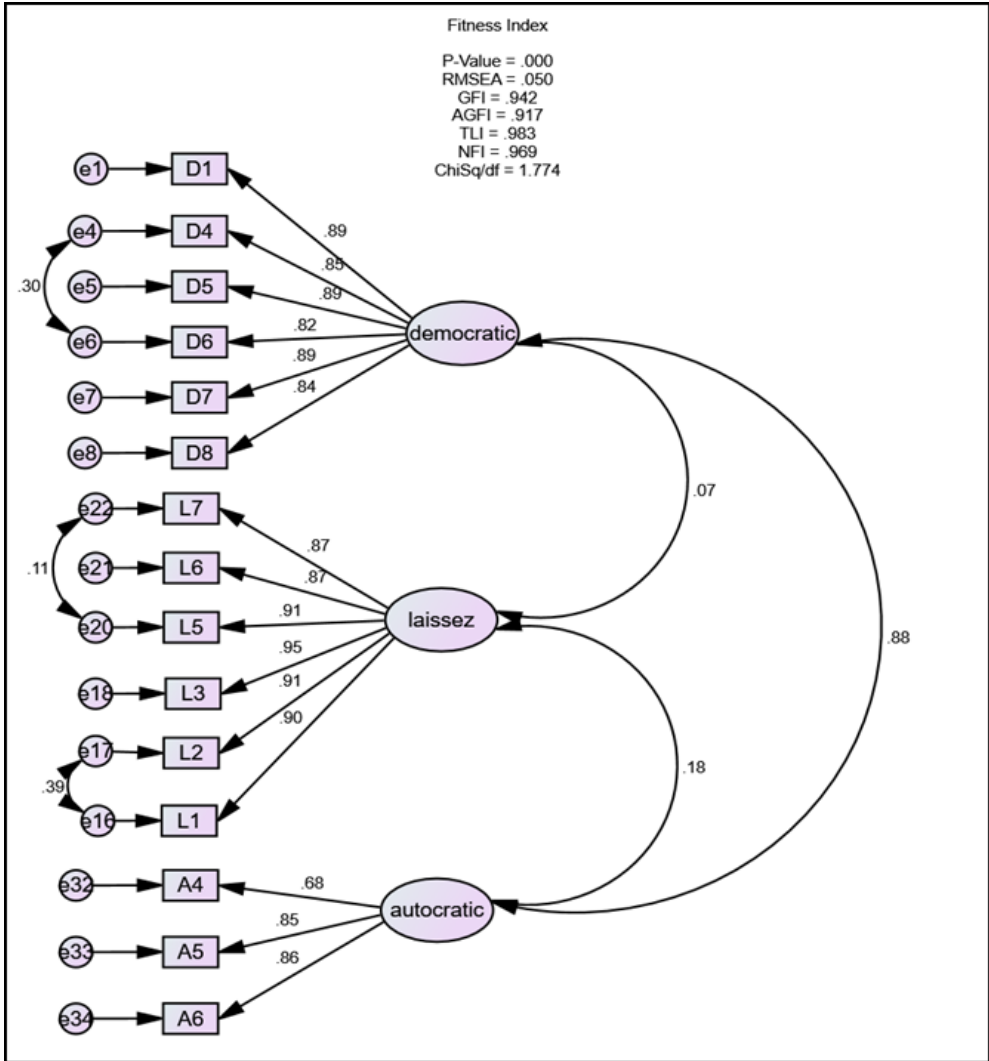


Figure 2: Reliability Analysis of Lecturer Leadership Styles after CFA

5.0 CONCLUSION

In a nutshell, this instrument has fulfilled the requirements of strong validity and reliability evidence and can be employed to analyze the data and to draw a conclusion based on data analysis done in this study. The instrument can be used by anyone who has a common population and setting, as this instrument is suitable for undergraduate students from the university for any future study that is related to the topic or issue, especially in a similar population. As suggested by previous scholars (Miller, 2005; Baumgartner & Jackson, 1998), any instrument should be valid according to the population setting for it to have meaningful data. Hence, the questionnaire is valid and

reliable to meet the requirement of data collection to ensure the results from this study are precise.

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8 MORE THAN JUST ENGAGING? TIKTOK AS AN EFFECTIVE EDUCATIONAL TOOL

Hasnah Am Abdul Aziz & Siti Zaiton Mohd Dali hasnah_aaziz@gapps.kptm.edu.my;
sitizaiton@gapps.kptm.edu.my Kolej Poly Tech MARA Alor Setar
Alor Setar, Kedah, Malaysia

ABSTRACT

TikTok, a video-sharing social media platform, has rapidly become one of the most popular social networking sites in recent years, with over 1 billion monthly active users, making it an effective and engaging tool for learning. With its easy-to-use interface, short-form videos, and viral content, TikTok provides an innovative way for educators to engage and educate students. This paper aims to investigate the usefulness of TikTok as an effective educational tool by creating a fun and interactive learning environment. TikTok is an ideal platform for effective and engaging learning for several reasons such as allows students to be creative and use their imagination to create unique, meaningful content for variety of subjects such as science, math, social studies, and language arts. Furthermore, TikTok encourages students to communicate and collaborate with their peers, which enhances their learning experience. Several studies have shown that TikTok can be a valuable learning tool, improving students' engagement, motivation, and overall learning experience. Despite its popularity, Tiktok use in education also raises concerns and challenges that need to be addressed by the scholars. This study was conducted using a purposeful sampling of KPTMAS students, with data collected through an online survey administered via Google Form. The findings revealed that high acceptance and usefulness of TikTok as an educational tool among KPTMAS students. In conclusion, TikTok has proven to be an effective and efficient platform for learning. Its unique features provide an innovative way for educators to engage students and teach valuable skills. As social media platforms continue to influence the way people consume information, TikTok could be an important tool for educators to create a more engaging and effective learning experience.

Keywords: TikTok, learning tool, engaging, online learning, social media

1.0 INTRODUCTION

The COVID-19 endemic has had a profound impact on education systems around the world. In order to prevent the spread of the virus, many schools and universities have transitioned to online learning that allowed for greater flexibility and access to education, especially for those who may not have been able to attend classes in person (Ali, 2020). However, the transition to online learning has also brought many challenges. One of the biggest challenges is unequal access to technology and reliable internet connections, particularly in low-income areas and developing countries. This has widened the digital divide and prevented some students from participating in online classes, putting them at a disadvantage.

Students who learn online, however, miss out on several aspects of classroom-based learning, such as social connections in a purpose-built learning environment. In addition, the traditional classroom is conducive to social connections, where students can interact with peers and instructors, share their ideas, and collaborate on assignments. In contrast, online learner study from the comfort of their homes or wherever they have access to a computer and the internet. Students may lack the sense of belonging to a community, and isolated from peers and instructors, which can negatively impact their motivation, engagement, and learning outcomes (Thamri et al, 2022). Therefore, social media applications have emerged as one of the taken for granted ways for people to interact and has been adopted in the learning environment (Jacobs, Pan & Ho, 2022; Escamilla-Fajardo, et al., 2021; Hayes, et al., 2020). In the past ten years, numerous social media platforms have experienced incredible growth in popularity, including Twitter, Instagram, and TikTok. In this study, researchers focused on the utilization of TikTok as a learning tool that becoming one of the most popular social media apps globally.

In 2016, ByteDance, a Chinese technology company, introduced TikTok, which has experienced an unparalleled surge in popularity. Boasting more than one billion active users

globally, the app owes its success to its distinctive algorithm that recommends personalized content tailored to individual users' preferences. Additionally, its user-friendly interface and innovative editing features contribute to its widespread appeal. Guarda et al (2021) said TikTok's success credited to its ability to create a sense of community among its users, with many users participating in challenges and trends that have become viral sensations. TikTok's meteoric rise has not gone unnoticed by researchers, who have begun to investigate the app's impact on society and culture (Yang, 2022; Zhang, 2021; Zuo & Wang, 2019). According to Wang and Lin (2021) TikTok's short-form videos can be used to deliver educational content in an interactive way, catering to the needs of today's learners. Teachers and educators have begun to leverage TikTok to create educational content, such as quick tutorials, fun facts, and interactive challenges, to engage students and promote learning.

Despite its popularity, scholars recognized that TikTok's widespread use in education raises concerns and presents challenges that must be acknowledged and resolved. One of the main concerns with using TikTok in education is the potential for inappropriate content as TikTok's algorithmic content recommendation system may expose students to content that is not suitable for their age or educational level that may negatively impact students' mental health and well-being (Chen and Chen, 2021). Another issue related to using TikTok in education is the potential for cyberbullying. Kowalski et al. (2019) suggested educators need to take measures to prevent cyberbullying and ensure that students feel safe and supported in the classroom by monitoring their online activities to ensure it align with the educational objectives and standards of the school or institution. Furthermore, there is a concern about the potential distractions caused by TikTok in the classroom that takes away from valuable learning time; which require educators to strike a balance between using TikTok as a tool for learning and minimizing by setting clear guidelines and expectations for students and monitoring their use of the app (Clarissa & Lobo, 2022). Apart from its entertainment and education values, TikTok has faced regulatory challenges and legal issues in several countries such as in India, Indonesia and Pakistan due to privacy concerns, inappropriate content, and safety issues; it is becoming a source of concern for parents (Wang, 2020). Although, TikTok has various features aligned to learning, TikTok's application within the education field is still largely unexplored. Therefore, this paper attempts to investigate the usefulness of TikTok's as effective learning tool.

2.0 LITERATURE REVIEW

2.1 TikTok Application in Education

TikTok was released in China and after three months of it released, it had over 45 million downloads, making it the most downloaded app, surpassing Facebook and WhatsApp (Adnan, Ramli & Ismail, 2021). Hence, Tiktok emergence as a potential educational tool has garnered significant attention and sparked discussions among scholars and educators. According to Syah et al. (2020), TikTok can be used as a modern teaching tool. TikTok is now an audio-visual medium that has been transformed into engaging learning content that was previously abstract and challenging to visualise in reality. Because to its unique and intriguing features, which include offering users access to learning materials, it will also inspire pupils to learn. Also, students are primarily from generation Z, and TikTok is compatible with their level of maturity, mental health, and prior experience (Rach & Lounis, 2020). Escamilla-Fajardo et al. (2021) claimed that TikTok inspires pupils, produces an engaging teaching environment, and fosters qualities like creativity and curiosity. The authors suggested TikTok as teaching or learning tool for sports studies because of its effective instructional capacity and compatibility for expressive and artistic content through music and movement (Escamilla-Fajardo et al., 2021). In order to promote the public transmission of science with a system thinking approach, Hayes et al. (2020) used TikTok to create 15 – 60 second extended chemistry outreach educational movies that were entertaining, intriguing, and engaging. The author discovered that TikTok may be utilised to increase both the public's desire to understand how chemistry is entertaining, it is a part of our daily lives, as well as to enhance the interest of students in chemistry and technology. Hence, #LearnOnTikTok and #DidYouKnow, are two hashtag initiatives and launched by TikTok to boost the movement of online learning; collaborated with more than 800 content creators including experts, real world skill creators, and educators (Taha, 2020). While TikTok is perceived to be more geared towards dancing and art material,

numerous subjects began to emerge on the platform, encouraging creativity and memes in the videos, making TikTok learning videos more fascinating and appealing (Putri, 2021). The TikTok community's feedback showed that viewers liked the teaching videos and are engaging with it in a recognizable way; indeed, TikTok proved able to attract people of different ages, interests, and levels of education (Taha, 2021).

3.0 METHODOLOGY

The methodology employed in this study involves the purposeful sampling of KPTMAS students, with data collected through an online survey administered via Google Form. The survey comprises three parts, with Part A gathering demographic information, Part B exploring students' experiences with TikTok, and Part C examining students' perceptions on the use of TikTok in education. The collected data analysed using Microsoft office for close-ended questions and thematic analysis for open-ended questions. The purposeful sampling technique allows researchers to deliberately select participants with specific characteristics, ensuring that the data collected is relevant to the research objective. The online survey is a convenient and efficient method of data collection, particularly in times when face-to-face interactions may be limited. The use of both Microsoft office and thematic analysis methods provides a comprehensive understanding of the data collected and enables the researchers to draw valid and reliable conclusions from their findings.

4.0 RESULT AND FINDINGS

4.1 Students' Experience of Using Tik Tok

1. Are you a TikTok application user? :

140 responses

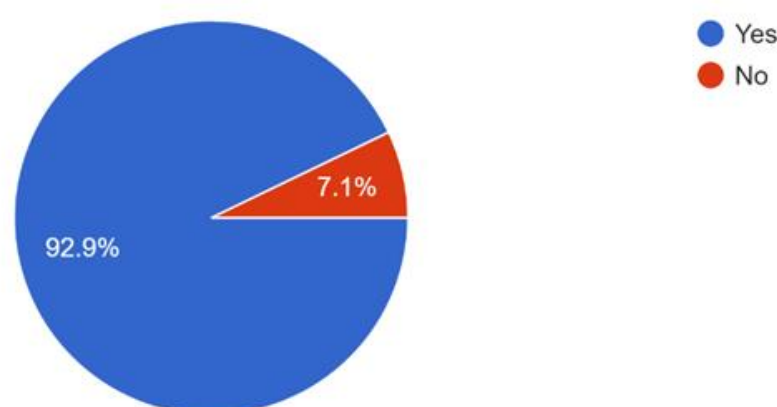


Figure 1: The percentage of Tiktok Application Users

The results revealed that a significant majority, comprising 92.2% of the respondents confirmed their usage of the TikTok app. In contrast, a smaller proportion of 7.1% indicated that they were not users of the application. These findings suggest that TikTok has predominantly users among KPTMAS students.

2. Have you tried creating your own TikTok videos?

140 responses

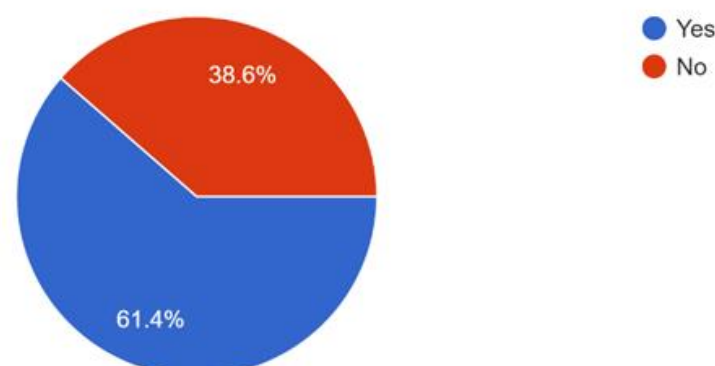


Figure 2: The Percentage of Users who generate their own Tiktok Video

The results showed that 61.4% of the respondents had indeed tried their hand at creating their own TikTok video. On the other hand, 38.6% of the respondents reported having not given it a try. These findings suggest that a significant proportion of users have engaged in the process of creating their own videos on the platform, with a slightly higher participation rate among female students. This indicates the popularity and appeal of content creation on TikTok across genders.

For an open-ended “What difficulties did you encounter when using TikTok?”.

Responses were categorised into several subthemes namely social engagement, data consume and network.

The issue of social engagement relates with the challenges to get their videos to appear on the For You Page (FYP), which is crucial for gaining visibility and reaching a wider audience. Respondents often felt like TikTok is a competitive space, and the algorithm seemed unpredictable at times. Additionally, Respondents admitted that their poor editing skills to create visually appealing and engaging videos make it hard to adapt to the ever-changing trends and engagement periods on TikTok.

Another issue was the amount of data TikTok consumed, which sometimes put a strain on their mobile data plan. Respondents struggled with an unstable network connection, leading to laggy video playback and difficulty in uploading content smoothly. Furthermore, the amount of data TikTok consumes can vary depending on several factors, including the duration and quality of videos watched or uploaded, as well as the frequency of app usage.

4. 2 Students’ Perceptions On the Use of Tiktok

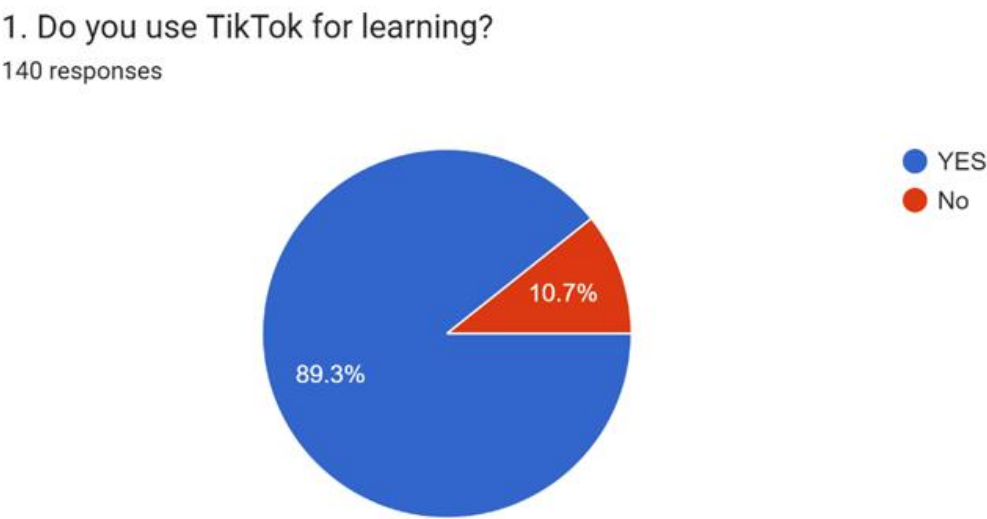


Figure 3: The percentage of users used Tiktok for learning purposes

The results revealed that 89.3% of students using TikTok as a learning tool. They found it to be an engaging platform that allowed them to access educational content in an innovative and entertaining manner. On the other hand, a smaller proportion, 10.7%, responded negatively and stated that they did not use TikTok for learning purposes. These students might prefer more traditional methods or find the platform distracting from their academic goals. Overall, the survey suggests that a significant number of student’s view TikTok as a valuable resource for educational purposes, embracing its potential as the learning tool.

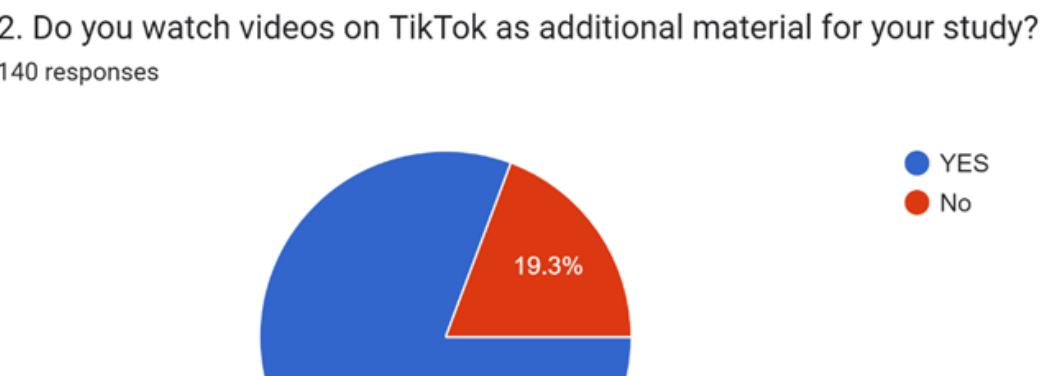


Figure 4: The percentage of users used Tiktok as additional material for their study

This survey found that 80.7% of respondents watching videos on TikTok as additional materials for their studies; that provided them with unique and concise educational content, enabling them to explore various subjects in an accessible and engaging way. Conversely, a smaller percentage of students, 19.3%, reported not utilizing TikTok for learning purposes. This survey highlights that a significant proportion of students perceive TikTok as a valuable source of supplemental materials for their studies, capitalizing on its potential for educational enrichment.

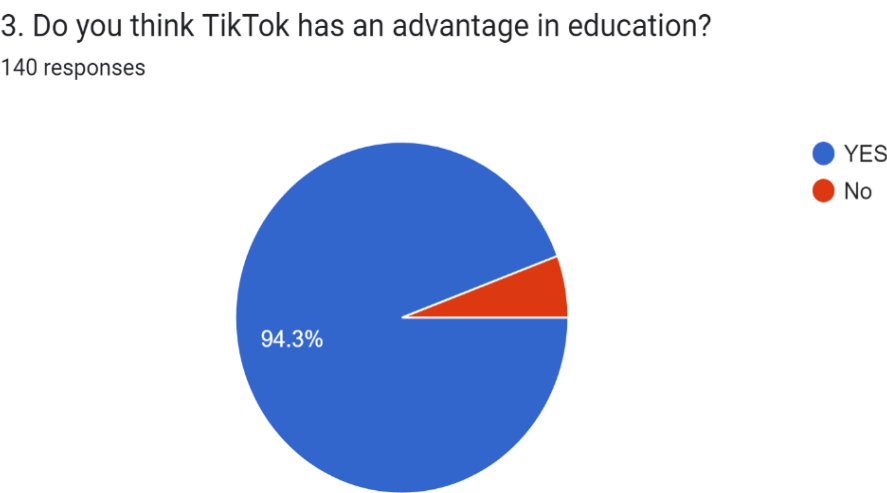


Figure 5: The Users perception towards advantages of Tiktok in education

Given the statistics from the survey, where 94.3% of respondents affirmed using TikTok for learning purposes, it suggests that TikTok holds an advantage in education. The overwhelming majority of students who utilize TikTok for learning purposes recognize its benefits and value in their educational journey. TikTok's unique format, combining short videos with audio visual elements, has the potential to make learning more engaging, interactive, and accessible to a wide audience. The platform's vast user base and diverse content creators also contribute to its advantage in education, as it offers a wide range of educational topics and perspectives. However, it is important to note that the remaining 5.7% who do not use TikTok for learning might have their own preferences or reasons for not utilizing the platform in an educational context.

For an open-ended question "What are the benefits of Tiktok for learning?".

Firstly, the diverse content on TikTok can contribute to increasing understanding, knowledge, and even English proficiency. Users can find educational videos, tutorials, and informative content on various subjects, allowing them to learn in a bite-sized and visually engaging format.

Additionally, TikTok's fun and attractive video format makes learning entertaining, capturing

attention and making it easier to remember the content. The platform's short-form videos are often concise and packed with valuable information, which can be more digestible and appealing to learners.

Furthermore, TikTok has the potential to inspire and motivate users towards their studies and future careers. Engaging with educational content on TikTok can spark curiosity and enthusiasm, encouraging individuals to explore further and pursue their academic or professional aspirations.

5.0 CONCLUSION

In conclusion, TikTok has become increasingly popular in recent years, with many users worldwide. Its success is due to its ability to engage with its audience through engaging and creative content. However, the app has proven to be more than a mindless entertainment source. It also has the potential to be used as a learning tool (Clarissa & Lobo, 2022; Adnan, Ramli & Ismail, 2021; Hayes et al, 2020). Content creators use the platform to create short videos that educate others on a wide range of topics, from science, math etc, cooking, and even self-help tips. This content can be informative, interesting, and even fun to watch.

One of the ways in which TikTok represents a potential for learning is its ability to distil vast amounts of information into easily digestible chunks. Users can create videos that are just 15 seconds in length, perfect for short attention spans. Due to its nature, the platform lends itself well to concise and straightforward explanations, making it an excellent platform for sharing knowledge in a way that resonates with younger people.

Another way in which TikTok remains a potential for learning is through its engagement levels. The platform not only allows users to express their creativity through creative discussions, collaborations, and feedback. Users can comment on videos, tag influencers, and share their thoughts, which opens up opportunities for dialogs and sharing knowledge.

That said, TikTok's potential as a learning tool should not be over-emphasized. Educational content on the platform is still relatively sparse, and most content is still entertainment-oriented. This lack of structured learning resources implies that the effectiveness of such content in facilitation of learning or academic pursuit is still unclear. TikTok may shine on simplified information, and such information may get mis-circulated, leading to misinterpretation or lack of sufficient knowledge on a topic. However, the lack of a centralized educational structure implies that its potential, especially in academic learning or research, should still be appropriately monitored. Ultimately, TikTok remains a versatile social media tool that has much to offer in the realm of creative communication and education.

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9 A REVIEW OF THE ACCEPTANCE ON LEARNING MANAGEMENT

10SYSTEM (LMS) USING UNIFIED THEORY ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT)

Muhammad Rifdi Shah Bin Che Dawud Adli rifdishah@gapps.kptm.edu.my
Kolej Poly-Tech MARA Alor Setar Alor Setar, Kedah

ABSTRACT

Technology advancement in world nowadays have greatly evolves especially in education trends. The advent of technology has revolutionized the way we approach education, with the rise of digital tools and platforms aimed at enhancing the learning experience. One such technology is the Learning Management System (LMS), which is a software application designed to support and manage online learning. LMS has become increasingly popular in higher education institutions due to its ability to provide a centralized platform for course materials, assignments, and communication. However, despite the benefits that LMS can offer, its adoption by students is not always guaranteed. This study aims to explore the acceptance of LMS among students in a Malaysian higher education institution using the Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical framework. One of the key objectives of the study is to identify the factors that influence students' acceptance of LMS. The UTAUT model proposes four key factors that affect the behavioural intention to use technology, including performance expectancy, effort expectancy, social influence, and facilitating conditions. The study seeks to evaluate these factors in the context of LMS adoption by students. The research methodology involves a quantitative survey approach, where a questionnaire will be administered to a sample of undergraduate students. The survey will collect data on the students' demographic information, their use of LMS, and their perceptions of the UTAUT factors. The collected data will be analysed using statistical tools, including descriptive statistics and regression analysis. The results of this study may have implications for higher education institutions seeking to improve the adoption of LMS among students. Understanding the factors that influence students' acceptance of LMS can inform the development of strategies aimed at enhancing the use of technology in education. Additionally, the study may contribute to the broader field of technology acceptance in the context of education, providing insights for future research in this area.

Keywords: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, UTAUT, LMS

1.0 INTRODUCTION

The influence of the COVID-19 virus on the education sector has been widely studied. A report by UNESCO (2020) found that over 1.5 billion students were affected by school closures, and the sudden shift to online learning presented numerous challenges for both educators and students. The digital divide has been identified as one of the primary issues in online learning, with many students lacking access to technology and high-speed internet at home (Chandra et al., 2020). This has resulted in unequal access to education and exacerbated existing achievement gaps. Additionally, research has shown that student engagement and motivation can be a challenge in online learning environments, with the lack of face-to-face interaction leading to feelings of isolation and disconnection (Namboodiri, 2022). The importance of teacher training and support for online learning has also been highlighted, with many educators struggling to adapt to the new mode of instruction (Geverola et al., 2022). Thus, concerns have been raised about the quality of online learning programs and the need for rigorous assessments and evaluations to ensure that they meet the same standards as traditional in-person education.

Malaysian educational institution has implemented a Learning Management System (LMS) in response to the COVID-19 pandemic. While online learning can offer flexibility and convenience for students, there are also potential issues that can arise. This section will discuss some of the issues related to Learning Management System (LMS) implementation and their implications for student learning. One issue is limited access to technology. Hazlin (2021) reported that although Malaysia's household Internet penetration rate increased from 87% in 2018 to 90.1% in 2019, there are still numerous reports in the media about students having to climb trees or hills to get better Internet reception, just to be able to participate in

online classes during the Covid-19 pandemic. This can limit their ability to fully participate in online learning and access course materials. Another issue is technical difficulties and system errors. Learning Management System (LMS) platform may experience technical difficulties or system errors that can disrupt online classes, assignments, or assessments (Mahyoob, 2020). This can be frustrating for students and may result in a loss of learning time or incomplete assignments. Furthermore, the issues raised is the lack of engagement and interaction in online learning. Without face-to-face interaction, students may struggle to stay motivated and engaged in their coursework, it was reported that the absence of regular interaction with instructors and peers can lead to a sense of isolation and disconnection from the learning community (Abuhassna et al., 2022).

The UTAUT framework is a widely used model for analysing technology adoption in various contexts, including education. According to Venkatesh et al. (2003), the UTAUT framework consists of four main constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. These constructs are used to explain the factors that influence the intention to use a technology and its subsequent actual use. Recent studies discovered that the UTAUT framework is suitable for assessing the adoption of mobile banking applications (Samartha et al., 2022). Similarly, Learning Management System (LMS) application can be study by UTAUT framework. Considering the growing importance of Learning Management Systems (LMS) in education, this study aims to provide a comprehensive review of the existing literature on the acceptance and usage of LMS using the UTAUT framework. By examining the key factors that influence users' acceptance and usage of LMS, this review seeks to contribute to the understanding of how LMS can be effectively implemented and utilized to enhance user experience and promote adoption. The following sections will provide an overview of the UTAUT model, discuss its application to LMS, and highlight the key findings from previous studies on the acceptance and usage of LMS.

2.0 LITERATURE REVIEW

2.1 Learning Management System (LMS)

Learning Management System (LMS) is a web-based platform that allows instructors and learners to manage learning activities such as course materials, assessments, and communication (Bradley, 2021). LMS has been widely used in various educational contexts, including higher education institutions, to support teaching and learning activities (Aljaloud, 2022). The acceptance of LMS by users is an essential factor that affects the success of its implementation. The purpose of this literature review is to investigate prior research on the adoption of LMSs utilising the Unified Theory Acceptance and Use of Technology (UTAUT) framework.

2.2 Theory Acceptance Model (TAM)

The TAM model has earned attention from vast of researchers around the world, especially those conducting empirical studies, as it pertains to students' behaviour regarding the acceptance of digital technology for academic tasks (Davis et al., 1989). This model is derived from the Theory of Reasoned Action (TRA) model, and it consists of two constructs to predict students' actual behaviour towards technology acceptance. Specifically, the acceptance is studied in terms of its perceived usefulness and ease of use (Venkatesh & Bala, 2008). Perceived ease of use measures the extent to which an individual believes that using technology requires less effort, while perceived usefulness is the degree to which an individual assumes that using technology will improve their performance (Davis et al., 1989). Consequently, whether the individual will carry out actual behaviour, which reflects a positive perceived ease of use and usefulness for using the technology, depends on their acceptable behaviour. Moreover, the perceived ease directly impacts the perceived usefulness, and external variables can affect both these variables, thereby affecting the individual acceptance of the technology.

2.3 Unified Theory Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a widely recognized and influential model that attempts to explain user behaviour towards technology adoption. Introduced by Venkatesh et al. (2003), the UTAUT model seeks to provide a comprehensive framework for understanding the factors that contribute to the acceptance and use of technology, particularly in organizational settings. Since its inception, UTAUT has been widely used and tested in various contexts, and its validity has been demonstrated through extensive

empirical research (Teng et al., 2021). One of the primary contributions of the UTAUT model is its integration of key constructs from several existing models of technology acceptance, such as the Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA) (Granic, 2023). UTAUT integrates four essential aspects thought to impact user behaviour: performance expectancy, effort expectancy, social influence, and enabling circumstances (Venkatesh & Bala, 2008). Performance expectancy refers to the perceived benefits that users believe they will gain from using the technology, while effort expectancy reflects the perceived ease of use of the technology (Wang et al., 2020). Social influence refers to the influence of others on an individual's decision to adopt and use technology, and facilitating conditions refer to the extent to which the organization provides the necessary resources and infrastructure to support technology use.

Since its introduction, the UTAUT model has been subject to extensive empirical testing and validation. Numerous studies have found strong support for the model, with performance expectancy and effort expectancy consistently emerging as the most significant predictors of technology adoption and use (Teng et al., 2021). However, the relative importance of the four constructs can vary depending on the context and the type of technology being studied. One important area of research that has benefited from the UTAUT model is healthcare technology adoption. A review of the literature by Wang et al. (2020) found that UTAUT had been used extensively in studies of technology adoption in healthcare settings, with strong support for the model's predictive ability. Similarly, a study by Gu et al. (2021) found that UTAUT was effective in explaining nurses' adoption of electronic health records.

Another area where UTAUT has been applied is in the context of mobile technology adoption. A study by Abbad (2021) found that performance expectancy, effort expectancy, and social influence were significant predictors of mobile technology adoption among college students, while facilitating conditions did not significantly predict adoption. Similarly, a study by Purwanto et al. (2020) found that performance expectancy and effort expectancy were significant predictors of mobile banking adoption among consumers. Hence, the UTAUT model has emerged as a powerful tool for understanding technology adoption and use in a wide range of contexts (Wang et al., 2020). Its integration of key constructs from multiple existing models, as well as its extensive empirical validation, have contributed to its widespread adoption in both academic and practical settings. As technology continues to play an increasingly significant role in society, the UTAUT model is expected to remain a vital resource for academics and practitioners attempting to understand and enhance technology uptake and usage.

2.4 Performance Expectancy

According to Venkatesh et al. (2003), an individual's adoption of a system is determined by their perception of how it will improve their performance. The study also mentioned that Performance expectancy is rooted in the Technology Acceptance Model (TAM), a widely used theoretical framework for studying the adoption of new technologies. Numerous studies have demonstrated the importance of performance expectancy in predicting technology adoption and use. For example, a meta-analysis by Venkatesh et al. (2003) found that performance expectancy was one of the strongest predictors of user acceptance across a variety of technologies. According to TAM, an individual's intention to use a technology is determined by their perceived usefulness and perceived ease of use. Perceived usefulness is closely related to performance expectancy, as it captures the extent to which a technology is perceived to enhance job performance (Granic, 2023). These models all focus on constructs such as perceived usefulness, extrinsic motivation, job fit, relative advantage, and expectations towards outcome. The UTAUT model proposes that behavioural intention has a direct effect on performance expectancy in the adoption of technology. Studies have demonstrated the effectiveness of performance expectancy in promoting technology adoption, particularly in online platforms (Altalhi, 2021). This study believe that performance expectancy is a critical factor in determining individuals' intention to adopt and use new technologies of LMS. Future research should continue to explore the mechanisms underlying performance expectancy and its interactions with other factors, such as social influence and education organizational culture.

2.5 Effort Expectancy

Effort expectancy has been found to be a critical factor in predicting technology adoption and

use. Several studies have shown that perceived ease of use, of which effort expectancy is a critical component, is a strong predictor of technology acceptance (Davis et al., 1989). Furthermore, some studies have shown that effort expectancy is particularly important in predicting technology adoption among older adults and individuals with lower levels of technology literacy. Effort expectancy is defined as the extent to which a system is perceived as easy to use (Venkatesh et al., 2003). The formation of effort expectancy is based on the similarity between constructs found in various models, such as perceived ease of use, complexity, and ease of use derived from TAM, (Abbad, 2021). The UTAUT model proposes that there is a direct link between behavioural intention and performance expectancy in the adoption of technology. These findings are consistent with earlier research and support the use of effort expectancy in e-learning contexts (Altalhi, 2021). Effort expectancy is a critical factor in determining individuals' intention to adopt and use new technologies. Future research should continue to explore the mechanisms underlying effort expectancy and its interactions with other factors, such as social influence and organizational culture. Thus, improved understanding of effort expectancy can inform the design and implementation of technology to enhance user experience and promote adoption.

2.6 Social Influence

Studies have shown that social influence plays a significant role in the acceptance of LMS. For instance, a study by Alasmari & Zhang (2019) found that social influence significantly influenced the intention to use LMS among students in Saudi Arabia. Similarly, Fianu et al. (2018) found that social influence was a significant factor affecting the use of LMS by students in Korea. Social influence was also found to be a critical factor affecting the acceptance of LMS among teachers. In a study by Raza et al. (2021), social influence was found to be a significant predictor of the intention to use LMS among teachers in China. Several studies have also highlighted the importance of different sources of social influence, such as peers, instructors, and parents. A study by Al-adwan et al. (2021) found that peer influence had a significant effect on the intention to use LMS among university students in Jordan. Similarly, a study by Alharbi et al. (2022) found that instructor influence had a significant effect on the intention to use LMS among students in Saudi Arabia. Hence, different sources of social influence, such as peers, instructors, and parents, have been found to be significant predictors of the intention and acceptance to use LMS. Therefore, it is crucial for educators and administrators to consider the influence of these important to others when implementing LMS in educational settings.

2.7 Facilitating Condition

Several studies have investigated the role of facilitating conditions in the acceptance of LMS. For instance, a study by Al-adwan et al. (2021) found that facilitating conditions significantly influenced the intention to use LMS among university students in Jordan. Similarly, a study by Fianu et al. (2018) found that facilitating conditions were significant factors affecting the use of LMS by students in Korea. Facilitating conditions were also found to be a critical factor affecting the acceptance of LMS among teachers. In a study by Raza et al. (2021), facilitating conditions were found to be significant predictors of the intention to use LMS among teachers in China. Several studies have also highlighted the importance of different dimensions of facilitating conditions, such as technical support, training, and compatibility. A study by Alasmari & Zhang (2019) found that technical support was a significant predictor of the intention to use LMS among students in Saudi Arabia. Similarly, a study by Huang et al. (2020) found that training was a significant predictor of the use of LMS among elementary school students in Taiwan. In another study, Park et al. (2018) found that compatibility was a significant predictor of the use of LMS among university students in Korea. Facilitating conditions are a critical factor affecting the acceptance of LMS. The UTAUT model provides a useful framework for understanding the role of facilitating conditions in technology acceptance. Different dimensions of facilitating conditions, such as technical support, training, and compatibility, have been found to be significant predictors of the intention to use LMS. Therefore, it is crucial for educators and administrators to consider these factors when implementing LMS in educational settings to ensure that the necessary infrastructure and support are in place to facilitate its successful adoption and use.

3.0 CONCLUSIONS

The adoption and usage of Learning Management Systems (LMS) has become increasingly important in the educational sector. The Unified Theory of Acceptance and Use of Technology (UTAUT) has provided a valuable framework for understanding the factors that influence users' acceptance and usage of LMS. This literature review examined the existing research on the acceptance of LMS using UTAUT and identified several important findings. The UTAUT model provides a comprehensive understanding of the factors that influence users' acceptance of LMS, including performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is the degree to which a user believes that using LMS will improve their performance. Effort expectancy is the degree of ease associated with using the system. Social influence refers to the influence of others in encouraging or discouraging the use of LMS, while facilitating conditions refer to the external factors that facilitate or hinder the use of LMS.

Several studies have applied the UTAUT model to different contexts, including higher education, vocational training, and corporate training. These studies have identified the specific factors that influence the acceptance and usage of LMS in these contexts. For example, in higher education, the social influence of peers and instructors has been found to be a significant predictor of the use of LMS, while in vocational training, facilitating conditions such as technical support and training have been found to be important. UTAUT has also been applied to different types of LMS, including open-source, commercial, and customized LMS. These studies have found that the UTAUT constructs are relevant across these different systems, and that the specific factors that influence the acceptance and usage of LMS may vary depending on the type of LMS.

In conclusion, the study focused on UTAUT because for earlier phase of the study are enough to analyse and examine the users' acceptance and usage of LMS especially among education sectors and can be used to inform the design and implementation of LMS to enhance user experience and promote adoption. However, further research is needed to explore the specific factors that influence the acceptance and usage of LMS in different contexts, and to develop more refined measures of the UTAUT constructs in the LMS context. Hence, the study suggests that empirical studies should be conducted in near future.

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11 FACTORS THAT INFLUENCING EMPLOYEE RETENTION AMONG LECTURERS IN HIGHER EDUCATION INSTITUTIONS

Muhamad Nasrullah Zamri nasrullah@gapps.kptm.edu.my Kolej Poly-Tech MARA Alor Setar
Alor Setar, Kedah

ABSTRACT

Employee turnover among lecturers in Malaysia is a significant issue that can result in a loss of talent and experience, decreased productivity, and increased costs for recruitment and training of new staff. The literature suggests that low salaries and benefits and a lack of career growth opportunities are the main reasons for employee turnover among lecturers in Malaysia. These factors can lead to a lack of job satisfaction, motivation, and a feeling of career stagnation, resulting in many lecturers intending to leave their current institutions. This study aims to present the literature and examine the factors influencing employee retention among lecturers in Malaysia. The study draws on various sources, including academic studies and surveys, to identify the main factors contributing to employee turnover and the costs associated with it. By presenting this literature, the study aims to provide insights into the challenges faced by universities in retaining their lecturers and the need to implement strategies to improve retention. The study's findings highlight the importance of addressing the issues of low salaries and benefits and the lack of career growth opportunities to improve lecturer retention in Malaysia. The study suggests that universities need to develop retention strategies that offer competitive salaries, benefits, and opportunities for career growth to retain their lecturers. By doing so, universities can reduce the costs associated with employee turnover and ensure that they have experienced and talented lecturers to deliver high-quality education and research.

Keywords: Employee Retention; Compensation; Promotional Opportunities; Higher Education Institutions; Social Exchange Theory

1.0 INTRODUCTION

The high turnover of lecturers in Malaysia's higher education institutions has become a major concern. According to Sinniah et al. (2019), academic staff members at universities and colleges are currently more likely to pursue new job opportunities than to stay in their current roles. The staff turnover rate in the higher education sector suffers as a result of this attitude. Furthermore, a lack of student confidence in their respective colleges or universities is a result of high turnover rates (Noor, 2015). In addition to having poor work environments, little recognition, and other factors, previous studies have shown that many organizations in Malaysia lack compensation systems that can adequately meet the needs of their academic staff (Tyson et al., 2011). Meanwhile, job satisfaction of lecturers is influenced by a number of variables, such as pay, opportunities for advancement, the workplace, and recognition. However, Malaysia's academic salaries are the lowest when compared to those of Singapore, Hong Kong, South Africa, Canada, Australia, the United Kingdom, and New Zealand when looking at the average overall salary of academic staff within the Commonwealth Universities Association (Virtanen & Elovainio, 2018). In other words, academic staff in Malaysia are unlikely to be able to meet their salary expectations. Lower wages lead to lower job satisfaction, whereas higher wages lead to higher job satisfaction (Basak & Govender, 2015). Moreover, according to a study conducted by Masum, Azad and Beh (2015), it was found that The National University of Singapore offers a significantly higher salary package than the University of Malaya (UM).

According to Paul and Kee (2020), there has been a significant turnover of academic staff in Malaysia's educational system. Academic staff turnover remains a problem in Malaysia's education sector, as evidenced by the fact that the average annual turnover rate increased from 13.2% in 2013 to 20% in 2017 (Falahat et al., 2019). Furthermore, the number of academic employees leaving Malaysian universities has grown over time, resulting in a labor shortage in many areas (Nguyen et al., 2020). Malaysian private universities have significantly higher turnover rates than public universities (GuiXia & Rashid, 2019). Moreover, Orpina, Jalil,

& Ting (2022) also cited in their study that "each year, more than 26% of academic staff at private universities leave, compared to 11% at public universities". Similarly, Badiozaman (2021) discovered that "the turnover rate of academic staff in private universities was more than double that of public universities". According to the Pollian Educational Poll, 51.7% of academic staff at private institutions want to leave their current institutions (Sinniah et al., 2019). In addition, the Malaysian Ministry of Higher Education (MOHE) reported a 25% turnover rate among academic staff in private universities in 2019. Furthermore, the Ministry of Higher Education Malaysia Statistics in 2019 revealed "a significant decrease in the number of academic staff in private universities compared to public universities" (Orpina, Jalil, & Ting, 2022).

However, Khan, Ahmed, and Sarker (2010) contend that lecturers' high turnover rate is primarily due to their dissatisfaction. The main causes of this dissatisfaction are worries about "job security, supervisor support, compensation satisfaction, job autonomy, KPI attainability, and overall job satisfaction". Due for this reason, the quality of education has suffered as a result of the lecturers' performance deteriorating (Rahman & Chowdhury, 2012; Rathakrishnan, Imm, & Kok, 2016). Therefore, it is essential that Malaysian universities address the causes of lecturer turnover and put in place measures to increase retention. The primary goal of this study is to review the literature already in existence and investigate the variables affecting employee retention among lecturers in Malaysian higher education institutions.

2.0 LITERATURE REVIEW

Employee retention is "the process of encouraging employees to stay with the organization for a longer period of time or until a project is completed. Retention strategies seek to improve employee commitment, communication, and support for key corporate initiatives" (Kaur, 2017). Employee retention is regarded as a critical factor for organizations seeking to gain a competitive advantage in today's market (Walker, 2001). Many organizations, however, face difficulties in retaining their employees, and it is critical to retain competent staff because replacing them incurs additional costs such as training and filling vacancies (Ghansah, 2011). Employee retention has been emphasized by numerous scholars (Walker, 2001; Zaffane, 1994; Bibi et al., 2019).

Employees are valued intellectual assets in knowledge-intensive industries, and attracting and retaining them is critical (Albrecht et al., 2015; Deery and Jago, 2015; Joo et al., 2015). However, voluntary employee turnover has a negative impact on organizational success. To retain employees for a longer period of time, it is necessary to analyze the factors that contribute to their intention to quit. Traditional approaches to turnover and retention in human resource management have focused primarily on individual-level predictors such as job stress, unequal treatment, inadequate pay, and alternate job opportunities (Hom et al., 2017). However, other elements, like employee social networks and organizational networks, also have a big impact on the decisions about turnover. According to several studies (Gao et al., 2019; Ho et al., 2006; Younis, Ahsan & Chatteur, 2023), organizational network structural characteristics such as network density, group cohesiveness, and network centrality are thought to affect employees' intent to leave their jobs.

However, in the context of higher education institutions, several factors were identified as important for retaining lecturers and reducing turnover in higher education institutions in a study conducted by Sinniah et al. (2019), including salary, work environment, recognition, promotion, and job satisfaction. Meanwhile, Rathakrishnan, Imm, and Kok (2016) identified key factors for employee retention as job security, supervisor support, compensation satisfaction, job autonomy, KPI achievability, and job satisfaction.

Furthermore, Ahmed and Kolachi (2013) suggested "four factors that affect employee retention or turnover: organizational career opportunities, mentoring programs, organizational communication policies, and salary and benefits". According to Shahzad et al. (2011), job stress, challenging work, and job satisfaction all have an impact on employee absence and turnover, while challenging work has also been shown to have an impact on employees' intentions to remain or leave an organization (Ibrahim, Melhem, and Ali, 2019). Large workgroups, on the other hand, have been linked to inefficiencies, decreased social interaction, lower levels of commitment and satisfaction, and a diminished sense of collective responsibility (Holtom and Burch, 2016; Green, Anderson, and Shivers, 1996; Kozlowski and Bell, 2003; Banwo and Du, 2020).

Moreover, employee decisions to leave are also influenced by factors like changes in management style, conflicts with coworkers, and a lack of trust (Rahman and Nas, 2012; Reina et al., 2018; Kerdpitak and Jermisittiparsert, 2020; Azam et al., 2019; Brinck and Larsson, 2019). Leaders and managers also have an impact on employee turnover or retention. Additionally, reduced employee enthusiasm and job dissatisfaction can result from poor leadership (Reina et al., 2018; Ladelsky, 2013; Al-Suraihi et al., 2021).

2.1 Factors to Encourage Lecturer's Retention

Based on the literature review mentioned above, various factors have been identified that can contribute to encouraging the retention of lecturers. These factors include rewards, training, working conditions, recognition, promotion, job security, supervisor support, job autonomy, KPI achievability, and job satisfaction. However, this study will adapt the framework proposed by Bibi et al. (2017), which primarily focuses on compensation and promotional opportunities as predictors of lecturer retention in private higher education institutions. Therefore, it is intriguing to delve deeper into the examination of compensation and promotional opportunities and their impact on lecturer's retention.

2.2 Compensation

The importance of compensation as a factor in employee retention is widely acknowledged in the literature. According to Tessema and Soeters (2006), compensation in the current study is the monthly salary participants receive from organizations. According to studies on compensation (Arthur, 1994; Delaney and Huselid, 1996; Ichniowski, Shaw, and Prennushi, 1997), it improves retention and lowers absenteeism. Similar to this, Harris and Brannick (1999) emphasized that paying employees well is essential to keeping them on board for a long time. Pay, as a part of compensation, has a big impact on luring and keeping employees (Williams & Dreher, 1992).

In addition, March and Simon (1958) suggested that "businesses with insufficient compensation are more likely to have high employee turnover". In earlier studies, the effect of pay on employee retention has been investigated (Choi & Dickson, 2009; Hinkin & Tracey, 2010; Sturman, 2006). For instance, Irshad (2000) investigated the impact of pay on employee retention in his study, and the results showed a strong correlation between the two. In a similar vein, Ramlall (2013) discovered a significant correlation between pay and staff retention in their investigation. Furthermore, according to previous researchers, there is a strong correlation between pay and employee retention (Nawab and Bhatti, 2013; Saeed et al., 2013; Ramlall, 2013; Bibi et al., 2017).

Hence, "compensation plays a vital role in attracting and retaining lecturers in higher education institutions. With the increasing number of universities, dissatisfied lecturers are willing to switch to institutions that offer higher compensation packages. Lecturers tend to experience dissatisfaction when they perceive their compensation to be unfair, and this lack of equity in compensation satisfaction can lead to an increase in turnover intention among lecturers" (Rathakrishnan, Imm, and Kok, 2016).

Moreover, several studies have demonstrated a negative impact on job satisfaction when employees receive low salaries, whereas high salaries have been shown to have a positive effect on job satisfaction (Basak & Govender, 2015). The level of job satisfaction related to salary directly influences employee performance, job involvement, motivation, and overall job satisfaction (Masum, Azad & Beh, 2015). In other words, organizations must fulfill employees' salary satisfaction to enhance their job satisfaction levels. Salisu, Chinyio & Suresh (2015) found a positive relationship between salary and job satisfaction across various work domains. Braun et al. (2013) conducted an experiment demonstrating that successful levels of pay satisfaction contribute to organizational success. This is because salary serves as a motivating factor for employees to give their best efforts and contribute to the organization. In summary, satisfied employees tend to work more efficiently and effectively (Sinniah et al., 2017).

Hence, according to Gardner et al. (2004), salary or pay serves as both a motivator and a technique for employee retention. Next, Milkovich and Newman (2004) have explicitly expressed that "monetary pay is considered a crucial and significant factor in retention, surpassing other types of rewards". Additionally, Moncraz, Zhao, and Kay (2009) also conducted a study that concluded "compensation may not be among the primary factors affecting non-management turnover. However, they emphasized that compensation plays a vital role in reducing managerial turnover and enhancing commitment."

2.3 Promotional Opportunities

Delery and Doty (1996) had defined promotional opportunities as “both the availability of staff members' ability to move up the corporate ladder and the openness of an institution's policies”. Meanwhile, promotional opportunities, in accordance with Accenture (2001), “increase employee retention by fostering their loyalty, satisfaction, and decreased intention to leave”. In the past, Miller and Wheeler (1992) highlighted how employees' decisions to stay with the organization are influenced by the availability of promotion opportunities. According to the social exchange theory (Blau, 1964), wherein promotion is viewed as an organizational honor, “leading employees to reciprocate with loyalty, commitment, and involvement, the presence of promotional opportunities instills a sense of value in employees”. A survey-based empirical study on retention intentions by Morris and Quarles (2004) showed a strong positive correlation between retention intentions and promotional opportunities.

Similar to this, earlier studies by Delaney & Huselid (1996), Shahzad et al. (2008), and Teseema & Soeters (2006) discovered a significant relationship between employee performance and promotion opportunities. Different perspectives are presented in the turnover literature, though. For instance, contrary findings suggested that employee promotion is linked to high turnover in Fairris' (2004) report. According to a study by Joarder et al. (2011), opportunities for promotion among employees have less of an effect on decisions regarding faculty turnover. On the other hand, Billah (2009) discovered a significant correlation between promotion opportunities and employee retention. Thus, this finding was corroborated with other previous researchers (Irshad and Afridi, 2010; Kwenin et al., 2013; Luthans, 2005; Santhapparaj and Alam, 2005; Bibi et al., 2017).

The importance of promotion to job satisfaction was emphasized by Porter et al., (1974). Moreover, Alam (2015) quoted that “giving employees the chance to advance has a positive effect on their performance and decreases their intention to quit”. This leads to greater loyalty to the companies where they work. Additionally, promotion affects job satisfaction, according to Khamisa et al. (2015) and it was found that a significant correlation existed between promotion and job satisfaction using the correlation coefficient method (Pan et al., 2015), which suggests that employees would be happier in their jobs if given the chance to advance. Moreover, Lai and Chen (2012) also found sufficient data to support this idea, proving that job satisfaction can rise with promotion. According to Sinniah et al. (2018), when employees are not promoted, they may find it difficult to meet their personal needs, which may hinder their ability to adapt to the workplace. As a result, job satisfaction declines when there is no promotion (Sinniah et al., 2019). Therefore, as stated by Accenture (2001), “where promotion opportunities help to foster employee loyalty, satisfaction, and reduce their intention to leave, thereby enhancing retention”.

2.4 Social Exchange Theory

According to Rathakrishnan, Imm, and Kok (2016), several theories can be applied to the study of employee retention and attrition, including Social Exchange Theory, Perceived Organizational Support Theory (POS), Reciprocity Theory, Equity Theory, Expectancy Theory, and Herzberg Two Factor Theory. However, the focus of this study was exclusively on Social Exchange Theory.

Thibaut and Kelley's Social Exchange Theory (SET), which serves as the theoretical foundation of the current study, was first developed in 1959. To better understand the dynamics of the employer-employee relationship, SET has been used in research on turnover and retention more frequently (Coyle-Shapiro & Conway, 2005). According to SET, good deeds and performances should be reciprocated (Blau, 1964). According to Mossholder, Settoon, and Henagan (2005), people who perceive benefits from others feel obligated to repay those benefits through commendable actions, attitudes, endeavors, and dedication. Blau (1964) also draws attention to the fact that organizations use various HRM strategies, such as pay and advancement opportunities, to create unique exchange relationships. Additionally, SET stresses that workers perform better when they feel appreciated and supported by their employers (Eisenberger et al., 2001; Bibi et al., 2017).

Moreover, SET also explained regarding the relationships are formed by the balance of benefits and costs to an individual (Eugene & Nor, 2011). Simply put, the strength and commitment of a relationship are determined by the perceived balance between the effort expended (costs) and the rewards obtained (benefits). Employees can establish social exchange relationships with their supervisors or organizations, according to Masterson, Lewis, Goldman, and Taylor

(2000). Moreover, employees, are more likely to contribute to the organization if they are satisfied with it (Rhoades, Eisenberger, and Armeli, 2001; Rathakrishnan, Imm, and Kok, 2016).

2.5 Research Framework

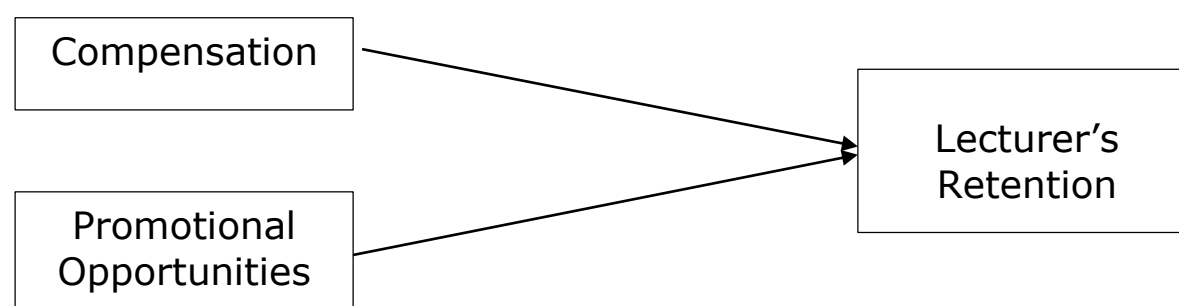


Figure 1: Research Framework

3.0 METHODOLOGY

To accomplish the aforementioned goals, an archival method was used to review the literature. Using the keywords "employee retention," "employee turnover," "compensation," "promotion opportunities," and "higher education institutions" in the online databases Google Scholar and Scopus, it was possible to gain insights into the current state of this study by compiling the research of various researchers. To accomplish the stated goal, articles on employee retention that were published between 2016 and 2023 have been examined.

4.0 DISCUSSION AND CONCLUSION

According to the literature review mentioned above, it can be inferred that pay and opportunities for advancement had an impact on employee retention. Previous studies had demonstrated that compensation is a crucial element in luring and keeping employees, as they are more likely to feel satisfied and motivated to stay with the company when they believe they are being fairly compensated for their work. In addition, fair pay and a positive workplace culture can help recruit, foster, and keep qualified and experienced lecturers. Hence, compensation is an important factor that affects employee retention. Lecturers who are paid a fair and competitive salary are more likely to stay with their current institution. This is because compensation is an indicator of the value that an institution places on its employees. A fair salary can also help to reduce financial stress and improve job satisfaction. This, in turn, can lead to increased productivity and a more positive work environment. Next, promotional opportunities are also important for retaining employees. Lecturers are more likely to stay if they are given opportunities to advance their careers within their current institution. This is due to the fact that promotions provide a sense of career progression and development. It also demonstrates that a company values its employees and is willing to invest in their future.

In conclusion, compensation and promotional opportunities play crucial roles in influencing the retention of lecturers. Ensuring fair and competitive compensation can alleviate financial stress and enhance job satisfaction, resulting in increased productivity and a more positive work environment. Similarly, providing avenues for career advancement through promotional opportunities can instill a sense of growth and demonstrate an institution's commitment to employee development. Failing to offer these incentives can contribute to a high turnover rate among lecturers, negatively affecting the quality of education provided. Consequently, it is imperative for higher educational institutions to prioritize competitive compensation packages and promotional pathways in order to retain experienced and knowledgeable lecturers. Therefore, further empirical studies are recommended in the context of higher education institutions in Malaysia to explore the impact of these factors on lecturer retention. Additionally, future research should explore other relevant theories and incorporate additional variables to strengthen the findings.

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12 FACTORS INFLUENCING STUDENT'S PERFORMANCE DURING ODL IN MALAYSIA

Muhammad Hafiz Hamdi bin Radzi hafizhamdi@kptm.edu.my
Kolej Poly-Tech MARA Alor Setar Alor Setar, Kedah

ABSTRACT

Open and Distance Learning (ODL) has become an increasingly popular mode of education in Malaysia due to its flexibility and convenience. However, several issues can influence students' performance during ODL method. This paper identifies and discusses five key issues that influence student performance during ODL in Malaysia: technology, learning environment, self-motivation and discipline, support services, and quality of instruction.

Access to technology is crucial for successful learning in ODL, and students who lack reliable internet connections or computing devices may struggle to complete their coursework. Additionally, a suitable learning environment, free from distractions and noise, is necessary for students to perform well. Self-motivation and discipline are also vital as ODL requires students to manage their learning independently. Adequate support services such as tutoring, counselling, and academic advising can significantly impact students' performance by providing them with the necessary guidance and support.

Finally, the quality of instruction is a critical factor influencing student performance. A well-designed curriculum, engaging course materials, and effective teaching methods are essential for students to stay motivated and engaged. Addressing these five issues can help promote student success in ODL method in Malaysia and improve the quality of education offered through this mode of learning.

Keywords: Factor Influencing Student's Performance in Malaysia, Online Distance Learning (ODL), Covid-19, Performance of students, Performance, ODL

1.0 INTRODUCTION

According to Keegan and Holmberg (2007), Open and Distance Learning (ODL) has become a global phenomenon, with institutions worldwide offering courses and degree programs through this mode of learning. ODL has several advantages, including flexibility, convenience, and access to education for individuals who may not have been able to pursue traditional campus-based learning. However, several issues can impact student performance in ODL programs, which are evident worldwide.

The quality of instruction is a significant issue that affects student performance in ODL programs globally. The effectiveness of teaching methods, well-designed curricula, and engaging course materials are essential for promoting student motivation and engagement. The need for access to technology is another issue that impacts student performance. Access to reliable internet connections and computing devices is necessary for successful learning in ODL. Students who lack access to such resources may struggle to complete their coursework, leading to poor academic performance.

Finally, the need for self-motivation and discipline is another issue that affects student performance in ODL programs worldwide. ODL requires students to manage their learning independently, which can be challenging for those who lack self-discipline or motivation. Adequate support services, such as tutoring, counseling, and academic advising, can significantly impact students' performance by providing them with the necessary guidance and support.

In conclusion, addressing these issues can help promote student success in ODL programs worldwide. Institutions must provide students with the necessary technology, a suitable

learning environment, opportunities to develop self-motivation and discipline, and adequate support services to improve the quality of education offered through this mode of learning. By doing so, ODL can continue to provide individuals around the world with access to quality education and opportunities for personal and professional growth. (Keegan & Holmberg, 2007).

2.0 PROBLEM STATEMENT

The popularity of Open and Distance Learning (ODL) has been increasing in Malaysia due to its flexibility and convenience, especially during the COVID-19 pandemic. However, despite its many advantages, several issues can impact students' performance during ODL integration. The lack of face-to-face interactions and support services, as well as the need for self-motivation and discipline, can make it difficult for students to succeed in their courses. In addition, access to technology and a suitable learning environment are crucial for successful learning in ODL. The quality of instruction also plays a critical role in students' performance. Despite these issues, there is limited research on the factors that affect student performance during ODL in Malaysia. Therefore, there is a need to identify and understand the key issues that influence student performance in ODL integration in Malaysia and to develop strategies to address them. This study aims to address this gap in the literature by identifying and discussing the key issues that impact student performance during ODL in Malaysia.

A study conducted by Almusharraf and Ali (2019) found that students who participated in ODL programs in Malaysia had lower academic achievement than those in traditional face-to-face programs. The study also found that the dropout rate was higher among ODL students compared to traditional students. The authors suggest that the lack of face-to-face interaction and support services, as well as the need for self-discipline and motivation, may contribute to these outcomes.

Another study by Sahin et al. (2020) found that students who participated in online courses in Malaysia had lower grades than those who participated in face-to-face courses. The authors suggest that the lack of interaction with instructors and peers, as well as the need for self-regulation and self-motivation, may contribute to this outcome. These studies highlight the challenges that students may face during ODL programs in Malaysia and the need for strategies to improve student performance.

2.1 Research Objective:

1. Identify the key issues that impact student performance during ODL programs in Malaysia.
2. Explore the extent to which these issues affect student performance in ODL programs in Malaysia.
3. Investigates the strategies that can be implemented to address these issues and improve student performance in ODL programs in Malaysia.

By achieving these objectives, this research can contribute to improving the quality of ODL programs in Malaysia and help to promote student success in this mode of learning.

3.0 LITERATURE REVIEW

3.1 Technology

Access to technology is critical for successful learning in ODL, as students need to use digital devices and reliable internet connections to access course materials, participate in online discussions, and complete assignments. In Malaysia, the government has initiated several initiatives to improve digital infrastructure and provide access to technology for students. However, some students still face challenges due to limited access to technology. A study by Coman, C. et al. (2020) found that students who lacked access to technology had lower academic achievement in ODL programs. Therefore, it is crucial to ensure that students have access to reliable technology to promote their success in ODL programs.

3.2 Learning Environment

The learning environment is also an essential factor that influences student performance during ODL. A suitable learning environment that is free from distractions and noise is necessary for students to focus on their studies. A study by Abdullah et al. (2022) found that the learning environment was one of the most significant factors that affected students' satisfaction with ODL programs in Malaysia. The authors recommend that institutions should provide students with a comfortable and conducive learning environment to promote their success in ODL programs.

3.3 Self-motivation and Discipline

ODL requires students to manage their learning independently, which requires self-motivation and discipline. Students need to set goals, manage their time effectively, and stay motivated to succeed in their courses. A study by Jony (2021) found that self-motivation and discipline were crucial factors that influenced student success in ODL programs in Malaysia. Therefore, institutions should provide students with the necessary guidance and support to develop self-motivation and discipline to promote their success in ODL programs.

3.4 Support Services

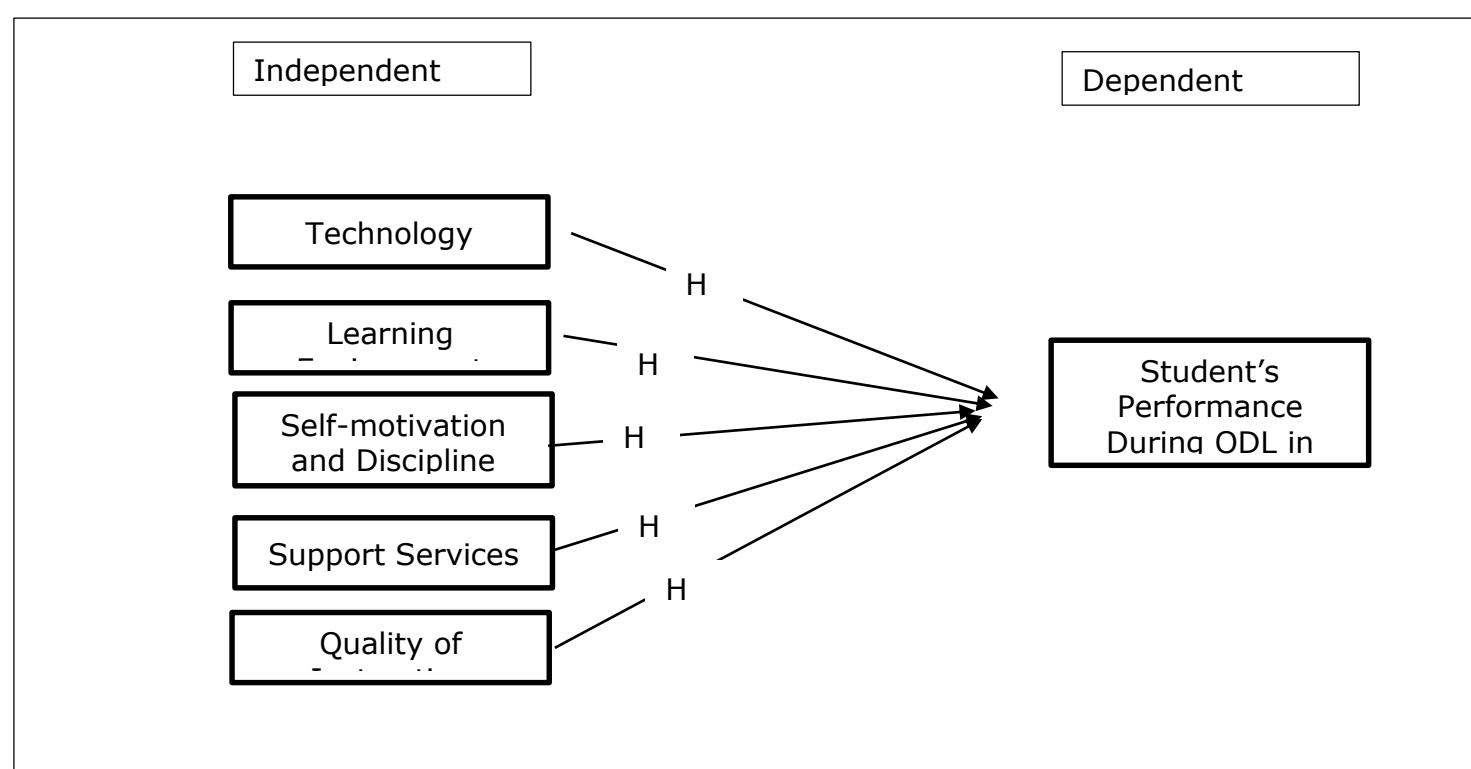
Support services such as tutoring, counselling, and academic advising can significantly impact students' performance by providing them with the necessary guidance and support. A study by Pham et al. (2019) found that access to support services was a critical factor that influenced student performance with ODL programs in Malaysia. The authors recommend that institutions should provide students with a range of support services to promote their success in ODL programs.

3.5 Quality of Instruction

The quality of instruction is a critical factor that influences student performance in ODL programs. A well-designed curriculum, engaging course materials, and effective teaching methods are essential for students to stay motivated and engaged. A study by Ngole et al. (2021) found that the quality of instruction significantly impacted student performance with ODL programs in Malaysia. The authors recommend that institutions should focus on developing high-quality instructional materials and providing effective teaching methods to promote student success in ODL programs.

Overall, these studies highlight the importance of addressing the five key factors that influence student performance during ODL in Malaysia. Addressing these issues can help promote student success in ODL programs and improve the quality of education offered through this mode of learning.

4.0 CONCEPTUAL FRAMEWORK



5.0 CONCLUSION

In conclusion, Open and Distance Learning (ODL) in Malaysia offers flexible and convenient options for learners. However, several issues can impact student performance during ODL programs. This paper identified and discussed five key factors that influence student performance during ODL in Malaysia: technology, learning environment, self-motivation and discipline, support services, and quality of instruction.

Access to technology and a suitable learning environment are essential for successful learning in ODL. In addition, self-motivation and discipline are vital as ODL requires learners to manage their learning independently. Adequate support services such as tutoring, counseling, and academic advising can significantly impact students' performance by providing them with the necessary guidance and support. Finally, the quality of instruction is a critical factor influencing student performance. A well-designed curriculum, engaging course materials, and effective teaching methods are essential for learners to stay motivated and engaged.

Addressing these five factors can help promote student success in ODL programs in Malaysia and improve the quality of education offered through this mode of learning. Policymakers, educators, and educational institutions must prioritize the development and implementation of strategies that ensure students have access to the necessary technology, learning environment, and support services to succeed in ODL. Moreover, quality instructional design and effective teaching methods are necessary to enhance students' learning outcomes and satisfaction with ODL in Malaysia.

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13 THE INFLUENCES OF ONLINE LEARNING ON STUDENT BEHAVIOR: A CONCEPT PAPER

nadirah@gapps.kptm.edu.my Kolej Poly-Tech MARA, Alor Setar

ABSTRACT

This conceptual paper explores the impact of online learning on student behavior and presents a conceptual framework to identify key factors that influence student behavior in online learning environments. Online learning has become increasingly popular as a flexible and accessible alternative to traditional classroom-based education, especially during the COVID-19 pandemic. However, concerns have been raised about the impact of online learning on student behavior, including increased opportunities for procrastination, reduced academic integrity, and decreased engagement. The study presents a comprehensive literature review approach to analyze and synthesize existing research on the topic, including academic databases such as JSTOR, Google Scholar, and Al Khawarizmi Library. The study concludes with recommendations for effective strategies to promote positive behavior in online learning, including instructional design principles, fostering a sense of community, and promoting self-regulation. The findings contribute to the understanding of the impact of online learning on student behavior and provide insights into strategies to address the challenges posed by online learning environments. Limitations of the study include the potential for publication bias and the lack of primary research data.

Keywords: online learning, student behavior, procrastination, academic integrity, engagement, instructional design, self-regulation

1.0 INTRODUCTION

In recent years, online learning has become increasingly popular in educational institutions as a flexible and accessible alternative to traditional classroom-based education. The COVID-19 pandemic has further accelerated the adoption of online learning, making it an essential component of the education system. While online learning has many advantages, concerns have been raised about its impact on student behavior. This paper aims to explore the influence of online learning on student behavior, including the challenges and opportunities it presents.

Online learning provides students with the flexibility and convenience to learn at their own pace and in their own environment. However, it also presents challenges related to student behavior, including procrastination, lack of engagement, and academic dishonesty. The lack of structure and routine in online learning environments may lead to procrastination and poor time management skills. Furthermore, the absence of face-to-face interaction and feedback can lead to a lack of engagement and motivation among students.

Despite these challenges, online learning also presents opportunities for promoting positive student behavior, including increased access to resources, improved communication and collaboration, and the development of digital literacy skills. This paper will examine the impact of online learning on student behavior and explore strategies to promote positive behavior in online learning environments.

2.0 LITERATURE REVIEW

The impact of online learning on student behavior has been a topic of increasing interest and concern among educators and researchers. In this section, we will review relevant literature that examines the influence of online learning on student behavior, including the challenges and opportunities it presents.

2.1 Procrastination

One of the major concerns about online learning is the potential for increased procrastination and time management issues (Bolliger & Halupa, 2018). Without the structure and routine of traditional classroom-based education, students may struggle to manage their time effectively, leading to a lack of productivity and focus. Procrastination can lead to missed deadlines, poor performance, and increased stress levels, which can negatively impact students' academic performance and overall well-being.

2.2 Lack of Engagement

Online learning can also lead to a lack of engagement and motivation among students. Without the face-to-face interaction and immediate feedback of traditional classroom-based education, students may feel disconnected and isolated, leading to decreased motivation and interest in learning (O'Doherty et al., 2018). Moreover, the asynchronous nature of online learning can make it challenging for students to stay engaged and focused, particularly if they are juggling multiple responsibilities and distractions.

2.3 Academic Dishonesty

Another concern is the potential for cheating and academic dishonesty. Online learning can provide students with opportunities to cheat on exams or assignments, leading to a lack of academic integrity (Chiang et al., 2022). The lack of accountability and monitoring in online learning environments may make it easier for students to engage in unethical behavior without fear of consequences. Moreover, the abundance of online resources and tools can make it tempting for students to plagiarize or copy others' work, further compromising their academic integrity.

2.3 Opportunities

Despite these challenges, online learning also presents opportunities for promoting positive student behavior. The flexible and accessible nature of online learning can provide students with increased access to resources and learning materials (Allen & Seaman, 2017). Moreover, online learning can promote communication and collaboration among students, leading to enhanced learning outcomes (Mazzolini & Maddison, 2003). Online learning can also foster the development of digital literacy skills, which are essential in today's digital age.

3.0 RESEARCH METHOD

This conceptual paper aims to review relevant literature and synthesize existing research to examine the impact of online learning on student behavior. A literature review approach will be used to analyze and summarize previous studies, reports, and articles related to the topic.

The literature search will include a comprehensive review of academic databases such as JSTOR, Google Scholar, and Al Khawarizmi Library, using keywords such as "online learning," "e-learning," "distance education," "student behavior," "procrastination," "academic integrity," and "engagement." The inclusion criteria for the selection of articles will be relevance to the research topic, publication date within the last ten years, and availability of full-text access.

The review process will involve screening the titles and abstracts of identified articles to determine their relevance to the research question. Full-text articles will be reviewed to extract relevant information related to the impact of online learning on student behavior, including the challenges and opportunities it presents. The information will be analyzed and synthesized into a conceptual framework to identify the key factors that influence student behavior in online learning environments.

Limitations of this study include the potential for publication bias in the literature review, as only articles published in academic databases will be considered. Additionally, the review may not capture the experiences and perspectives of students and educators who have been involved in online learning, as primary research data will not be collected.

Overall, this study will contribute to the understanding of the impact of online learning on student behavior, and provide insights into strategies that can be used to promote positive behavior in online learning environments.

4.0 DISCUSSION CONCLUSION

Online learning has become increasingly popular in recent years, and the COVID-19 pandemic has further accelerated its adoption as an essential component of the education system. While online learning provides flexibility and convenience, concerns have been raised about its impact on student behavior, including procrastination, lack of engagement, and academic dishonesty. However, online learning also presents opportunities for promoting positive student behavior, such as increased access to resources, improved communication and collaboration, and the development of digital literacy skills.

This conceptual paper reviewed relevant literature to examine the impact of online learning on student behavior, and identified key factors that influence student behavior in online learning environments. The review found that online learning can lead to increased procrastination and time management issues, a lack of engagement and motivation, and academic dishonesty. However, online learning also presents opportunities for promoting positive student behavior, such as increased access to resources and learning materials, improved communication and collaboration, and the development of digital literacy skills.

The challenges and opportunities presented by online learning for student behavior have important implications for educators, administrators, and policymakers. Educators must develop strategies to address the challenges of online learning, such as promoting time management skills, providing opportunities for engagement and interaction, and preventing academic dishonesty. Administrators must ensure that online learning environments provide adequate support and resources for students to succeed. Policymakers must consider the role of online learning in the education system and ensure that it is accessible, equitable, and of high quality.

Future research should continue to explore the impact of online learning on student behavior, including the experiences and perspectives of students and educators. Additionally, research should examine the effectiveness of strategies to promote positive student behavior in online learning environments. As online learning continues to play a significant role in the education system, it is essential to understand its impact on student behavior and develop strategies to promote positive outcomes.

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14TIKTOK AS AN EFFECTIVE MARKETING TOOL FOR HIGHER EDUCATION

Siti Zaiton Mohd Dali, Hasnah Am Abdul Aziz sitizaiton@gapps.kptm.edu.my, hasnah_aaziz@gapps.kptm.edu.my Kolej Poly-Tech MARA Alor Setar

ABSTRACT

This study is to explore the potential of TikTok as a marketing tool for higher education institutions, employing a qualitative methodology. The use of qualitative methodology in the study may have allowed for a deeper exploration of the experiences and perceptions of individuals who have used TikTok as a marketing tool for higher education institutions. The research examines how TikTok can effectively promote higher education institutions and reveals that it offers a distinctive platform to highlight campus culture, values, and programs in a dynamic and captivating manner. TikTok can increase knowledge of the academic programs offered by higher education institutions, which can lead to greater brand awareness and engagement with prospective students. Therefore, this study concludes that TikTok has the potential to be a valuable marketing asset for higher education institutions seeking to engage with prospective students and build their brand image. Overall, it appears that TikTok has the potential to be a valuable marketing asset for higher education institutions seeking to build their brand image and engage with prospective students. However, it is important to note that the effectiveness of TikTok as a marketing tool may depend on various factors, such as the target audience and the specific goals and strategies of the higher education institution and need for further studies.

Keywords: TikTok, marketing tools, social media, higher education, brand awareness

1.0 INTRODUCTION

TikTok has emerged as one of the most popular social media platforms in recent years, particularly among younger generations. The video-sharing app has become a cultural phenomenon, with over a billion active users worldwide, providing users with a creative outlet to showcase their talents and interests in short, bite-sized videos. TikTok, on the other hand, is more than just a platform for entertainment and personal expression; it also provides tremendous opportunities for businesses and organizations to reach new audiences and promote their products and services. TikTok has quickly emerged as a powerful marketing tool for colleges and universities looking to attract and engage prospective students in the field of higher education. Higher education institutions can effectively promote their academic programs in an engaging and authentic way that resonates with TikTok's younger user base by leveraging the platform's unique features and creative potential.

The objective of this paper is to explore the effectiveness of TikTok in promoting academic programs in higher education to prospective students. While TikTok has emerged as a popular social media platform among younger generations, its effectiveness as a marketing tool for higher education institutions remains largely unexplored. Specifically, there is limited research on the effectiveness of TikTok campaigns in promoting academic programs, campus culture, and student life to prospective students. While TikTok's engaging and creative content has the potential to capture the attention of prospective students, the short-form video format and limited targeting capabilities may limit its effectiveness in conveying the unique features and benefits of a particular institution. Furthermore, the lack of robust analytics and metrics on TikTok makes it difficult for higher education marketers to assess the success of their campaigns and optimize their strategies. There is a need for research to explore the effectiveness of TikTok campaigns in promoting academic programs in higher education.

2.0 LITERATURE REVIEW

2.1 Tiktok as One of Social Media Platform

According to Gesmundo et.al. (2022) and Feldkamp, J. (2021), modern people use social networks to connect with one another. In today's society, there is a digital social landscape that allows for interactions while also providing convenience and efficiency. TikTok is a video-sharing social media platform that allows users to upload and watch content as they see fit. This study is deemed a resource to business owners, marketing students and professionals, and academic institutions that hope to generate further information on the existence of TikTok and its marketing advantage.

TikTok and Instagram are among the most prevalent and fast-growing social media channels employed by marketers to connect and interact with their desired demographics, Mou, J. B. (2020).

2.2 Tiktok as Marketing Tools

One of the most popular social media is TikTok, which is developing rapidly. This efficient app was downloaded over 738 million times in 2019 and has climbed to 1,8 billion users worldwide by the end of 2022 (Business of Apps, 2023). TikTok is now available in a variety of countries and languages. Furthermore, the number of TikTok users multiplies year after year, with more than 800 million active users monthly. 41% of users are between the ages of 16 and 24, and they spend an average of 52 minutes per day using this application (Ma & Hu, 2021). Given the number of active users on TikTok, this application could be a viable social media platform for marketers to approach and attract customers. TikTok includes valuable features such as videos that anyone can watch, like, and comment on in order for an influencer or marketer to introduce or sell a product or service (Anderson, 2020).

TikTok is an application that allows users to create a video with a duration of 30 seconds to 3 minutes with different music. The TikTok application is a social media platform used in the system for the application user to upload a video, which is then shared with other users. Tiktok is the most popular and popular app among college students (Wardah et al., 2020).

According to Yosep et al. (2021), TikTok is an affordable and entertaining solution for generating high-quality marketing content for digital marketing objectives. It enables the promotion and display of product activities across a diverse range of digital marketing channels, while also minimizing unnecessary expenditure.

TikTok is a social media platform that has grown rapidly in popularity, particularly among younger generations. As a result, many higher education institutions are now using TikTok as a marketing tool to promote their academic programs, campus culture, and student life to prospective students. There have been studies conducted in the past that have investigated the potential of TikTok as a platform for marketing.

According to Akbari et.al (2022), user-generated content on TikTok can significantly impact consumer engagement with higher education institutions. They found that TikTok users are more likely to engage with educational content that is easy to reach and interesting. Similarly, Brown and Wilson (2020) conducted a study on the influence of user-generated content on brand engagement in higher education marketing on TikTok. They found that user-generated content has a positive impact on brand engagement, particularly when the content is relevant, authentic, and engaging.

TikTok, according to Hao et. al. (2022)., has a significant impact on young adults' perspectives, preferences, knowledge, and purchasing behavior. TikTok also can help to motivate users. Thus, by using TikTok higher education can engage with potential students by showcasing campus life, student activities, and academic offerings.

TikTok is a relatively new social media platform. Despite the fact that TikTok is a new social media platform, it already has a large number of active users. This popularity can be advantageous for digital marketing purposes, and many researchers have investigated TikTok's effectiveness in digital marketing (Peng, 2021; Haenlein et al., 2020; Li et al., 2021).

Davis (2021) argues that educational institutions can leverage TikTok's user-generated content to connect with prospective students and build a strong brand image. She suggests that institutions should focus on creating content that resonates with their target audiences, such as campus life, student experiences, and academic programs. In addition, the TikTok university accounts demonstrate the best effectiveness and the most brand-building value to

the university target audience, Saiokhat Berdiieva, O. Goroshko (2022).

In conclusion, the literature suggests that TikTok can be an effective marketing tool for higher education institutions. The use of user-generated content has been found to significantly impact consumer engagement, leading to increased interest in educational institutions. Future research could explore how TikTok can be used to promote different types of educational programs and the impact of TikTok marketing on student enrolment.

2.3 Tiktok Building Brand Awareness

Rimadias.S et.al. (2021) suggests that TikTok can be used as a tool to build brand loyalty, awareness and image, and it is found that consumer brand engagement positively affects brand loyalty, brand awareness, and brand image. They found that TikTok is particularly effective in promoting institutions that offer creative or unique programs. Meanwhile, Johnson (2020) explored the effect of user-generated content on consumer engagement on TikTok in the context of higher education marketing. Her findings indicate that user-generated content can increase consumer engagement with educational institutions on TikTok.

Gesmundo et.al. (2022), this study discovered that TikTok marketing campaigns can significantly influence brand awareness among millennials. Thus, higher education can take advantage of these opportunities to attract potential students and use TikTok as a marketing tool.

Gumalang et.al. (2022), mention that, concurrently content marketing, influencers, and psychological factors have a significant impact on TikTok advertising brand awareness among university students. Content marketers are encouraged to constantly improve their strategies in order to provide the most recent breakthroughs and build relationships with customers and potential customers in order to increase consumer brand awareness. It can be concluded that TikTok is recognised as one of the marketing tools that are able to build brand awareness.

3.0 METHODOLOGY

To discuss the objectives, a literature review approach was used. It is a common approach in research to conduct a literature review to gather relevant information and identify existing gaps in knowledge on a particular topic. In this case, the objective is to investigate the effectiveness of TikTok in promoting academic programmes in higher education to prospective students. The literature review approach can help achieve this by reviewing relevant studies.

The conceptual framework provides a theoretical foundation for the research and guides the development of the research questions. By reviewing existing literature on the topic, the conceptual framework can help to identify the key factors that influence the effectiveness of TikTok in promoting academic programmes in higher education.

4.0 CONCLUSION

Over the past few years, TikTok has risen to become one of the most popular social media platforms, particularly among younger audiences. Recognizing its potential as a marketing tool, higher education institutions have started to utilize TikTok to reach and engage with prospective students.

One key advantage of using TikTok for higher education marketing is the platform's ability to showcase the unique culture and personality of a higher education provider to wider audiences. By creating and sharing short-form videos, higher education institutions can highlight various aspects of campus life, student experiences, and academic programs, effectively differentiating their institution from competitors and attracting students who are a good fit for their culture and values. TikTok also presents an opportunity for higher education institutions to reach a broader audience, particularly international students, given the platform's global reach. By creating content that is relevant and engaging to international students, higher education providers can effectively promote their brand and increase visibility in the market.

In summary, TikTok can serve as a powerful marketing tool for higher education institutions seeking to reach and engage prospective students. By leveraging the platform's unique features, higher education institutions can effectively increase brand awareness and promote their distinct culture and personality.

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15THE FLEXIBILITY IN A HYBRID LEARNING ENVIRONMENT AFTER COVID-19: A CONCEPT PAPER

Nur Zarifah binti Mohamad Nazri, Muhammad Ridhwan bin Mat Zaki zarifah@gapps.kptm.edu.my, ridhwan@gapps.kptm.edu.my

Kolej Poly-Tech MARA Alor Setar, Kedah, Malaysia

ABSTRACT

The pandemic coronavirus disease (COVID-19) has altered the landscape of the education system in every country. As academic institutions throughout the world face the global health issue, there is a need to investigate various instructional approaches such as online, hybrid, and blended learning methods and the impact of these approaches on students' academic performance. This concept paper aims to investigate the flexibility of hybrid learning environments on student academic performance in Malaysian higher education institutions. Hybrid learning environments, which combine traditional in-person classes with online learning components, have become increasingly popular in Malaysia due to their potential to enhance student learning outcomes and accessibility, especially in their Cumulative Grade Point Average (CGPA). The paper will review relevant literature on the concept of flexibility in hybrid learning environments on student academic performance. This will include a discussion of the benefits and challenges of flexibility, as well as best practices for supporting student success in hybrid learning environments. This paper will conclude with a discussion of the study's findings for Malaysian higher education institutions and recommendations for optimizing student success in hybrid learning environments. These recommendations may include providing support and resources to enhance student motivation and engagement, promoting clear communication and collaboration between instructors and students, and ensuring access to necessary technology and infrastructure for online learning.

Keywords: Flexibility, Hybrid Class, Student Academic Performance

1.0 INTRODUCTION

1.1 Background of the Study

The emergence of hybrid learning environments, which combine both online and face-to-face elements, has allowed for greater flexibility in education. Flexibility in hybrid learning environments refers to the ability of students to access and engage with course materials and resources at their own pace and on their own schedule. This mode of learning has become increasingly popular in recent years, especially during the COVID-19 pandemic, as it offers a way to continue education while maintaining social distancing measures. Research has shown that flexibility in hybrid learning environments can positively affect student learning outcomes. For example, a study conducted by Kaur and Kaushal (2021) found that students in a hybrid learning environment performed better on exams and had a higher overall grade point average compared to students in a traditional face-to-face learning environment. This may be due to the fact that hybrid learning allows for greater personalization of the learning experience, as students can choose when and how they engage with course material.

Furthermore, flexibility in hybrid learning environments can also lead to increased student engagement and motivation. According to a study by Song and Hill (2017), students in hybrid learning environments reported feeling more motivated to learn and more connected to course material compared to students in traditional face-to-face learning environments. This may be due to the fact that hybrid learning environments provide students with more control over their learning experience, which can lead to a greater sense of ownership and investment in the learning process. Despite the potential benefits, there are also challenges associated with flexibility in hybrid learning environments. For example, a lack of structure and accountability may lead to students falling behind or not fully engaging with the material. Additionally, students who are not self-directed or who lack access to reliable technology may struggle to succeed in a flexible hybrid learning environment.

Overall, understanding the flexibility in hybrid learning environments is crucial for educators and policymakers as they seek to improve and innovate in the field of education. By examining the benefits and challenges of this mode of learning, researchers can identify strategies to maximize the potential benefits while mitigating the potential challenges.

1.2 Problem Statement

Several studies have explored the benefits and challenges of flexibility in hybrid learning environments. For example, a study by Alghamdi et al. (2021) found that flexibility in online learning can positively impact student academic performance, but that a lack of structure and accountability can negatively affect some students. Similarly, a study by Kaur et al. (2021) found that flexibility in online learning can lead to increased student engagement and motivation, but that some students may struggle to manage their time effectively without a structured schedule.

In order to optimize student success in hybrid learning environments, institutions and instructors can implement best practices such as providing clear communication and expectations, promoting collaboration and engagement, and offering resources and support for students. For example, a study by Chen and Li (2021) found that providing clear guidelines and expectations for online learning, as well as regular communication and feedback from teachers, can positively impact student academic performance. Additionally, a study by Saqr et al. (2018) found that promoting collaboration and interaction between students and instructors, such as through online discussion forums or virtual office hours, can improve student engagement and motivation in online learning environments.

The flexibility in hybrid learning environments can have both benefits and challenges for student academic performance, it is important for institutions and instructors to consider the needs and learning styles of their students and provide appropriate support and resources. By implementing best practices and considering the individual needs of students, institutions can optimize student success in online and hybrid learning environments.

1.3 Significance of the Study

The COVID-19 pandemic has highlighted the need for educational institutions to be flexible and adaptable to change. Hybrid learning environments provide an opportunity for educators to meet the needs of students who may not have access to traditional educational institutions or who have other commitments, such as work or family responsibilities. Additionally, understanding the flexibility in a hybrid learning environment on academic performance can help educators and institutions tailor their approaches to better support student success. This study is significant as it will provide insights into the effectiveness of hybrid learning environments and offer recommendations for improving educational outcomes in the context of the COVID-19 pandemic.

2.0 LITERATURE REVIEW

With the recent advancements in technology, education has been rapidly changing over the years. Hybrid learning, also known as blended learning, is a combination of traditional classroom-based learning and online learning. The flexibility offered by hybrid learning environments is attracting more attention from educators and researchers. The purpose of this literature review is to examine the flexibility in hybrid learning environments on student academic performance.

2.1 Academic Performance

With the recent growth of technology, education has become more flexible and diverse, especially after the COVID-19 era. Hybrid learning, a combination of traditional classroom-based learning and online learning, has emerged as a popular method of learning. Academic performance is a crucial aspect of education, and it can be defined in many ways. This literature review will examine the definition of academic performance and how it relates to flexibility in hybrid learning environments. Academic performance can be defined in many ways, depending on the context of the study. According to Kumar and Sharma (2021), academic performance refers to the level of achievement and success attained by a student in a given subject or course. It can also refer to the skills and knowledge acquired by students during their learning process. In a study conducted by Singh and Kaur (2021), academic performance was defined as the grades and marks obtained by students in their academic assessments.

In addition, academic performance is a term used to describe the achievement of students in a learning environment, typically measured by grades, test scores, and other quantitative and qualitative measures. According to Carter (2009), academic performance can be defined as

"the extent to which a student has attained the skills, knowledge, and understandings that teachers, schools, or educational authorities have determined are appropriate to a given level of schooling or education." Academic performance needs to be measured accurately in planning students' education. It helps to identify how good the achievement gained by students in educational goals is, and they will determine based on the examinations or continuous assessment (Quenemoen et al., 2003). Cumulative Grade Point Average (CGPA) is the grade that use by all universities to measure students' academic achievement. (Ali et al., 2013). The institution can observe the students' CGPA by the end of the semester and compare it with the CGPA of a traditional class.

2.2 Hybrid Class

Hybrid courses offer greater flexibility for students, as they can complete some course activities online and can attend in-person classes on a part-time or full-time basis. In contrast, face-to-face courses require students to attend classes in person on a fixed schedule. A hybrid class, also known as a blended class, is a type of learning environment that combines both traditional in-person instruction with online learning components. According to Vaughan et al. (2013), a hybrid class is defined as a course where "a significant portion of the learning activities have been moved online, and time traditionally spent in the face-to-face classroom is reduced but not eliminated." In other words, hybrid classes offer students the opportunity to engage in both synchronous and asynchronous learning activities, with a mix of online and face-to-face interactions with instructors and peers.

In the context of hybrid learning environments, academic performance can be influenced by various factors, including the quality of online learning materials and resources, the level of engagement and interaction between students and instructors, and the effectiveness of assessment and feedback mechanisms (Sitzmann et al., 2016). It is also important to consider how flexibility in a hybrid learning environment can impact academic performance, as students may have different learning styles and preferences that can influence their ability to succeed in a hybrid class. Overall, understanding the definitions of hybrid classes and academic performance is crucial for conducting research and evaluating the effectiveness of hybrid learning environments. By examining how different factors impact academic performance in hybrid classes, educators and researchers can develop strategies and interventions to improve student outcomes and enhance the quality of hybrid learning experiences.

2.3 Flexibility

According to a study conducted by Lee et al. (2020), flexibility in hybrid learning environments had a positive effect on student academic performance. The study showed that students who had access to flexible learning options had better academic performance compared to those who did not. The study also found that the flexibility offered by hybrid learning environments reduced stress levels among students, which resulted in better academic performance. Similarly, a study conducted by Wang et al. (2020) found that flexibility in hybrid learning environments increased student engagement and motivation, which in turn improved their academic performance. The study found that students who had access to flexible learning options such as asynchronous learning had higher levels of engagement and motivation compared to those who did not.

On the other hand, a study conducted by Nong et al. (2022) found that the impact of flexibility on student academic performance in hybrid learning environments was dependent on the student's learning style. The study found that students who had a strong preference for traditional classroom-based learning had lower academic performance in hybrid learning environments compared to those who had a preference for online learning. In support of these findings, as stated by Rehm et al. (2021) found that the flexibility offered by hybrid learning environments had a positive impact on student academic performance. The article also highlighted the importance of flexibility in meeting the diverse needs of students, which could improve student engagement and motivation, leading to better academic performance.

3.0 DISCUSSION AND CONCLUSION

Hybrid learning, which combines online and in-person learning, has become increasingly popular in higher education due to its flexibility and adaptability to diverse student needs. This paper will discuss the benefits and challenges of flexibility in a hybrid learning environment and provide recommendations for optimizing student success. One of the key benefits of flexibility in a hybrid learning environment is the ability for students to engage with course

content and assignments at their own pace and on their own schedule. According to a study by Huang et al. (2020), students in a hybrid learning environment reported higher levels of satisfaction with the flexibility of their courses compared to students in traditional face-to-face courses. Additionally, hybrid learning environments can provide students with opportunities for more personalized learning experiences, as they can choose to focus more on areas in which they need additional support or challenge themselves with more advanced content.

However, there are also challenges associated with flexibility in hybrid learning environments, particularly in terms of maintaining engagement and motivation among students. As noted by Pardo-Ballester and Esteve-Mon (2020), the lack of structure and accountability in online learning can lead to lower levels of engagement and motivation among students. Additionally, the flexibility of hybrid learning environments can create challenges for instructors in terms of managing student progress and providing timely feedback. To support student success in hybrid learning environments, it is important to promote clear communication and collaboration between instructors and students. According to a study by Conrad and Donaldson (2011), effective communication and collaboration between instructors and students can help to mitigate some of the challenges associated with hybrid learning environments. In addition, providing access to the necessary technology and infrastructure for online learning is critical for ensuring that students can fully engage with course content and assignments.

In conclusion, flexibility in hybrid learning environments can provide students with opportunities for personalized learning experiences and greater control over their learning. However, it is important to also address the challenges associated with flexibility, particularly in terms of maintaining student engagement and motivation. To optimize student success in hybrid learning environments, it is recommended that higher education institutions provide support and resources to enhance student motivation and engagement, promote clear communication and collaboration between instructors and students, and ensure access to necessary technology and infrastructure for online learning.

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16ACADEMIC PERFORMANCE, LEARNING ENVIRONMENT AND SOCIAL SUPPORT INFLUENCING STUDENT LEVELS OF DEPRESSION IN ONLINE LEARNING: A CONCEPTUAL PAPER

Muhammad Ridhwan bin Mat Zaki, Nur Zarifah binti Mohamad Nazri ridhwan@gapps.kptm.edu.my,
zarifah@gapps.kptm.edu.my
Kolej Poly-Tech MARA Alor Setar Alor Setar, Kedah, Malaysia

ABSTRACT

The COVID-19 pandemic issue has made online learning a requirement in all educational institutions, including schools, colleges, and universities. Even though they face challenges in many ways, teachers and students must adapt to online learning technologies to ensure that it is used as usual. Some of them struggle with anxiety and depression. This study aimed to investigate the factors influencing student levels of depression in online learning. Specifically, the researcher focused on the relationship between academic performance, learning environment, and social support and their impact on students' levels of depression. Students with higher academic performance and a supportive learning environment reported lower levels of depression. Moreover, students who received greater social support from peers, instructors, and family members also reported lower levels of depression. The study contributes to the growing body of literature on the mental health of students in online learning environments by highlighting the importance of academic performance, learning environment, and social support in influencing levels of depression. The study's findings have important implications for educators and policymakers, highlighting the need to prioritize students' mental health and well-being in online learning environments. To improve students' mental health, educators must provide students with a supportive and engaging learning environment that fosters a sense of community and belonging. Additionally, educators should focus on helping students achieve academic success, as this can have a positive impact on their mental health.

Keywords: Academic Performance; Learning Environment; Social Support; Depression; Online Learning; mental health

1.0 INTRODUCTION

1.1 Background of Study

Depression is a prevalent mental health condition among students, and the shift to online learning due to the COVID-19 pandemic has raised concerns about the potential impact on student mental health. Several people have been impacted by the coronavirus, commonly known as Covid-19. According to WHO, it has been deemed a pandemic due to its extensive spread. As a result, the majority of nations declared students down, and everyone, even those working in the education sector, was ordered to work from home. Because of the epidemic, students have transitioned from attending traditional morning sessions to online learning (Chung et al., 2020).

Online learning has become increasingly popular in recent years, with its use further accelerated during the COVID-19 pandemic. While online learning offers numerous benefits such as flexibility and convenience, it also presents unique challenges for students. One such challenge is the risk of depression, which can be influenced by various factors. The COVID-19 pandemic has intensified the impact of these factors on student mental health, leading to an urgent need for research to identify the factors that influence student depression levels in online learning.

1.2 Research Problem

Depression among students towards online learning is a complex and multifaceted issue that can vary depending on a variety of factors such as academic performance, learning environment, and social support. Online learning has become increasingly popular in recent years, and its use has only accelerated during the COVID-19 pandemic. While online learning has its benefits, such as flexibility and convenience, it can also present unique challenges for students. One such challenge is the risk of depression, which can be influenced by various factors. Poor academic performance is one such factor that can increase the risk of depression

in online learning. According to a study by Yousef et al. (2020), academic stressors were found to be a significant predictor of depression in students studying online during the COVID-19 pandemic. In addition to academic stressors, the learning environment can also impact student depression levels.

These studies found varying rates of depression among students toward online learning. The study by Cao et al. (2020) found that 43.7% of college students in China reported experiencing depressive symptoms during the pandemic. The study by Son et al. (2020) found that 25% of university students in the United States reported experiencing symptoms of depression as a result of the pandemic and online learning. Hence, the study by Mohammed, Z. et al. (2021) found that 31.7% of secondary school students in Malaysia reported experiencing moderate to severe symptoms of depression during online learning.

Factors such as increased academic pressure and reduced social interaction were identified as potential contributors to the student's mental health concerns. A study by Bashir et al. (2021) found that a noisy and uncomfortable learning environment negatively affected students' mental health during online learning. Finally, social support is crucial for student well-being, as a study by Yuqiao Y. et al. (2021) found that students who received emotional support from their peers and family reported lower levels of depression during online learning. These findings highlight the importance of addressing various factors influencing student depression levels in online learning.

1.3 Significance of the Study

It's important to note that these studies may have limitations and further research is needed to fully understand the impact of online learning on student mental health. The researchers will be able to broaden their understanding of factors influencing students' level of depression in online learning. In order to pinpoint the causes of this problem, it is crucial to do research on the prevalence of depression among students who take online learning. This research provides insight into the level of depression that develops among college and high school students. Also, this study will assist students in recognizing the causes of online learning misery and in taking preventative measures to avoid similar issues in the future. This study was important for researchers to gain more knowledge within this field and use it for future accomplishments, how far can job-hopping affects to organizations. Furthermore, the parents will benefit from this study's additional major contribution. This study provided parents with useful viewpoints for preventing depression in their kids. The inclusion of academic administrators is another important contribution to this study. Academic administrators are a group of persons that assist in planning and organizing academics and students at any branch of a university or institution. Counseling to students or overseeing pertinent social programming are among the tasks.

2.0 LITERATURE REVIEW

2.1 Depression

Depression is a mental health disorder that is characterized by persistent feelings of sadness, hopelessness, and loss of interest or pleasure in daily activities, as well as changes in appetite, sleep, and energy (World Health Organization, 2017). It can also lead to physical symptoms such as aches and pains, headaches, and digestive problems, and in severe cases, thoughts of suicide. Chinese college students' anxiety and depression during the Corona Virus outbreak were evaluated by Xiang et al. (2020), who also looked into the connection between depression and anxiety symptoms during physical activity. The study predicted that many college students would experience depression and anxiety as well as little physical activity. Contrarily, certain forms and levels of physical activity would lessen the signs and symptoms of anxiety and sadness. According to the World Health Organization (2021), depression is a widespread ailment that affects the world's population of about 3.8 percent, with 5.7 percent of persons and 5.0 percent of adults over 60 years old suffering from depression. Of the people around the world, about 280 million suffer from depression.

2.2 Online Learning

According to Maulana, H. A., (2021) one of the uses for distance education is online learning. Online education is anticipated to offer options for students to continue taking lessons or

courses without any distance or time constraints in order to protect health and safety and allow students to learn in a secure setting. Although it has been agreed upon, online learning still sparks debate when put into practice, particularly among parents and students. Online learning is only thought to be useful for assignments by teachers; teaching students to understand the topic is thought to be very difficult. Each student also possesses a unique set of technological and financial skills. Not all students have access to resources for online learning. Online learning is hampered by devices that do not support poor internet connections, expensive internet quotas, and other issues. Yet, education must go on. While online learning is a new phenomenon for many of us, certain specific considerations need to be highlighted and treated carefully. Students may experience psychological issues including isolation and maintaining strong physical boundaries, including anxiety, despair, frustration, and trauma. The entire teaching-learning environment would be affected if the students are the ones who suffer the most (Sifat, 2020).

2.3 Academic Performance

"In particular, perceived academic performance was found to be associated with increased psychological distress among university students during the COVID-19 pandemic, suggesting that poor academic performance may exacerbate mental health problems in the context of online learning" (Co et al., 2021). The results also indicated that students with lower academic performance tended to experience more anxiety and depression than those with higher academic performance (Gao et al., 2020). Moreover, academic failure and decreased academic performance in online classes were associated with higher rates of psychological distress among students (Co et al., 2021). This may be due to various factors such as increased academic pressure, difficulty adapting to online learning environments, and reduced social support from peers and instructors. It is important for educators and mental health professionals to be aware of the potential impact of academic performance on student mental health in online learning settings and provide appropriate support and resources to address these issues.

2.4 Learning Environment

The learning environment in online learning refers to the digital platform, tools, and instructional practices that facilitate learning in a virtual setting. It includes factors such as the quality of the digital platform, level of interactivity, the quality of the instructional design, and support available to learners. The learning environment is known to have a significant influence on students' academic performance and psychological well-being, including depression. Several studies have shown that the online learning environment can impact students' mental health and lead to depression. For instance, a study by Liu et al., 2021 found that students who had negative perceptions of the online learning environment had a higher likelihood of experiencing depression. Another study by Barrot et al. (2021) showed that students who experienced technical difficulties, inadequate instructional support, and a lack of interaction with peers were more likely to experience stress and depression. Additionally, a study found that the level of interactivity and collaboration among students in an online learning environment was positively correlated with students' psychological well-being. Similarly, a study showed that a supportive online learning environment with high-quality instructional design and regular communication and feedback from instructors led to positive outcomes, including lower levels of stress and depression.

2.5 Social Support

Social support is an important factor that can influence students' mental health, including depression, in online learning. Social support refers to the emotional, informational, and practical assistance provided by individuals or groups, which can help students cope with stress, anxiety, and other mental health problems. Moreover, students who feel isolated, disconnected from their peers, and unsupported by instructors in an online learning environment may experience increased levels of depression. As noted by Liang & Ting (2022), this is because online learning may lack the social support and sense of community that traditional classroom learning provides. For example, social support from family, friends, and instructors was positively associated with students' psychological well-being in online learning. Another study by Liang & Ting (2022) reported that social support, including emotional support and communication with peers and instructors, was positively related to students' psychological well-being during the COVID-19 pandemic. Moreover, online communities and

peer networks can provide students with opportunities for social support, such as sharing experiences, providing advice, and offering encouragement. A study by Green et al. (2022) found that participating in online discussion forums and social media groups can reduce students' feelings of isolation and enhance their sense of belonging and connectedness, which can contribute to better mental health outcomes.

3.0 METHODOLOGY

To accomplish the aforementioned goals, a review of the literature was done utilizing an archival method. Using the terms "depression," "online learning," "academic performance," "learning environment," and "social support," it was possible to assemble the studies of various academics from online sources like Google Scholar and Emerald Insight. As a result, articles about the factors that influence students' level of depression that were published between 2018 and 2022 have been examined to fulfil the stated objective. The study would provide insights into the impact of academic performance, learning environment, and social support on students' mental health, which could inform the development of interventions and policies to promote students' mental health and well-being in online learning environments.

4.0 DISCUSSION AND CONCLUSION

The study on "Academic Performance, Learning Environment, and Social Support Influencing Student Levels of Depression in Online Learning" aimed to investigate the impact of academic performance, learning environment, and social support on students' levels of depression in online learning. The findings of this study can reveal several important insights into the factors that influence students' mental health in online learning environments. Firstly, the study found that academic performance was positively associated with students' levels of depression. This suggests that students who struggle academically in online learning environments are more likely to experience depression (Co et al., 2021). The study's findings are consistent with previous research, which has shown that academic stress and pressure can lead to mental health problems among students.

Secondly, the study found that the learning environment played a significant role in influencing students' levels of depression. Specifically, students who perceived their learning environment as supportive and positive had lower levels of depression compared to those who perceived their learning environment as negative or stressful (Barrot et al., 2021). This suggests that the design and implementation of online learning environments can have a significant impact on students' mental health. Lastly, the study found that social support was positively associated with students' mental health in online learning environments. Students who received social support from peers, family members, and educators had lower levels of depression compared to those who lacked social support. The previous study highlights the importance of social support in promoting students' mental health in online learning environments (Liang & Ting, 2022). In conclusion, the outcomes of the study suggest that academic performance, learning environment, and social support are factors that influence students' levels of depression in online learning environments. Mental health is very important nowadays that should take looked at among students because it can bring their life happy or sad to face a learning journey.

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17 EFFECT OF GALLERY WALK FLIPPED CLASSROOM (GWFC) ON ENGLISH LANGUAGE ACQUISITION AMONG DIPLOMA LEARNERS

Dr Siti Noor Azilah Mohd Naw, Norafni@Farlina Rahim, Nurfarahin Afina Fadzil, Mohamad Shafiq Ramli, Nazirul Azwan Ab Rahman

azilah@gapps.kptm.edu.my Kolej Poly-Tech MARA Ipoh Ipoh, Perak, Malaysia

ABSTRACT

This study aimed to investigate the Effect of Gallery Walk Flipped Classroom (GWFC) on English Language Acquisition among Diploma Learners. The study utilized a quasi-experimental design with pre- and post-tests to compare the performance of the experimental group and control group. The experimental group received GWFC treatment for four weeks while the control group received traditional classroom. Data were collected through pre- and post-tests and a focus group interview. The results were analyzed and compared using nonparametric tests as the sample size is less than 30 samples in each classroom. Pre- and post-test scores were collected as quantitative data to evaluate the learning achievement. Qualitative data were also collected from a focus group interview to explore how GWFC affect language acquisition. The findings showed that the GWFC group outperformed the control group in terms of English language acquisition, engagement, and satisfaction. The findings showed that GWFC learners scored significantly the highest in language acquisition compared to standard flipped classrooms and traditional classrooms. There is a significant difference in achievement means between before and after the treatment for the GWFC. The study concludes that the GWFC approach can be an effective method for promoting English language acquisition among diploma learners. The study recommends that instructors should consider implementing GWFC in their classrooms to enhance English language acquisition among their learners. Thus, it can be said that Gallery Walk flipped instruction had a large effect on language acquisition among diploma learners. The findings are followed by implications, limitations and directions for future research.

Keywords: Higher education, English language acquisition, flipped classroom, Gallery Walk

1.0 INTRODUCTION

The evolution of technology and the media-driven environment has changed education in order to be a more advanced and challenging field. In today's learning environments, the increasing integration of technology-enhanced teaching strategies promotes learners' learning to meet 21st-century learning goals (Crippen & Archambault, 2012). Instructors should be able to utilize technology, pedagogy and content knowledge (TPACK) effectively in both face-to-face and virtual classrooms.

Appropriate incorporation of technology in their teaching foster more positive attitudes among learners and maintain learner interest. These technology goals through the concept of a flipped classroom, allow personalized learning to homogenized learning standards. As stated by Bergmann and Sams (2012), technology has become the latest mean of learning as electronic devices have become a part of learners' free time. The integration of technology with traditional methods has also affected instructors' teaching methods and created several pedagogical methods including blended learning and the flipped classroom.

Blended learning combines in class activities and online learning outside class (Poon, 2014). Learners experience face-to-face interactive learning in the traditional classroom and online learning outside classroom. This shifts from teacher-centered instruction to learner-centered learning. In flipped classroom, learners are more actively engaged in learning activities compared to the traditional classroom (Bishop & Verleger, 2013). They learn independently with the use of technology tools and instructor as the facilitator. Through the concept of flipped classroom, learning becomes a Gallery Walk, critical and collaborative online activity.

1.1 Problem Statement

In the traditional teaching method, the instructor delivers information while learners are expected to take notes and learn the content. As a result, learners feel difficult to retain information and to engage in deep learning. With active learning, learners are involved in collaborative activities and group participation that develop deep and meaningful learning. In a flipped classroom, they significantly reported more positive concerning attitudes towards the use of video as a learning tool, perceived learning and learning empowerment as compared to high achievers (Nouri, 2016).

Flipped teaching models use technology to control learning in a classroom (Bergmann & Sams, 2012). Gallery Walk learning strategies improve the mastery of knowledge and skills of learners of all ages (Slavin, 1991). The findings are not consistent as little research has been done to assess the actual effects of Gallery Walk learning in a flipped classroom (Bates & Galloway, 2012). There is a need to identify the effects of the GWFC on language acquisition focusing at higher education.

Although gallery walks have been shown to be an effective strategy for promoting collaborative learning and engagement in traditional classroom settings, it is not yet clear whether this strategy is equally effective in a flipped classroom. While the flipped classroom model has gained popularity in recent years as a way to promote active learning and student-centered instruction, it is not yet clear how best to incorporate gallery walks into this model. Therefore, this study aims to investigate the effectiveness of gallery walks in a flipped classroom context, specifically exploring their impact on student engagement, collaborative learning, and learning outcomes. By addressing this gap in the literature, this study can contribute to a deeper understanding of how best to design and implement effective flipped classroom activities, ultimately improving the quality of education for students.

Thus, the purpose of the present study is to investigate the effectiveness of the GWFC on language acquisition among diploma learners. The study focuses to discover any significant differences in learning achievement between learners who were exposed to the traditional classroom (TC), flipped classroom (FC) and GWFC (GWFC).

1.2 Research Objectives

Based on the issues that were raised in the earlier discussion, the main purpose of this study is to investigate the effectiveness of the GWFC on language acquisition among diploma learners. The objectives of this study are:

1. To compare the English language acquisition performance of diploma learners who receive GWFC treatment with those who receive traditional face-to-face instruction.
2. To investigate the effect of GWFC on engagement and satisfaction of diploma learners in English language acquisition.
3. To explore the potential benefits and drawbacks of implementing GWFC in English language acquisition among diploma learners.
4. To identify the most effective strategies and techniques for implementing GWFC in English language acquisition among diploma learners.
5. To investigate the perceptions of teachers and students towards GWFC in English language acquisition among diploma learners.
6. To develop guidelines for implementing GWFC in English language acquisition among diploma learners.
7. To contribute to the body of knowledge on the effectiveness of GWFC in English language acquisition among diploma learners.

These research objectives can guide the study in answering research questions and achieving the overall goal of the study.

1.3 Research Framework

According to learning styles theories, individuals' unique learning styles with

matching learning experiences enhance academic achievement. Derived from Lewin, Dewey and Piaget, Kolb's theory of experiential learning develop Kolb's model of learning styles. Kolb's four learning styles are given by the permutations of two embedded dimensions: perception and processing in a universal learning cycle.

The Triple E Framework measures how technology can help instructors to select tools and design learning experiences thus further guide learners so the tools to meet and exceed learning goals (Kolb, 2017). The framework is based on three factors that instructors need to be clear about when using technology in order to further the goals of the lessons. As an engagement factor, technology allows learners to focus on the learning process. As the enhancement factor, technology allows learners to develop more understanding of concepts and ideas. Meanwhile, as the extension factor, technology allows learners to connect learning and their life experiences.

Several pieces of research have been on the effect of Gallery Walk or flipped classroom on academic performance, but not many studies the practice of Gallery Walk in the flipped classroom with a specific focus on language acquisition in higher education. By understanding the effect of Gallery Walk in the flipped classroom, the better instructional method can be applied to learning activities in classrooms. The study also provides information regarding the use, governance and training related to administrative future action.

It can be concluded that the effect of the flipped classroom and Gallery Walk learning can be both positive and negative on language acquisition due to the differences in learning strategies between users and non-users. When technology is being integrated into the curriculum, it is most often for routine or lower-order tasks. Very few studies discussed the effect of Gallery Walk learning in the flipped classroom on language acquisition. In short, an overview of research on the GWFC and its effect on language acquisition among diploma learners in private higher education.

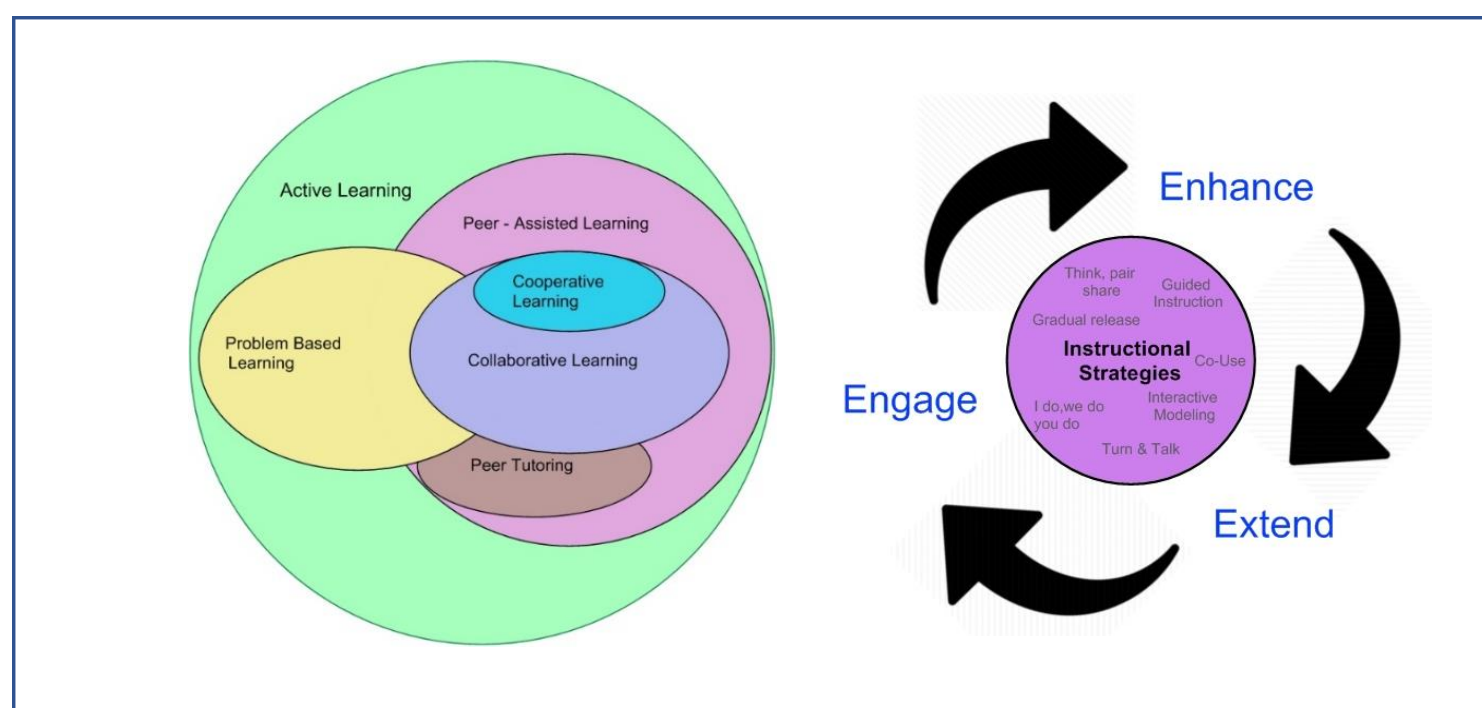


Figure 1. Learner-Centered Learning Theories + Triple E Framework.

(Bishop & Verleger, 2013; Kolb, 2017)

2.0 LITERATURE REVIEW

Flipped classrooms involve the instructor in order to provide the introductory lesson to the learners through a video that is either self-created or accessed from another online source including YouTube. The flipped classroom model encompasses any use of using Internet technology to control the learning in a classroom so that instructors can spend more time interacting with learners instead of lecturing (Bergmann & Sams, 2012). This is most

commonly being done using instructor-created videos that learners view outside of class time. It is called the flipped class model because the whole classroom/homework paradigm is "flipped".

A gallery walk is a teaching strategy that involves students moving around a classroom or other learning space to view and analyze displays of information on a particular topic. The displays may include posters, charts, photographs, or other visual aids that present information in a concise and visually appealing way. Research has shown that gallery walks can be an effective way to promote student engagement, critical thinking, and collaborative learning. In a study by Barzilai and Blau (2014), students who participated in a gallery walk on the topic of "Water Resources" demonstrated increased knowledge and understanding of the subject matter, as well as improved communication skills and a greater appreciation for the importance of water conservation.

Overall, research suggests that gallery walks can be a valuable teaching strategy for promoting student engagement, critical thinking, and collaborative learning. However, it is important for educators to carefully plan and structure gallery walk activities to ensure that they are effective and aligned with learning goals. Gallery walks can also be an effective strategy for promoting collaborative learning and student engagement in a flipped classroom. In a flipped classroom, students engage with instructional materials outside of class time, typically through online videos or readings, and then come to class prepared to engage in activities that reinforce and extend their learning.

Research has shown that gallery walks can be an effective activity to incorporate into the in-class portion of a flipped classroom. In a study by Strayer and Planchon (2018), students in a flipped classroom were assigned to small groups and asked to create a poster or visual display summarizing the key concepts from the pre-class instructional materials. During class, the groups then participated in a gallery walk where they viewed and discussed each other's displays, providing feedback and asking questions to deepen their understanding of the material. The results of the study indicated that the gallery walk activity was effective in promoting student engagement and collaborative learning. Students reported that the activity helped them to clarify their understanding of the material and that they enjoyed the opportunity to interact with their peers and receive feedback on their work.

Another study by Lo and Hew (2017) investigated the use of gallery walks in a flipped classroom context to promote critical thinking skills. In this study, students in a flipped classroom were assigned to small groups and asked to create a poster or visual display that presented arguments for and against a controversial issue. During class, the groups participated in a gallery walk where they viewed and discussed each other's displays, using critical thinking skills to evaluate the arguments presented. Research on the use of gallery walks in a flipped classroom context in Malaysia is relatively limited. However, a few studies have investigated the effectiveness of this strategy in promoting student engagement and learning outcomes in Malaysian classrooms.

In a study by Alias and Ali (2019), gallery walks were used as a learning activity in a flipped classroom for a group of Malaysian secondary school students. The students were asked to create posters summarizing the key concepts from their pre-class learning materials and then participated in a gallery walk where they viewed and discussed each other's posters. The results of the study showed that the gallery walk activity was effective in promoting student engagement and collaboration, as well as improving their understanding of the subject matter. The researchers also noted that the flipped classroom approach was well-received by the students, who reported that they enjoyed the opportunity to take ownership of their learning and engage in meaningful discussions with their peers.

Another study by Mohamed et al. (2019) investigated the effectiveness of a flipped classroom approach that incorporated gallery walks in a Malaysian university setting. In this study, students in a statistics course were assigned to small groups and asked to create posters summarizing the key concepts from their pre-class instructional materials. During class, the groups participated in a gallery walk where they viewed and discussed each other's posters, providing feedback and asking questions to deepen their understanding of the material. The results of the study showed that the flipped classroom approach was effective in promoting student engagement and improving learning outcomes, with students reporting increased motivation and a deeper understanding of the subject matter. Overall, these studies suggest that gallery walks can be an effective learning activity to incorporate into a flipped classroom

in Malaysia, promoting student engagement, collaboration, and learning outcomes.

3.0 METHODOLOGY

This study investigated the effectiveness of the GWFC on language acquisition among diploma learners. A quasi-experimental research design involving the implementation of the flipped classroom, the collection and analysis of both quantitative and qualitative data was utilized in order to assess its effect on language acquisition in higher education.

The participants were 63 learners enrolled in three classrooms of a mathematic course in a private college. Non-parametric statistical techniques are chosen due to very small samples ($N > 30$) and data do not assume about the population as in the parametric techniques (Pallant, 2016). Based on assumptions that sample data are the random, independent, continuous and indifferent distribution of the population.

Descriptive statistics were used to compute summary statistics in order to provide the mean and standard deviations of achievement for each group. The results of both quantitative and qualitative data analyses are represented based on the research questions and hypotheses.

The Wilcoxon Signed Rank Test was applied in order to determine if there is a significant difference between the pre-test and post-test scores for the GWFC. The pre-test scores were compared to post-test scores among learners in the group and the difference is statistically significant. Thus, there is a significant difference in learning achievement means between before and after the treatment for the GWFC.

The Kruskal-Wallis Test compared the differences in learning achievement among learners in a TC, FC and GWFC. There low, moderate and high learning achievements among the participants. Learners in GWFC performed better than FC learners which were better than TC learners. However, there is no significant difference in learning achievement means between learners in TC, FC and GWFC. Also, learners in FC performed not significantly better than learners in TC. Similarly, learners in GWFC performed not significantly better than FC learners.

Qualitative data were collected at the end of the experiment in order to provide depth to the learners' responses. The focus group interview explored how the GWFC affects language acquisition among diploma learners. The focus was on their views on the incorporation of Gallery Walk learning into flipped teaching strategy and its effect on their language acquisition. Based on the selected responses to the interview protocols, learners indicated positive attitudes toward learning experience in the GWFC after the experiment.

The most common response was they could learn from others and they could guide each other. This showed positive interdependence among group members even though there was some disagreement. Most learners agreed on the effectiveness of group learning and their ability in order to work with others. The difference could be their ability to give feedback on their understanding of others' ideas. Some were able and some were not. Some preferred to work alone.

The GWFC learners were more open to cooperation in their learning environment and actual classroom experience. They valued learning with group members thus led to successful learning. As the flipped method was initially new to them, learners preferred it as innovation in the classroom. They responded that a successful learning environment would include activities form them in order to apply their new knowledge. Overall, learners had a positive experience as their responses were mainly centralized to enjoyment. Besides, their achievement was better after the Gallery Walk flipped learning resulted from motivation factors either by themselves or by the other group members. They had fun learning with their peers and felt that achievement levels could be levelled among group members.

4.0 CONCLUSION

Based on the data analysis, the output value showed significant improvement and resulted in higher scores compared to before treatment in GWFC. The finding is that there is a significant difference in learning achievement means between before and after the treatment for the GWFC. It can be said that Gallery Walk flipped instruction had a large effect on learning achievement among diploma learners.

The result showed that there low, moderate and high learning achievements among the

participants. Learners in GWFC performed better than FC learners which were better than TC learners. Better scores are achieved through implementation of GWFC in comparison to FC and TC. Thus, there is a significant difference in learning achievement means between learners in a traditional classroom, flipped classroom and Gallery Walk flipped classroom with a small effect size according to Cohen's (1988) criteria.

Qualitatively, based on the responses, GWFC learners had positive attitudes toward Gallery Walk learning and flipped classroom after the experiment. This showed positive interdependence among group members even though there was some disagreement. GWFC resulted in better achievement and teamwork. As the flipped method was initially new to them, learners preferred it as innovation in the classroom. They responded that a successful learning environment would include activities from them in order to apply their new knowledge. Overall, learners had a positive experience as their responses were mainly centralized to enjoyment.

The GWFC had a large effect on learning achievement among diploma learners. The combination of Learner-centered Learning Theory and Triple E framework has accelerated the math performance of high-achievers. As supported Chen et al (2015}, Foldnes (2016) and Zhang (2018), the incorporation of Gallery Walk learning into flipped classroom affects learners' achievement, attitudes & behavior positively. Gallery Walk learning also enhances learning motivation, potential & critical ability toward better academic performance (Ai, 2009).

GWFC has a positively large effect in learning. Quantitatively, learners show a significant difference in achievement means between before and after the GWFC. Gallery Walk is a technique of cooperative learning resulted in better achievement and teamwork. The learners are responding more actively on the course materials compared to a standard gallery walk, a significantly higher two-way participation from the learners was observed during the activity. The GWFC can be used as a guideline not only for future researchers but for educators as well. As shown from the result gained, the innovation of GWFC for learners is effective and offers wide potential to be further developed in the future.

4.1 Research Implications

1. The combination of Gallery Walk learning & flipped teaching fits constructivism, active learning & Vygotsky Theory.
2. Flipped classroom enhances ZPD outside class & Gallery Walk learning further realizes it during class discussion.
3. The combination of Learner-centered learning theory & Triple E Framework in CFC improves learners' autonomous learning & communication skills.
4. Improvement of English language acquisition learning among learners at any educational levels.
5. Professional development training of various flipped teaching strategies for instructors.
6. Supports from top management to develop instructional tools for an active learning environment.
7. The use of mixed method research design & non-parametric statistical techniques.
8. Pioneer innovation in Malaysia in regards to STEM/Non STEM learning strategies
9. Different models of flipped learning to overcome the issues of existing English language acquisition education
10. The GWFC approach can be integrated into English language instruction to enhance students' learning and engagement.
11. The GWFC approach can be used to develop various language skills, including reading comprehension, critical thinking, vocabulary, writing, and speaking.
12. Teachers can use the GWFC approach to create an interactive and collaborative learning environment that fosters students' participation and active learning.

4.2 Research Limitations

1. A limited time frame to investigate learning achievement
2. A relatively small sample size and convenience sampling may not be generalized for the population
3. Failure to control confounding factors when comparing groups
4. Learners' preference to work alone or resistance to cooperation might be a barrier to perform
5. The analysis of learner performance was limited
6. The study is limited to a specific group of diploma learners, and the results may not be generalizable to other contexts or populations.
7. The study focuses on English language acquisition, and the effectiveness of the GWFC approach may vary across different subject areas or disciplines.
8. The study relies on self-reported data from learners and may be subject to social desirability bias.
9. The study does not control for other variables that may affect language learning outcomes, such as learners' motivation, prior knowledge, and proficiency level.

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4.4 Recommendations

1. A longer more extensive study to collect more comprehensive data for deeper understanding
2. Further longitudinal studies provide more in-depth finding
3. More extensive study with different instructors, different semester or different assessment
4. To be aware of learners' diverse needs & learning styles
5. New instructional strategy need implementation with easier content
6. Future studies should compare the effectiveness of the GWFC approach with other flipped learning strategies and traditional teaching methods.
7. Longitudinal studies are needed to investigate the long-term impact of the GWFC

approach on learners' language proficiency and retention.

8. The effectiveness of the GWFC approach should be examined in different educational contexts and with learners from diverse linguistic and cultural backgrounds.
9. Studies should investigate the factors that may influence the success of the GWFC approach, such as learners' motivation, engagement, and prior knowledge.
10. Further research should explore the potential of the GWFC approach to promote learners' critical thinking, problem-solving, and collaboration skills.

4.5 Directions for Future Research

1. Flipped classroom strategies for larger population, extended time duration, broader range of courses, any education level
2. More data collection on learners' perspectives based on structure of activities, approach & their mindset for learning comfort
3. Guidelines on the productive use of technology in classroom toward learning enhancement
4. Focus on instructor's roles as a learning tool in the classroom
5. Various implementation of flipped classroom to establish best practices
6. The effect of peer tutoring on learning experience & motivation of flipped classroom to establish best practices
7. Assessment of Gallery Walk learning
8. Investigate the role of teachers in implementing the GWFC approach and their attitudes towards this teaching method.
9. Explore learners' preferences and perceptions towards the GWFC approach, and how these perceptions may influence their motivation and engagement.
10. Examine the effectiveness of the GWFC approach in developing learners' 21st-century skills, such as communication, collaboration, and creativity.
11. Compare the impact of the GWFC approach on different language skills, such as reading, writing, listening, and speaking, and identify the areas where it is most effective.
12. Examine the potential of the GWFC approach to promote intercultural competence and cross-cultural understanding among learners from diverse backgrounds.
13. Investigate the role of teachers in implementing the GWFC approach and their attitudes towards this teaching method.
14. Explore learners' preferences and perceptions towards the GWFC approach, and how these perceptions may influence their motivation and engagement.
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18PARTICIPATORY DESIGN APPROACH WITH TEENAGERS TO SOCIAL MEDIA DESIGN

Mohd Rosidi Omar rosidi@gapps.kptm.edu.my Kolej Poly-Tech MARA Alor Setar Alor Setar, Kedah

ABSTRACT

Teenagers' lives and experiences have been prominently influenced by social media, which encourages some values (while forbidding others) and offers a fresh way to engage with others. Nevertheless, teenagers are rarely engaged in the creation and growth of popular social media, however, because their human characteristics are not taken into account. Therefore, the primary objective of this study is to capture significant factors of human characteristics by employing teenagers to cooperatively design a new social media application. We ensure that by actively participating and involving teenagers in design activities, we can recognize their thoughts, emotions, and behaviors as the human characteristics towards social media use. Giving participants access to design components or creative materials allows them to construct their ideal experience in a manner that clearly communicates what is important to them and why. This process is identified as participatory design. During participatory design session, the teenagers will be experiencing selected processes such as brainstorming, responding to various scenarios, and developing prototype to extract insights in the forms of factors of HCI for teenagers and design preferences. Paper prototyping technique is the most appropriate participatory design tool used as it requires no technical skills, easy and fast to develop.

Keywords: participatory design, paper prototyping, social media, teenagers, prototype, human characteristics

1.0 INTRODUCTION

Teenagers and social media cannot be separated. Teenagers' lives and experiences have been prominently influenced by social media, which encourages some values (while forbidding others) and offers a fresh way to engage with others. Teenagers use social media in most of their activities. It is extensively used in academic (Taufik, Eyitayo, & Goplang, 2022; Suprato, 2020; Dennen et al., 2019), entertainment and personal life (Shah, Chen, Sonner, & Sadler, 2023; Corvite, Zhang, & Haimson, 2022; Saha, et al., 2021), and news and current events (Rocheleau & Chiasson, 2022; Goray & Schoenebeck, 2022; Charmaraman & Delcourt, 2021). Thus, most teenagers believe social media brings essential technology in their life (Rosenberg, Ophir, & Billig, 2021). Meanwhile, a recent encounter has exposed that entirely 95% of United States of America's teenagers own a smartphone or have access to it (Anderson & Jiang, 2018). Specifically, for Malaysian perspective, the Internet user at the range of age between five to seventeen years old has fully-fledged more than 50% since 2018 (Malaysian Communications and Multimedia Commission, 2020). In the same report, Facebook, YouTube, and Instagram has been listed by MCMC as the most retrieved social media platforms. While, WhatsApp, Facebook Messenger, and Telegram has been declared as most users' communication apps.

Teenagers' involvement in interaction design requires a specialized, classified, and unique study that make them unlike from study with children and adults. Teenagers are a group of users that categorized under a less-discovered region because of least attention and a small number of research in this emerging discipline (Björling, Rose, Davidson, Ren, & Wong, 2019; Fitton & Bell, 2014; Fitton, et al., 2014). In fact, teenagers able to offer a wide dimension in technology design and development when engaging with a mixture of children's creative minds with adults' articulacy. In addition, teenagers have also created a huge lucrative technology market share due to their population and their emerging spending power. As example, teenagers in the United States of America spending trend accounted for billions of dollars yearly (Fitton & Bell, 2014; Zimmerman, et al., 2016). They are active users of technology and can be both challenging and pleasing to work with because they would rather be working with teen-centric events and linguistic, but avoiding structural authorities conduct (Little et al., 2013). They too, demand special attention and concentrated research field so that they

can be known as the testing ground for the pioneering technologies (Dhir & Al-kahtani, 2013).

Human-Computer Interaction (HCI) for teenagers is considered as important, just like Child-Computer Interaction (CCI). From the psychological and psychosocial views, teenagers are not in common with adults and children in terms of their way of thinking, feeling, and acting. Hence, efforts should be directed towards learning teenagers inside these fields of computer interaction and user experience (UX) to notify the technological design process without disregarding them as technology users. The deployment of HCI for teenagers is expected to deliver an applicable direction for teenagers' computer interaction design and development. Hence, this study identifies and analyses teenagers' factors on social media according to their thinking, feeling, and action, to reveal valuable insights.

2.0 LITERATURE REVIEW

2.1 Social Media Design with Teenagers

Researchers Price (2018), Schwär and Moynihan (2020), Fang (2020), and Anderson (2018) have found that social media is designed to cause "the dopamine effect," or obsession. Technology companies developed strategies to encourage people to use technology in the setting of the growth of social media. (Saura et al., 2021). It's best if more people use technology because it will increase their ability to make money. (Boddy & Dominelli, 2017). According to Saura et al. (2021), social media aims to change user behavior in order to boost sales. Furthermore, social media platforms try to increase user involvement to generate more data, according to Carlson, Rahman, Voola, and De Vries (2018). This poses ethical and security questions. All of these issues, in addition to numerous others, including those involving mental health and melancholy, harassment, and sexual grooming, to name a few, raise doubts about young people's substantial exposure to and use of social media.

The creation and development of well-known social media platforms like Instagram, Tik Tok, Facebook, etc. that might fix or at least lessen some of the disagreeable issues are currently rare, as is the serious consideration of teenagers' needs and requirements. It's possible that by making inferences from them, designers will be able to create social media platforms that not only continue to draw users but are also thoughtfully built for their ease and security in both their engagement and behavior.

Fitton et al. (2013) suggested a unique interaction design approach specifically for adolescents because they didn't believe that the current HCI and CCI were completely relevant to or meeting teenagers' needs. Teenagers are known for their complexity and diversity in HCI study, which necessitate thorough investigation. (Bell, 2016). Teenagers will soon become adults, and it is possible to gain useful interactive insights to develop future technical breakthroughs. Although HCI for teenagers is still new and understudied, CCI has been debated for almost 50 years, so newcomers to the general HCI community may be acquainted with the idea and all of its foundations (Hourcade, 2015). Without a question, more research and writing are required to support HCI for teenagers' status as one of the major issues in technology design. The creation of a conceptual framework and approach is urged by Bell and Davis (2016) in order to value this age group on par with HCI and CCI. This study can lay out a precise route for achieving common objectives in interaction design, computer interaction in general, and the development of HCI for teenagers.

2.2 Participatory Design

When compared to other methods that do not require users to be actively involved throughout the data collection process, participatory design has the potential to uncover significant insights that would otherwise go unnoticed. Teenagers are constantly involved in the technology creation and development process. The best option for speeding the design and development process while utilizing participative design is a paper prototype because it is quick, inexpensive, and allows for a quick recovery if errors are made or met during the design.

Participatory design is a body of ideas, exercises, and research that promotes full user participation in tasks that result in computer-based activities and the development of computer hardware and software. (Muller & Druin, 2007). A new theory of knowledge representation and system designs that clearly differentiate between a system's conceptual model and implementation model are the roots of participatory design (Sjöberg & Timpka, 1998). When technology starts to be used more frequently in everyday life, researchers and designers need to come up with strategies for creating for interaction between people and

things. Work by Azenkot et al. (2016), Frederiks et al. (2019), and Rose and Björling are some examples of this. (2017).

Giving participants access to design elements or artistic items allows them to craft their ideal experience in a decisive way that expresses what is truly important to them and why. In order to gain information on particular aspects of HCI for teenagers and design choices for this project, participants in participatory design workshops will go through a number of specific processes, including observation, scenarios, and prototypes.

2.3 Paper Prototyping

Making user interfaces on paper is a helpful method for software, websites, and online applications. (Snyder, 2001, 2003). These workplace items—blank papers, index cards, marker markers, shears, paper cutter blades, transparencies, and glue sticks—are frequently used to replicate system design. Anyone of any age or background can use this well-liked method because it doesn't require any technical knowledge. This is beneficial because there is currently no need to write any computer code.

Paper prototyping can provide precise customer feedback during the early phases of development, and the procedure can be replicated to produce original ideas for the prototype. For example, Musthafa et al. (2019) used paper prototyping to create applications for users with physical disabilities, Boyd et al. (2019) used it to create applications for kids with neurotypical, ADHD, and autism spectrum disorders, Hammami et al. (2020) combined paper and video-based prototypes, and Rueda et al. (2020) used it to elicit functional requirements from their participants.

3.0 METHODOLOGY

This section offers a comprehensive description of the methods used to conduct this research, from selecting participants meticulously while considering Covid-19 limitations to organizing, creating, and executing the participatory design to conducting the analysis.

3.1 Participants

Participants in this research are teenagers between the ages of 17 and 19 who are enrolled in secondary schools and colleges of higher learning. Due to Covid-19 and several restrictions imposed by the government, convenient sampling is used to select and collect the participants, exactly adhering to the general standard operating procedure (SOP) during the pandemic. Thus, 26 participants participated in this research, 19 of whom were between the ages of 18 and 19 and 7 of whom were aged 17 or younger. Twelve female competitors and fourteen male individuals made up the gender split.

3.2 Participatory Design Sessions

Three participatory design sessions were separately conducted because the participants hailed from different academic schools and places. Nine volunteers from a higher education college participated, and seventeen people were selected from different secondary institutions. Each participant freely consented to participate in the research by submitting a letter of participation. The videotaping of the prototype activities and the fact that the data was only gathered for this project were both made known to all participants. These young people asked a lot of questions, so the academics assumed the position of guide. The actions of each session are described in depth below, with a summary of those activities appearing in Table 1.

Table 1 The detail of each session in the participatory design

Session 1	Session 2
Research Objective briefing	Testing
Participatory Design Introductory	Discussion and reflection
Paper Prototyping Introductory	Refining prototype
Paper Prototyping development	

Session 1:

The subjects were informed of the study's objectives, the results anticipated at the end of each session, and the kinds of activities they would engage in. Five main topics were emphasized in the first class, including the following:

- i. *The background of Participatory Design and Paper Prototyping*: The students were given explanations of the background of collaborative design and the paper prototyping technique. The students were all new with the technique and technology, so the researchers used clear descriptions and plain English to help them understand how paper prototyping is related to participatory design. The students were also informed that they were adopting the part of designers charged with creating the appearance of a fresh social networking site for teenagers. Instead, they acted as end consumers, responding to questions and adding commentary.
- ii. *The session involved hands-on activities and interactive*: It was told to the pupils that they would be learning this prototyping technique through direct synthesis of the prototype. The researcher, as previously stated, would act as their facilitator by urging the students to expose their ingenuity and identify variables of thinking, feeling, and action in order to envision the design of a new social media platform in the form of a paper mock-up. The creation of ideas and recommendations for the design using the paper prototype method is a biased process, so there is no right or wrong way to go about it.
- iii. *Roles of each participant*: All students were expected to collaborate in order to build the prototype rather than replying to the researchers' probing inquiries as they surfaced along the way.
- iv. *Materials for paper prototyping development*: The students were explained how stationery was used to create the prototype. The researchers fully guided the students by giving them samples of the constructed interface. By looking at the example, the students quickly learned how to use the provided stationery to make the required sample.
- v. *The advantages of paper prototyping*: In the first briefing, the researchers talked about the importance and advantages of using both the participatory design method and paper prototyping tools when creating interface design activities to pinpoint teenagers' reasoning, feeling, and action components. This was done to persuade the students to completely support and participate in the activities being conducted.

Session 2:

A test was conducted to determine whether the researchers had successfully incorporated the thinking, feeling, and action elements into the UI design and to determine whether all of the tasks had been accomplished after the users and the researchers had collaborated to create a prototype of their new social media platform. Two students were asked to participate as users, with one student cast as the machine. The remainder were told to act as observers. Throughout the trials, the researchers acted as a guide and asked questions about the goals and features of the new social media platform. In-depth responses from the students to challenging questions imply that more precise insights may be discovered. Figure 1 depicts paper prototyping activities with teenager participants in different setups and sessions. The activities were participated by groups of students from college, pre-university and secondary schools whose came from different locality, family background and ethnics. Figure 2 illustrates paper prototypes which successfully designed by participants that derived from theirs' thoughts, emotions, and behaviours.





Figure 1: Sessions conducted with participants

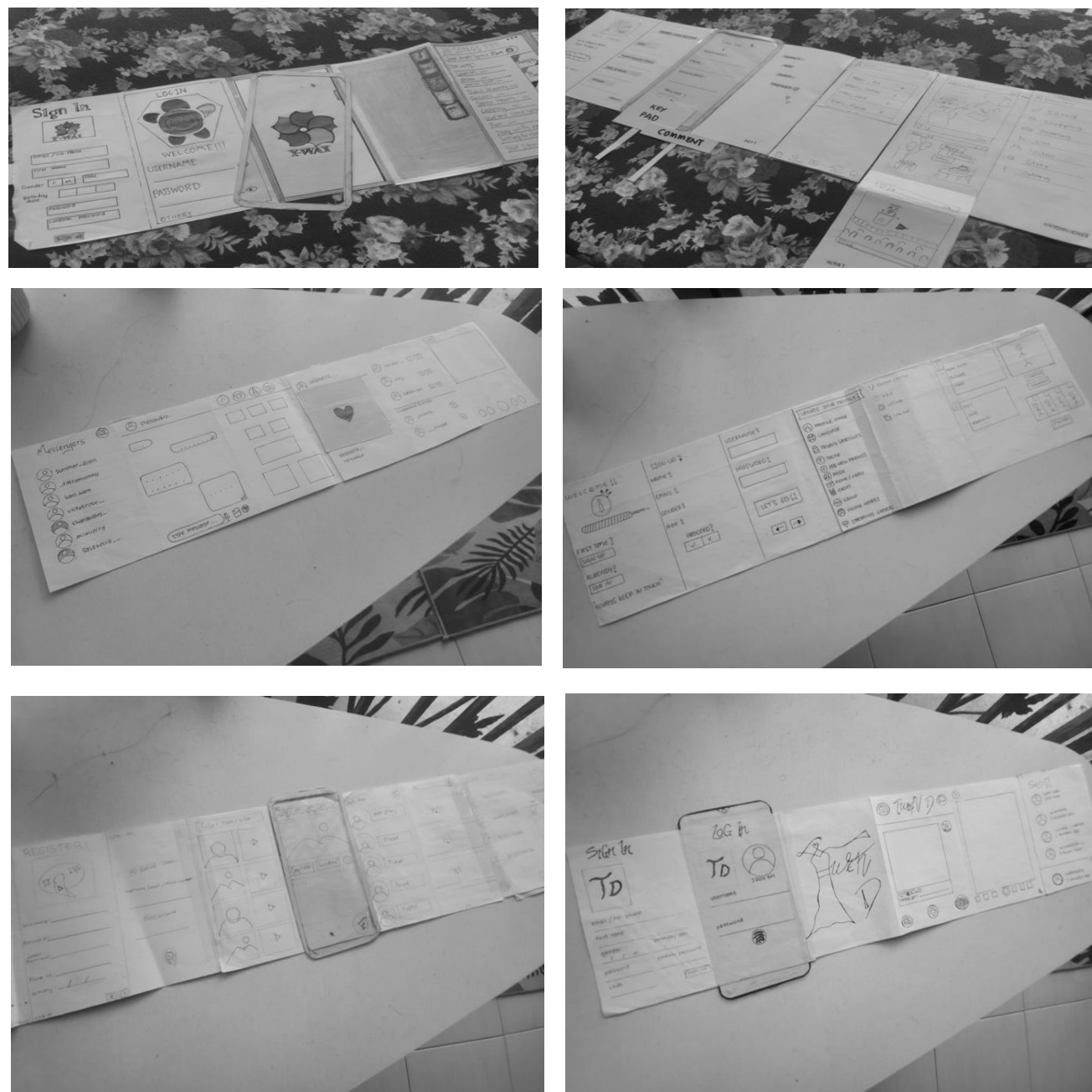


Figure 2: Some prototypes ideated from the paper prototyping sessions

3.3 Method for Analysis

The two main kinds of data that emerged from the meetings were prototypes of new social media and movies that were filmed. The videos of the prototyping activities were turned into helpful paperwork by using all of the newly developed social media prototypes as a reference. Then, using analysis of these papers, the factors for social media based on teenagers' thoughts, feeling, and behavior were discovered. The written transcriptions of the movies were done by hand, and they were saved as document-typed files. The titles for the documents included information about the student classes, member numbers, and video characteristics like file names, sizes, and durations. The study was carried out using *Atlas.ti*, a Computer-Aided Qualitative Data Study Software (CAQDAS). All of the transcription papers were received

by the software, which then prepared them for coding. By giving a label to the data segment and explaining what it was about, a word, phrase, sentence, or even a passage was coded (as shown in Figure 3). Then, networks were used to display the connections between the variables. The particular variables were combined and made generic in this study's inductive method. The software used for this purpose was *Atlas.ti*.

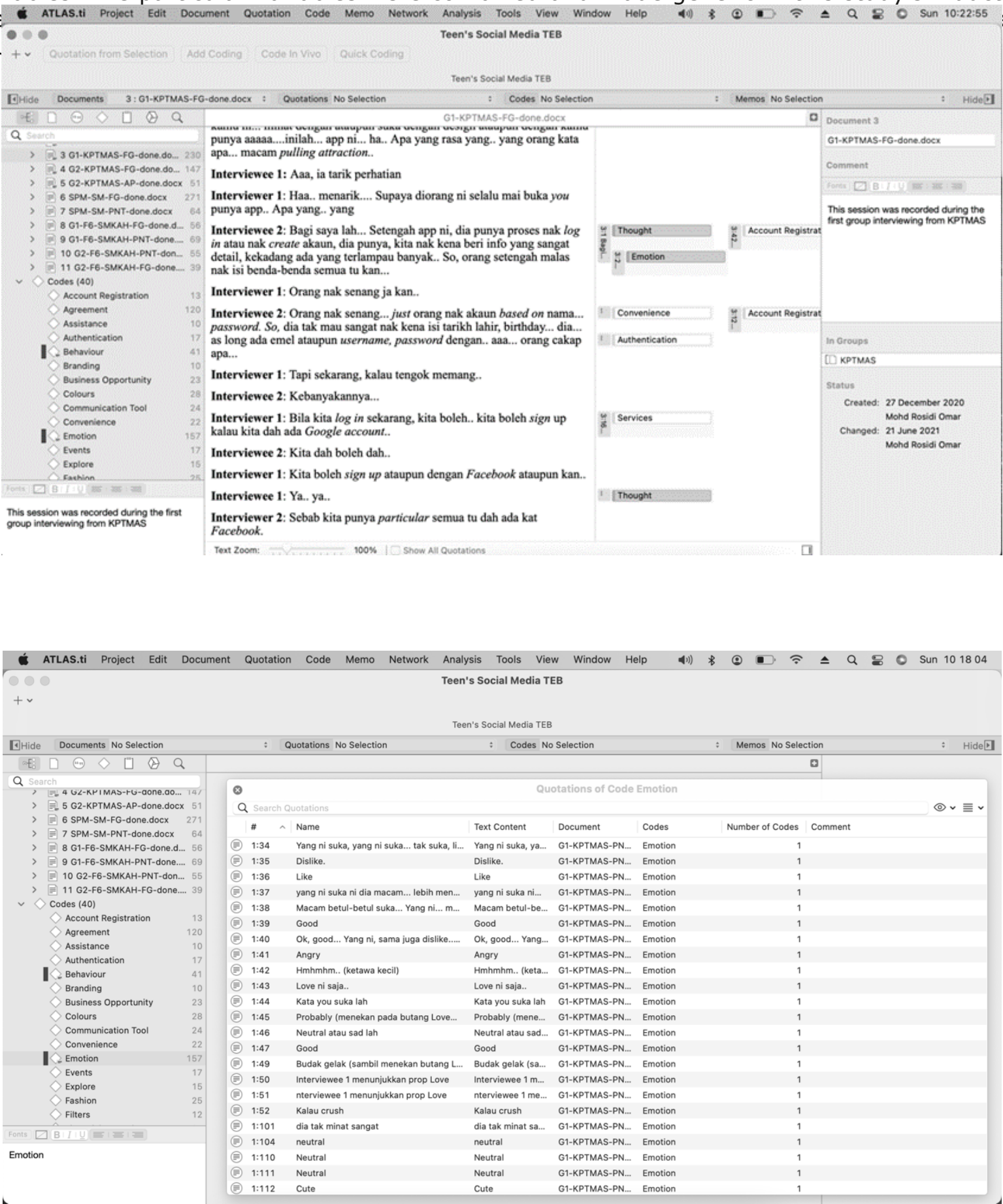


Figure 3: Process of coding the themes using *Atlas.ti*

4.0 OUTCOMES AND DISCUSSION

The previous coding method generated 66 codes. These individual codes were then classified into three broad categories: human characteristics, social media characteristics, and teenagers' interests. The broad groups were formed based on a shared understanding of what the codes represented. Aside from that, *Atlas.ti* was able to track the number of times each of the codes were referenced or referred to during all discussions concerning this study (including prototyping sessions, interviews, and presentations). The number of occurrences or mentions of codes ranged from 1 to 157. FEELING had the most occurrences or mentions, while GADGET, QUOTES, and TOURISM had the fewest. There were further twenty-three codes that appeared or were referenced fewer than ten times and were thus omitted from the list of factors. The exclusion was designed to ensure that only important variables in social media

design for adolescents were examined. After excluding non-important elements, forty criteria were explored in developing an HCI framework for teenager use of social media. Using thematic analysis, these elements were organised into four themes: T-E-B, CONTENTS, FEATURES, and INTERESTS. Table 2 demonstrates how the components were grouped together based on their common themes.

Table 2 Themes of the prominent factors (sorted based on number of occurrences from highest to lowest)

T-E-B	CONTENTS	FEATURES	INTERESTS
Feeling	Postings	Services	Social Media Applications
Agreement	Selection	Colours	Videos
Thinking	Convenience	Communication Tools	Music
Habit	Live Streaming	Security	Games
Language	Account Registration	Specialty	Photos
		Targeted User	Fashion
		Authentication	Business Opportunity
		Privacy Measures	Making Friends
		Multi-programming	Influencer
		Filters	Financial Rewards
		Views	Events
		Multi-tasking	Likes
		Branding	Followers
		Variability	Movies
		Assistance	Explore

These found elements were then depicted in the form of a functioning framework, which was meant to serve as a reference for social media design for teenagers. The framework (shown in Figure 4) was inspired by Abowd and Beale's interaction framework, in which the four translation origins; observation, articulation, performance, and presentation were adapted to the factor's themes of interests, T-E-B, contents, and features.

The HCI framework for teens in social media is founded on two fundamental roles: the teenagers themselves and social media as the primary focus of today's teenagers. Teenagers have a diverse set of interests; according to the data gathered, the five most popular teenage pastimes are social networking applications, movies, music, games, and photos.

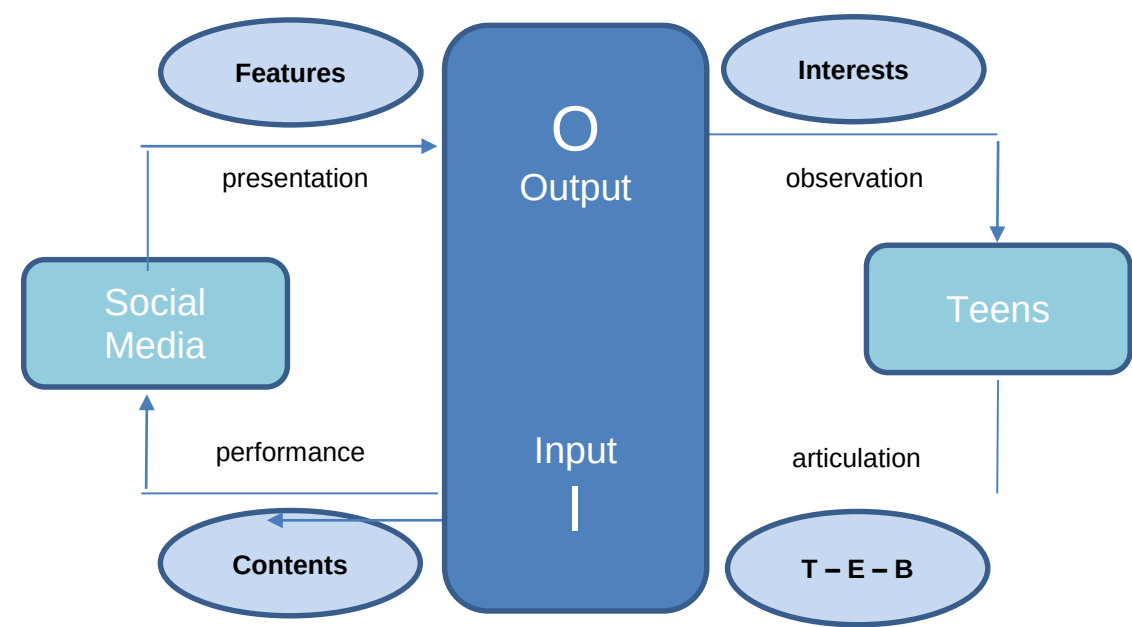


Figure 4: The HCI Framework for Teens in social media

Explaining observed interests in the framework is in the form of applications, multimedia components, trends, and/or activities that Aamir (2018) defined as one of the teens' favourite activities. As demonstrated in Table 2 under the INTERESTS heading, social media programmes provide content that teens desire to see and that meets their expectations. As so-called digital natives, teenagers are well-known for their articulate embrace of technology.

They generate social media posts based on what they think, feel, and do. For this study, think, feel, and act are synonymous with thinking, emotion, and behaviour, or T-E-B. T-E-B's human traits become the sources of content production, which include ideas derived from mental processes, emotions over the circumstance, and actions towards the event.

The creation of content for social media does not always follow the appearance of thought-emotion-behavior; it may be in the order of emotion-behavior-thought or behavior-thought-emotion where the contents can be created from the visualization of ideas, emotions reflections, or behaviours reactions. The materials made by teens as part of their performance add to the input of social media; an estimated five billion snaps everyday! (Snap Inc., 2021). Among the main aspects of social media are 'always-available' services, prismatic and bright hues, and connection to other people for conversation. These qualities are regarded the product of social media to display the intriguing appearances, multi-functions, and entertaining applications.

5.0 CONCLUSIONS

Most notably, this research highlights the importance of involving teenagers in the design and development of social media platforms through participatory design. The researchers emphasize that adolescents' lives and experiences are strongly influenced by social networks and it is crucial to consider their unique human characteristics in the design process. By actively involving teenagers in design activities and using paper prototypes as a participatory design tool, valuable information can be gained about the factors of human-computer interaction (HCI) and design preferences of teenagers.

The research points out that social media platforms are predominantly designed to encourage user engagement and generate profits, often neglecting the specific needs and safety of teenagers. The creation of well-designed social media platforms that address the concerns and requirements of teenagers is still limited. Therefore, the study proposes involving teenagers in the design process to create social media platforms that not only attract users but also prioritize their ease and security in engagement and behavior.

The research also emphasizes the importance of HCI for teenagers, as they have distinct ways of thinking, feeling, and acting compared to adults and children. Recognizing these differences is essential for creating effective technological designs and user experiences that cater to teenagers' needs. The deployment of HCI for teenagers is seen as a way to inform the technological design process and ensure that teenagers are not disregarded as mere technology users.

Participatory design is presented as a valuable approach to involve teenagers actively in the design process. It allows for the uncovering of significant insights that might otherwise be overlooked. Paper prototyping is highlighted as a suitable participatory design tool due to its simplicity, cost-effectiveness, and accessibility to individuals with no technical skills. The research suggests that participatory design sessions involving teenagers can include activities such as brainstorming, responding to scenarios, and developing paper prototypes to extract valuable insights into HCI factors for teenagers and their design preferences.

The researchers conducted three separate design sessions with teenagers from different educational institutions, ensuring that Covid-19 limitations and safety measures were followed, since the sessions were conducted during pandemic period. Through the sessions, the participants actively engaged in the creation of paper prototypes for a new social media platform. The data collected from these sessions, including prototypes and videos, were analysed to identify factors of social media based on teenagers' thoughts, feelings, and behaviours.

In summary, this research emphasizes the importance of involving teenagers in the design of social media platforms and highlights the benefits of participatory design and paper prototyping as methods for understanding teenagers' perspectives and preferences. By considering teenagers' human characteristics and actively involving them in the design process, it is possible to create social media platforms that better cater to their needs and provide a safer and more engaging user experience.

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19ACCEPTANCE TOWARDS USAGE OF AI TECHNOLOGY AMONG KPTM BANGI STUDENTS IN AN ESL CLASSROOM

Mohd Hafeez Bin Zainol hafeez@gapps.kptm.edu.my

Kolej Poly-Tech MARA

Bandar Baru Bangi, Selangor, Malaysia

ABSTRACT

This research aims to investigate the factors that influence students' acceptance of AI technology in an ESL classroom using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The study will be conducted with a sample of students from Kolej Poly-Tech MARA (KPTM), Bangi campus, who have been exposed to AI technology in their daily life. The research will specifically examine the impact of four constructs on students' acceptance of AI technology, as informed by the UTAUT model, which includes performance expectancy, effort expectancy, social influence, and facilitating conditions. The data will be collected through a questionnaire where the survey are conducted online through Google Form and analyzed using descriptive statistics and correlation analysis. The findings of this study are expected to provide insights into how educators can effectively implement AI technology in ESL classrooms and improve students' language learning outcomes.

Keywords: UTAUT, AI

1.0 INTRODUCTION

The field of English as a Second Language (ESL) learning has become increasingly important in today's globalized world. The demand for English proficiency, especially within this country, has certainly risen, making it a necessary skill for communication, education, and employment opportunities. With the rapid advancement of technology, Smith and Eckroth (2017) stated that the use of Artificial Intelligence (AI) in various fields has increased. Unsurprisingly this expansion also includes the education sector which, according to D'Mello and Graesser (2012), and Hwang and Tu (2021), AI may also have an impact on educational practices. The potential of AI technology to improve the learning process in ESL classrooms especially cannot be ignored because numerous studies have explored this topic and the result certainly did show promise. However, caution must also be paid since its' successful implementation depends on the factor of acceptance and attitudes of students towards the technology.

The Unified Theory of Acceptance and Use of Technology (UTAUT), as a framework, has been widely accepted, and used in various studies, to explain and predict users' acceptance and adoption of technology in various contexts (Khechine, Lakhal, & Ndjambou, 2016). Keerthiwansha (2018) added that the integration of Artificial Intelligence (AI) technology in English as a Second Language (ESL) classrooms has become increasingly prevalent as of late. With this latest development in mind, the UTAUT framework, which has been designed specifically to measure acceptance level of technology, is certainly the best model to be used to identify the factors that influence students' acceptance of this technology.

The UTAUT model proposes four key factors that influence users' acceptance and usage of technology, which are performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh, Morris, & Davis, 2003). These factors have shown to be able to explain, with acceptable percent of confidence, the factor of adoption and usage of technology in different settings. Therefore, applying the UTAUT framework to the context of ESL classrooms can help the researcher to understand students' attitudes towards AI technology and to determine the factors that affect their acceptance and usage of it. This research therefore then aims to use the UTAUT framework to investigate the acceptance of AI technology in ESL classrooms and identify the factors that influence students' willingness to use it in their language learning process.

Kolej Poly-Tech MARA (KPTM) Bangi, like many other educational institutions, is facing a challenge when it comes to incorporating the latest technology in their teaching and learning processes. Despite the advancements in technology, KPTM Bangi is still using traditional methods such as chalk and board, and textbooks, while the latest computer technology used to be only the Learning Management System software, or LMS. While these methods may have been effective in the past in assisting with the teaching and learning process, they are undoubtedly becoming outdated and inadequate for the modern-day students who, according to Prensky (2001), may have been normalized to use the latest technologies available in the market. This research would like to add that the use of Artificial Intelligence (AI) in the classroom has the potential to revolutionize the way students learn, making it more interactive and engaging. This can be achieved whereby the incorporation of AI could provide personalized learning experiences and improve the quality of education. Therefore, it is necessary for KPTM Bangi to upgrade their teaching and learning process with the latest technology to ensure their students receive the best possible education.

2.0 LITERATURE REVIEW

2.1 Artificial Intelligence and Its Applications in Education

Artificial Intelligence (AI) has the potential to revolutionize the field of education by providing new and innovative ways to facilitate teaching and learning. AI technologies such as machine learning, natural language processing (NLP), and computer vision, can be utilized in a variety of applications in education, including design of curricula, methods of teaching, and mode of assessment, to make the learning experience more effective (Eltabakh, 2019). These technologies are believed to be able to help personalize the learning experience for individual students in which Maghsudi, Lan, Xu, & van Der Schaar (2021) noted that it can be achieved through autonomous network formation because it encourages learners to interact. Additionally, AI can also automate a teacher's administrative tasks, such as grading, assessment, and feedback, freeing up more time for them to better focus on delivering high-quality instruction, and incidentally spend more time on each student (Sharma, Tomar, Bhardwaj, & Sakalle, 2021). With the increasing amount of data available in education, AI can also be used for predictive analytics, helping educators identify at-risk students and provide targeted interventions (Latif, Alghazo, Pilotti, & Brahim, 2021; Adnan, Habib, Ashraf, Mussadiq, Raza, Abid, & Khan, 2021). Overall, the potential applications of AI technology in education are vast, and its integration has the potential to transform the way students learn and educators teach.

2.2 Technology Acceptance Models

The Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology Acceptance Model (TAM), and the Diffusion of Innovations Theory (DOI) are the three popular technology acceptance models that has been used to understand users' attitudes and behaviors towards

the adoption and use of technology (Taherdoost, 2018; Radhakrishnan, & Chattopadhyay, 2020). UTAUT first of all proposed that there are four key factors that influence technology acceptance, which includes performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al, 2003). TAM on the other hand focused on two key factors which are perceived ease of use, and perceived usefulness, as predictors of user behavior (Davis, 1987). Whereas DOI emphasized the role of communication channels and social networks in the adoption and diffusion of new technologies (Rogers, 2003). While these models differ in their focus and approach, they all recognized the importance of user attitudes, beliefs, and perceptions towards technology as critical factors in determining their acceptance and usage. Understanding these models and their applications can help researchers identify the factors that influence the acceptance and use of AI technology in education, such as in the context of an ESL classroom.

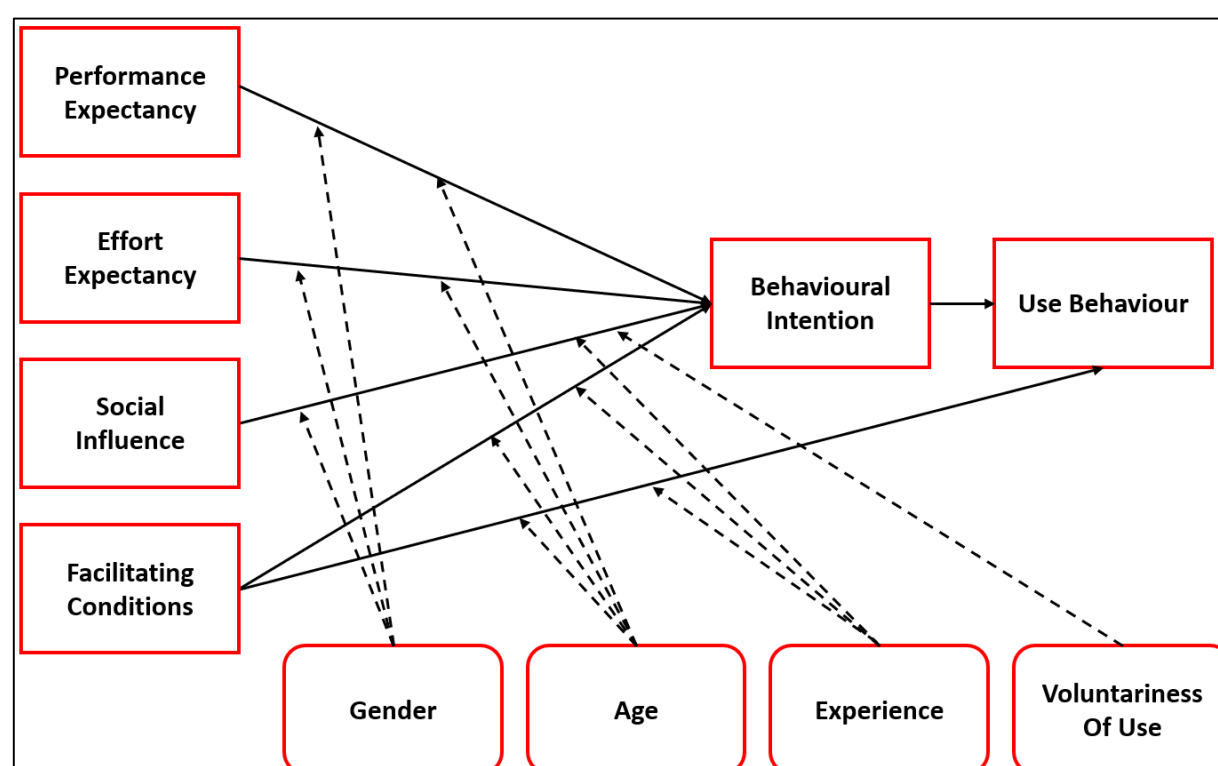


Figure 1: UTAUT Model

2.3 ESL Learning and Teaching

ESL learning and teaching practices have evolved significantly over the years, with a shift towards communicative and task-based approaches that prioritize the development of practical language skills (Sanchez, 2004; Rahman, 2010). The traditional grammar-translation method has been largely replaced by more student-centered methods, such as the communicative language teaching approach, which focuses on meaningful communication and interaction between learners (Phung, 2010; Du, 2021). The use of technology in ESL teaching and learning has also become increasingly prevalent, with the availability of online resources, digital textbooks, and language learning applications (O'Brien, & Hegelheimer, 2007). However, challenges still remain in ensuring equitable access to technology, especially for students from disadvantaged backgrounds (Oyedemi, & Mogano, 2018). Additionally, the COVID-19 pandemic has accelerated the adoption of online and blended learning models, with many ESL classrooms moving online (Dhawan, 2020; Maphosa, 2021). While these developments offer new opportunities for ESL learning and teaching, they also present challenges in terms of ensuring quality and maintaining student engagement in the virtual classroom (Hu, & Li, 2017).

2.4 Attitudes and Perceptions of Students Towards Technology

Students' attitudes and perceptions towards technology play a crucial role in determining their acceptance and usage of technology in the classroom (Botero, Questier, Cincinnato, He, & Zhu, 2018). While some students are enthusiastic about using technology and see it as a valuable tool for learning, others may be more hesitant or even resistant to its use (Ugur, 2020). Factors that can influence students' attitudes towards technology include their prior experience and exposure to technology, their level of digital literacy, and their personal beliefs and values (Metallo, & Agrifoglio, 2015; Mou, Shin, & Cohen, 2017). Students' perceptions of technology can also be influenced by their peers and social networks, as well as by the quality of the technology itself and the support provided by their teachers (Zacharis, 2015). Understanding students' attitudes and perceptions towards technology is important for

educators, as it can help them design technology-enhanced learning experiences that are engaging, effective, and inclusive for all learners.

2.5 Challenges and Benefits of Using AI in ESL Classrooms

It certainly cannot be ignored that the potential benefits of using AI in an ESL classroom, evidenced by previous studies, are numerous. According to Xie, Chu, Hwang, and Wang (2019), AI technologies can provide personalized learning experiences that are tailored to individual students' needs and preferences, allowing for more effective and efficient learning. Vinay (2023) further added that AI-powered tutoring systems can also provide immediate feedback to students, thus helping them to identify areas where they need to improve and providing guidance on how to do so. Additionally, AI can also help teachers track student progress and identify areas where additional support may be needed (Devi, Sreedhar, Arulprakash, Kazi, & Radhakrishnan, 2022). Alam (2021) further added that AI can also help to automate teachers' administrative tasks such as grading, saving their time and allowing them to focus on delivering high-quality instruction.

However, it has to also be acknowledged that there exist several challenges associated with using AI in an ESL classroom. One major challenge, as highlighted by Oyedemi et al (2018) is in ensuring that the technology is accessible and equitable for all students, especially for those from disadvantaged backgrounds who may not have access to the necessary devices, or even internet connection. Another challenge, as noted by Chu, Nyrup, Leslie, Shi, Bianchi, Lyn, and Grenier (2022), and Fosch-Villaronga, Drukarch, Khanna, Verhoef, and Custers (2022), is the potential for AI to reinforce biases or stereotypes, particularly in language processing and translation applications. Additionally, there are concerns around privacy and data security, as AI technologies often collect and analyze large amounts of potentially sensitive data (Carmody, Shringarpure, & Van de Venter, 2021). This concern to an extent can also be expanded towards both the teachers and the students. It is therefore essential for educators to carefully consider these potential challenges and take steps to address them to ensure that AI is used ethically and effectively in the ESL classroom.

2.6 Pedagogical Implications of Using AI Technology in ESL Classrooms

The impact of using AI on the pedagogy of the ESL classroom is significant, as it has the potential to transform traditional teaching practices and enhance student learning outcomes. Chounta, Bardone, Raudsep, and Pedaste (2022) for example has indicated that with AI providing personalized and adaptive learning experiences, it can help teachers deliver a more effective instruction, and in turn tailor their teaching to individual student needs. Additionally, Kim, Cha, and Kim (2019) has also noted AI-powered tools like chatbots can provide immediate feedback to students, thus helping them to identify areas where they need to improve and allowing for a far more efficient learning. Carayannopoulos (2018) has also stated, about employing chatbots in classroom, that the technology can be beneficial to students by way of it being convenient, easy to use, and because it created a sense of greater connection with their instructor. Aside from chatbots as an extension of AI technology, Kumar, Sakthivel, Prabhavathy, Rani, Subhashini, and Rekha (2023) have also noted that other ways in which how AI technology can be employed to enrich an ESL classroom is through improving the whole learning experience because the AI will be able to adapt to individual learners' specific requirements and interests. All in all, it certainly is clear that the use of the technology has the potential to revolutionize the pedagogy of the ESL classroom and improve the learning outcomes of students.

3.0 METHODOLOGY

To conduct this research, the researcher will first develop a survey questionnaire adapted from Raffaghelli, Rodríguez, Guerrero-Roldán, and Bañeres (2022) which was based on the UTAUT model to assess students' attitudes, intentions, and behavior towards the use of AI in ESL classroom, based on the four constructs of performance expectancy, effort expectancy, social influence, and facilitating conditions. This survey form will be in online form, through Google Form, and will be distributed through WhatsApp. A sample of 200 students from various ESL classrooms will be selected randomly and invited to participate in the survey. If the student agrees to it, they will be added into a WhatsApp group and the survey form will be distributed through there. Next, the collected data will be analyzed using appropriate statistical techniques, namely descriptive statistics and correlation analysis, to determine the impact of key variables on students' acceptance of AI in ESL classroom. Finally, the findings will be reported and discussed in the context of the UTAUT model, highlighting the significant factors

that influence students' acceptance of AI in ESL classroom and providing recommendations for its successful implementation.

4.0 CONCLUSION

This study looked to analyse the acceptance level of KPTM Bangi students towards the usage of AI technology in an ESL classroom. Based on the UTAUT model first proposed by Venkatesh, the four constructs that are a part of the model are expected to be able to explain both the behavioral intention and use behavior of the students, and thus informing their level of acceptance.

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20THE IMPACT OF PRODUCT CHANNEL ON ATTITUDE AND PURCHASE INTENTION FOR PERSONAL CARE PRODUCTS IN MALAYSIA'S ONLINE MARKET

*Mohd Huzaimie Ahmad Kafrawi huzaimie@gapps.kptm.edu.my Kolej Poly-Tech MARA
Bangi*

*Syahida Abd Aziz syahidaaziz@uitm.edu.my
Universiti Teknologi MARA, Cawangan Kedah*

*Nur Hani Syazwani Bakri nurhanisyazwani@uitm.edu.my
Universiti Teknologi MARA, Cawangan Negeri Sembilan*

ABSTRACT

Consumer behaviour research in the context of personal care goods is gaining popularity around the world. Unfortunately, there has been little research on consumer behaviour in Malaysia especially in personal care products. The purpose of this conceptual paper is to present an outline of the important aspects influencing customer attitudes and purchase intentions for personal care items in Malaysia's online channel. This study proposes a conceptual model that defines the interaction between attitudes, and buying behaviour, based on past research. According to the proposed model, customer variables such as age, gender, income, and cultural values influence consumer attitudes towards personal care goods, which in turn influences purchase intentions. Furthermore, the article emphasises the significance of product features like quality, price, and brand reputation, as well as online product information like reviews and ratings, in changing consumer attitudes and buy intentions. Additionally, the article explores the moderating effect of product channel on these correlations, taking into account Malaysia's online marketplace's distinctive characteristics. The suggested model provides a comprehensive framework for analysing consumer behaviour in the context of personal care items in Malaysia's online channel, as well as future research directions. The report provides insights for marketers and brand managers trying to establish effective personal care product marketing strategies in Malaysia.

Keywords: consumer behaviour, attitudes, purchase intention, online purchase

1.0 INTRODUCTION

In recent years, consumer behaviour research has received increased attention, particularly in the context of personal care items. The personal care products market in Malaysia has grown significantly as a result of rising consumer demand, increased competition, and the spread of online outlets for acquiring items. Statista.com predicts that sales in this area will reach \$2.5 billion in 2021 and continue to grow at a rate of 4% per year through 2025. Malaysia has a population of 32.7 million people, and the average income per person is \$11,414. As a result, marketers and brand managers seeking to design effective marketing strategies must first understand customer behaviour in this market.

In consumer behaviour research, two fundamental factors have been intensively studied: attitude and purchase intention. Attitude is a multidimensional concept that includes affective, cognitive, and behavioural components and expresses an individual's assessment of an object or behaviour. Buy intent, on the other hand, relates to a person's likelihood of acquiring a product, intention to purchase in the future, or intention to suggest the product to others. Past research has demonstrated that attitude influences purchase intention and is a crucial predictor of customer behaviour. (Ashraf, 2019, Birch & Memery, 2020, Grimmer & Miles, 2017, Khor & Hazen, 2017)

The relationship between attitude and buy intention, on the other hand, may differ depending on the product channel employed. Internet channels have grown in importance for personal care items, with many consumers preferring to buy products online due to convenience,

simplicity of access, and information availability. Consumer views and purchase intentions for personal care items may be influenced by the product channel chosen. Consumers, for example, may perceive varying levels of trust, ease, and value for money depending on the product channel chosen. The success of online retailers depends on people who have a lot of money to spend and who are comfortable with and trust technology (Hanford, 2005).

As a result, the purpose of this study is to look into how product channel influences the relationship between attitude and buy intention for personal care items in Malaysia. The paper's specific goal is to create a conceptual model that describes the interaction between attitude, buying intention, and product channel. The proposed model would provide information for marketers and brand managers wanting to design efficient personal care product marketing strategies in Malaysia's online channels.

2.0 LITERATURE REVIEW

Attitude is a multidimensional concept that includes affective, cognitive, and behavioural components and expresses an individual's assessment of an object or behaviour. In consumer behaviour research, attitude has been extensively researched, particularly in the context of purchase intention. The likelihood of acquiring a product, the intention to buy in the future, or the intention to suggest the product to others are all examples of purchase intention. Past research has demonstrated that attitude influences purchase intention and is a crucial predictor of customer behaviour.

Many research has looked into the relationship between attitude and purchase intent and found consistent evidence of a positive relationship between the two constructs. In Korea, for example, Kim and Ko (2010) discovered that attitude influenced purchase intention for premium fashion goods significantly.

Depending on the product category and context, the relationship between attitude and purchase intention may differ. Van Trijp and van der Lans (2007) discovered, for example, that attitude was a better predictor of purchase intention for novel food products than traditional food goods. Liu, Chen and Zhou (2010) discovered that attitude was a better predictor of purchase intention for new electronic products than for established electronic products.

Several factors, in addition to product category, may influence the association between attitude and purchase intention. Stronger views, for example, may moderate the connection, with stronger attitudes having a higher impact on purchase intention than weaker attitudes (Petty and Cacioppo, 1986). Similarly, perceived behavioural control may modulate the link, with greater perceived control resulting in a larger relationship between attitude and purchase intention (Ajzen, 1991).

Overall, the research indicates that attitude is an important predictor of purchase intention, with a positive relationship between the two dimensions. However, depending on the product category and setting, as well as other characteristics such as attitude strength and perceived behavioural control, the strength of the link may vary. Marketers and brand managers can use these elements to create effective marketing tactics that enhance consumer purchase intent.

People are buying more and more personal care items online because it's easy and convenient. As e-commerce has grown in Malaysia, people's shopping habits have changed, and more people now choose to buy personal care items online. Several studies have looked into the things that make people want to buy personal care items online in Malaysia.

Trust is an important factor that has been looked into. In e-commerce, trust is very important because customers have to trust both the online platform and the seller in order to make a purchase. Lim et al. (2015) found that trust had a big effect on people's plans to buy personal care products online in Malaysia. Mokhtar et al. (2017) also found that trust was a big reason why people were willing to buy personal care products online.

Convenience is another important factor. Online shopping gives people the convenience of being able to buy things from anywhere, at any time. Tan and Teo found in 2000 that consumers were more likely to buy personal care items online in Malaysia if they were easy to get. Liang and Huang (2017) also found that consumers were more likely to buy personal care items online if they were easy to get.

Price is another important factor that affects a person's decision to buy personal care items

online in Malaysia. Consumers are often drawn to online platforms because the prices are lower than in stores with walls and floors. Ahmad et al. (2017) found that consumers' plans to buy personal care items in Malaysia's online channel were strongly affected by price.

Lastly, the quality and variety of products are also important factors that affect the decision to buy. Consumers want to know that the products they buy are of high quality and meet their needs. Lim et al. (2015) found that the quality and variety of products had a big effect on people's plans to buy personal care products online in Malaysia.

Overall, the research shows that trust, ease of use, price, product quality, and variety are the most important things that make people want to buy personal care items online in Malaysia. Marketers and brand managers can use these factors to create effective marketing strategies that make people more likely to buy and help the online personal care market grow.

People use personal care products every day to keep themselves clean and to make themselves look better. The personal care market is growing quickly, and more and more people are looking for products that meet their needs and preferences. Several studies have looked into the things that make people want to buy personal care items.

Product quality is one important thing that has been looked into. Consumers want to know that the products they buy are of good quality and meet their needs. Liu et al. found in 2021 that the quality of a product had a big effect on people's plans to buy personal care products in China. In Pakistan, Amin et al. (2019) also found that product quality was a major reason why people were willing to buy personal care products.

Brand image is another important thing to think about. People often think of a certain brand when they think of personal care products, and the image of the brand can affect their decision to buy. Yoo et al. (2016) found that the image of a brand had a big effect on South Koreans' plans to buy personal care products. In a similar way, Pongpiriyakan and Imran (2018) found that consumers in Thailand were more likely to buy personal care products if they liked the way the brand looked.

Price is also a big factor in deciding whether or not to buy personal care products. Consumers often care about price and may choose cheaper items over more expensive ones. Wang et al. (2018) found that the price of personal care products in China had a big effect on whether or not people planned to buy them.

Lastly, the design and packaging of a product are also important factors that affect whether or not someone will buy it. Products that look nice on the outside and inside are more likely to sell. Jin et al. (2019) found that the design and packaging of personal care products in South Korea had a big effect on people's plans to buy them.

3.0 METHODOLOGY

The study will be conducted using a correlational and cross-sectional design to investigate the factors that influence people's intentions that is attitude to make an online purchase and the channels via which those intentions are ultimately fulfilled. The purpose of this cross-sectional study is to examine the interplay between attitude towards online purchase. Researchers are able to poll sizable samples of the population by using questionnaires to learn about their habits, perspectives, and opinions (Thom, 2007). Participants in this study will be asked to complete an online questionnaire.

4.0 CONCLUSION

This conceptual study looked at how attitudes and intentions to buy personal care items in Malaysia's online market were affected by the product channel. According to the literature review, trust, practicality, cost, product quality, brand image, and product packaging and design are significant influences on purchase intention for personal care goods.

The literature also implies that customers are increasingly choosing to buy personal care items online, with e-commerce playing a significant influence in influencing consumer behaviour. The expansion of e-commerce in Malaysia has caused a change in consumer behaviour, with more people opting to buy personal care products online.

The personal care industry's brand managers and marketers should take this conceptual paper's recommendations seriously. Companies may create efficient marketing strategies that

boost sales and spur growth by having a thorough understanding of the aspects influencing purchase intention in Malaysia's online market.

Companies can first concentrate on increasing consumer trust by giving clear information about their products and ensuring safe transactions. This can assist boost consumers' confidence in purchasing personal care products online.

Other than that, one of the main factors influencing online purchases is convenience. Businesses may make it more convenient for customers to buy personal care products online by providing features like free shipping, simple returns, and quick delivery.

Finally, businesses can set competitive prices for their goods to draw customers who are concerned about costs. Promotions, discounts, and offer bundling can accomplish this. Organisations can also focus on product quality and packaging to strengthen the brand image and attract consumers. Using premium ingredients and creative packaging ideas can help set products apart from rivals and boost buy intent.

In general, this conceptual paper offers insights into the variables affecting consumers' intentions to buy personal care items through Malaysia's online channel. Understanding these elements will help businesses create efficient marketing plans that will boost sales and propel the personal care sector's expansion.

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21IMPROVING THE SECURITY OF DYNAMIC SIGNATURE VERIFICATION FOR SERVICE PROVIDERS

Nor Faradilla Mohamed Idris, Ahmad Hafizi Giran faradilla@gapps.kptm.edu.my ,
hafizi@gapps.kptm.edu.my Kolej Poly-Tech MARA Kuantan
Kuantan, Pahang

ABSTRACT

Dynamic signatures have the potential to replace conventional signatures in verifying an authorized person as they are legal and widely accepted by society. This is particularly relevant for service providers who handle sensitive data and confidential information, who must ensure that their signature verification systems are secure and robust to prevent fraudulent activities. Previous research has mostly focused on achieving a high Genuine Acceptance Rate (GAR) in signature verification. However, such approaches often result in a high False Acceptance Rate (FAR), indicating a significant security vulnerability that could lead to forged signatures by imposters. There are few studies that previously conducted to enhance the security level of dynamic signature verification. In this paper, we would like to discuss features that currently being used to verify signature. Towards the end, the paper will suggest the utilizing of nine local features with individual thresholds to enhance the security of dynamic signature verification for service providers.

Keywords: dynamic signature, signature verification, forgery, Genuine Acceptance Rate (GAR), False Acceptance Rate (FAR), local features

1.0 INTRODUCTION

Signatures have become an integral part of our culture and are widely used for various purposes such as identity verification, computer user authorization, and protecting personal devices from unauthorized usage. Signatures not only prove one's identity but also provide evidence of deliberate and informed consent. However, the security level of signatures is often neglected, leading to incidents of fraud and document falsification, especially in Malaysia where the importance of security in signature verification is not widely understood. For service providers who deal with sensitive data and confidential information need to ensure that their signature verification systems are robust and secure in preventing fraudulent activities.

There are two approaches to signature acquisition: offline, which involves capturing the static image pattern of a signature from a document scan, and online, which involves capturing real-time data such as time, speed, and pressure using a special pen and digitizing tablets. Both offline and online signature verification can be extracted through global and local features. According to Mohammed et al. (2015), features can be classified as either global or local. Global features are obtained from the entire signature, whereas local features are derived from specific sample points along the signature's trajectory.

In offline mode, global features extraction typically includes parameters such as length, width, density, edge points, and wavelet transforms, while local features are extracted using statistical and geometrical methods. Statistical methods involve analyzing the pixel distribution of the signature image, such as by partitioning the image into a grid, while geometrical methods are used to handle distortion, style variations, and rotation and translation differences (Al-Omari et al., 2011).

Offline signatures have a notable limitation in that they can be easily forged as there is no real-time data available. Numerous fraudulent attacks have been reported in local news, where signatures are imitated to deceive authorized signature holders, due to the lack of a proper security system in Malaysia. The issue of signature forgeries has been widely reported, such as the case of a school teacher who received a phone call from a financial cooperative in Kajang in March 2012, confirming a loan of RM100, 000 without his concerned. According to him, the documents including pay slips, confirmation letters, bank statements, confirmation

stamps, and identity cards were forged simply to obtain the loan. Similarly, in November 2013, a lawyer pleaded not guilty to charges of using documents with forged signatures to nominate her late brother as heir to the Employees Provident Fund (EPF) owned by his brother. Another example of signature forgery involved the Director of Rossington Consolidated, who was investigated for falsifying signatures of a former General Secretary of Ministry of Education, for bank loans worth 5.7 million ringgits in May 2015, as reported by Malaysia1News.

Therefore, the need for dynamic signature verification is crucial to overcome the limitations faced by offline signature verification. Dynamic signature is proposed due to its advantages of comprising special characteristics such as the time taken for the user to complete the signature, pen pressure while signing, and the curve of the signature. These characteristics are not provided by conventional signature (signature's image on paper) and provide more unique features for each user. While some signatures may appear similar, there are various scientific mechanisms available to differentiate between them and detect forged signatures (Al-Omari et al., 2011).

2.0 LITERATURE REVIEW

Numerous studies and surveys have been conducted in the field of dynamic signature verification, employing various methods and approaches.

2.1 Dynamic Signature Verification

A multitude of research and surveys have been conducted on the subject of automatic signature verification, both for dynamic and static signature verification, utilizing various methods and approaches (Prathiba & Basavaraj, 2014; Narkhede & Patil, 2014; Thawkar & Pimple, 2015 and Chaudhary & Kumar Singh, 2016). With technological advancements, dynamic signature verification has gained preference due to its dynamic features, resulting in better outcomes compared to static signature verification (Daramola & Ibiyemi, 2010). This section presents a numerical analysis of dynamic signature verification.

According to Wilkin and Yin (2011), a person's signature may vary even if it comes from the same person due to factors such as age, geographic location, posture, illness, emotional state, and other reasons. In fact, even an authentic signer may not be able to replicate their own signature exactly, resulting in minor changes to the signature. This makes it challenging to determine whether a signature is genuine or forged. Yogesh and Patil (2014) noted that there are numerous variations in signatures based on factors such as country, habits, psychological or mental state, and physical and practical conditions.

To verify a person's signature and detect forgeries, a dynamic signature verification system must be capable of both tasks (S Rashidi et al., 2012). According to Prathiba & Basavaraj (2014), a challenge in dynamic signature verification is related to signature inconsistency. Skilled forgers can produce forgeries that closely resemble the user's signature. The variability in signatures is known as inter-person variability, while significant differences in signatures taken at different times are referred to as intra-person variability. Distinguishing between the two is a challenge that must be overcome to achieve better results. Elliott & Hunt (2006) support this idea, stating that the challenges of dynamic signature verification systems arise from the probability of a forger's signature being accepted as genuine, where the forger uses their own signature sample and claims to be a different user.

Vajpai & Vajpai (2013) explained that to verify the authenticity of a signature, the system's performance is evaluated based on the percentage of GAR, FAR, and FRR. GAR is used as a measurement of overall accuracy for the signature system. At the beginning of the authentication process, the signature system generates a match score by comparing the biometric data of the person trying to authenticate with the enrolment data for the claimed identity. In other words, the higher the match score, the closer the match, and if the match score exceeds a threshold, the person will be authenticated. However, setting the threshold too high will result in genuine users being rejected, while setting it too low will allow forgers to be authenticated, as pointed out by Kaouther et al. (2014).

Despite this, there is often an overlap in scores between genuine and forged signatures in practice. As a result, the system may generate two types of errors: false acceptance rate (FAR) and false rejection rate (FRR). FAR measures the frequency at which an unauthorized person is mistakenly accepted as an authorized identity, while FRR measures the frequency at which an authorized signature is mistakenly rejected by the system (Vajpai & Vajpai, 2013).

Hence, there is a growing interest in researching techniques and approaches to test and evaluate signatures in genuine and forgery verification settings, as this can significantly improve the accuracy of the system's development. Typically, a signature verification model can be broken down into five main stages: data acquisition, pre-processing, feature extraction and selection, verification through comparison or classification, and performance evaluation. (Mohammed et al., 2015; Rashidi et al., 2011; Fayyad et al., 2015).

2.2 Phases in Dynamic Signature Verification

Figure 1 illustrates the stages involved in signature verification. Data acquisition involves gathering signature data, which depends on whether verification is offline (static) or online (dynamic). For online verification, signatures are captured using devices such as tablets, personal digital assistants (PDAs), or smartphones. In contrast, offline verification can capture signatures through cameras or scanners. The second phase is pre-processing, where signatures are adjusted to a standardized size through normalization, re-sampling, smoothing, binarization, and thinning. The next step is feature extraction and selection, aimed at identifying the necessary features for developing the system. Features extraction is categorized into local and global features. Features selection can be performed using a parametric or functional approach to determine the best features. The verification phase involves matching or verifying the signature against signature samples, using techniques such as Template Matching, Neural Networks, Structural Approach, Statistical Approach, or Hidden Markov and Gaussian Mixture Model. Finally, the system's performance is evaluated based on measures such as the Equal Error Rate, False Acceptance Rate (FAR), and False Rejection Rate (FRR).

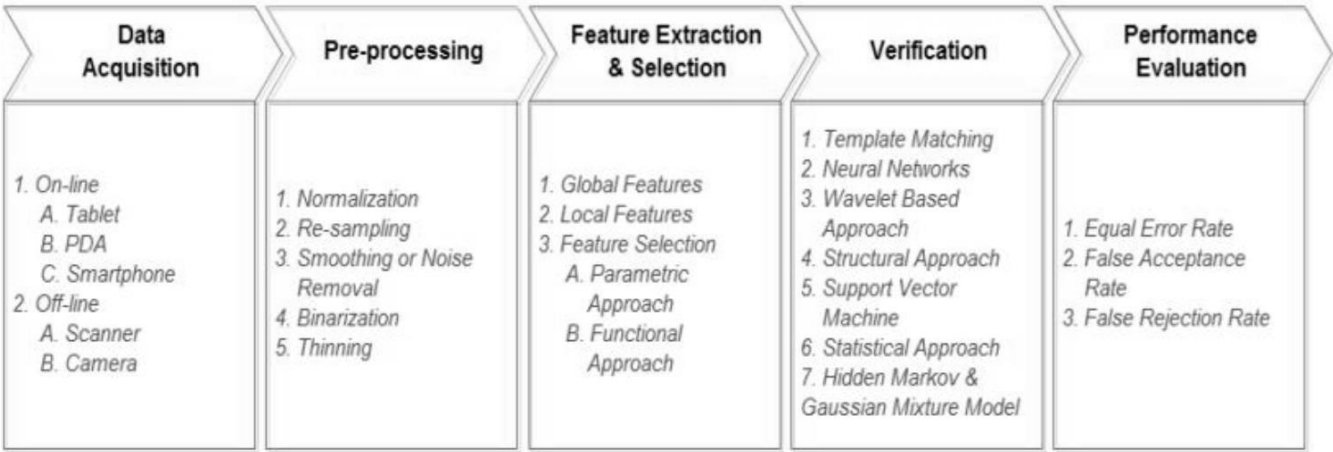


Figure 1: Typical stages involved in a Signature Verification System (Mohammed et al., 2015)

2.3 Features Extraction and Selection

Feature extraction is widely recognized as a critical step in dynamic signature systems (S. Rashidi et al., 2012; Mohammed et al., 2015; Fayyaz et al., 2015). Researchers have introduced numerous approaches to obtain the most suitable features for dynamic signature verification systems. The accuracy of dynamic signature verification systems depends largely on feature selection, which can vary from one system to another depending on the suitable technique or method used. This section provides a review of the literature on feature categories that can be extracted and the techniques utilized for feature extraction.

2.4 Verification on Existing Methods

Dynamic signature verification systems can differ from each other, depending on the feature selection method, decision-making method, or both. This section provides a review of some widely-used signature verification models, such as HMM, DTW, ANN, and SVM.

3.0 CONCLUSION

The paper discusses the importance of dynamic signature verification to ensure the security of sensitive data and confidential information. It highlights the limitations of offline signatures and the need for dynamic signature verification that captures real-time data such as time,

speed, and pressure. The paper suggests the utilization of local features with individual thresholds to enhance the security of dynamic signature verification for service providers. The paper also presents a literature review on dynamic signature verification, its advantages over static signature verification, and the challenges in determining the authenticity of a signature due to variations caused by multiple factors. Finally, the study emphasizes the necessity of a strong and secure signature authentication system to deter fraudulent activities.

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22A BIBLIOMETRIC REVIEW ON GREEN HUMAN RESOURCE MANAGEMENT: PRESENT TRENDS STUDY

Giran, A.H, Nor Faradilla M.I, hafizi@gapps.kptm.edu.my;
faradilla@gapps.kptm.edu.my

Kolej Poly-Tech MARA Kuantan Kuantan, Pahang

ABSTRACT

The objective of this paper is to investigate the geographical dispersion, magnitude and development of the knowledge foundation by pinpointing noteworthy writers, publications, terminologies, and periodicals, while evaluating present-day written works and cognitive framework, and emphasize prevalent patterns of research on green human resource management (GHRM). A new area of study in the field of human resource management (HRM) has evolved as academic interest in the environment has increased. To describe how HRM may influence environmental consequences, the term GHRM was developed. As a result of increased scholarly focus, there are more publications in this area. Using a bibliometric technique, the intellectual framework of the GHRM research is examined. Findings suggest four clusters in the Bibliographic coupling analysis in current discussion among scholars in green human resource management (GHRM).

Keywords: Human Resource Management, Bibliometric analysis, Bibliographic coupling, VOS viewer

1.0 INTRODUCTION

Nowadays human resource management (HRM) is seen as a strategic method for attaining a competitive edge through activities that emphasis on recruiting, training, safety, health, and labour relations. But nevertheless, many businesses do not address the environmental impact of their HR policies and procedures. Krstic (2021). There is a need to address the lack of environmental effect assessment in HR policies and practises due to the increasing pressure of global competition and the growing concerns of companies regarding cost reduction and environmental sustainability.

In study on human resource management, authors have increasingly incorporated sustainability considerations. (Kainzbauer, 2019). This has included an emphasis on the organization's sustainability as well as the sustainability of other HRM activities. (Macke, 2019). The increasing attention towards sustainability has caused a shift in the objectives and actions of HRM, moving away from the primary goal of enhancing business profitability towards recognizing the role of S-HRM in enhancing the company's economic, social, and environmental impact, commonly known as the "triple bottom-line."

According to scholars such as Renwick et al. (2016), human resource management plays a vital part in the pursuit of achieving sustainability. In addition, the United Nation has set a new roadmap, the Sustainable Development Goals (SDGs), for all nations to follow until 2030. This emphasises the significance of sustainable development and the need for GHRM research. (Khan, M. A., & Zubair, S. S. 2019) Hence, company leaders, governments, customers, and management researchers are becoming increasingly concerned with environmental sustainability.

The increasing awareness of green issues has prompted companies to embrace green human resource management, which is also referred to as GHRM or green human resource management, in response to this demand. GHRM refers to human resource management strategies that improve environmental outcomes (Renwick et al., 2016). The implementation of GHRM strategies aims to address and reduce negative impacts on the environment, as noted by Ahmad (2015), while simultaneously promoting environmentally conscious behaviors and attitudes, such as adopting paperless work processes, conserving energy, and practicing recycling, as highlighted by Mishra et al. (2014).

In terms of the theoretical foundations of GHRM, the most widely used framework is the abilities, motivation, and opportunities (AMO) model, as outlined by Harrell-Cook et al. (2001). This model suggests that an employee's performance is influenced by their competencies, motivation, and opportunities to act on environmental sustainability, as described by Renwick et al. (2013). Furthermore, resource-based theory is a commonly applied concept that integrates HRM with other organizational areas, including green supply chains (GSC), as noted by Jabbour and Jabbour (2016).

As a result, research on GHRM has seen a significant increase, prompting this study to examine the field. Despite the growing interest in GHRM among practitioners and scholars, as noted by Yong et al. (2019), there is a lack of a comprehensive bibliometric analysis that evaluates the expanding body of GHRM literature.

2.0 METHODOLOGY

2.1 Bibliometric Approach

Scholars in the fields of business and management are increasingly employing bibliometrics to evaluate authors, publications, and journals. The bibliometric approach is a quantitative strategy that employs a science mapping technique to evaluate bibliographic databases (Donthu et al., 2021). Bibliometric is a comparative quantitative evaluation method that employs bibliographic information from published academic publications. It examines a variety of bibliographic factors, such as the number of publications, citations, and major trends of themes. Bibliometric analysis has numerous applications, such as "assisting libraries to prioritise acquisitions; providing data for historiography and other studies of the history of scholarship; assisting researchers to obtain (potentially) more relevant information in their areas of specialisation; and providing limited measures of the relative impact or influence of publications and allowing scholars to evaluate or rank these" (Engler, 2014, p. 194).

In recent years, various studies have conducted bibliometric analyses on journal publication trends, as well as discipline, institutions, and countries, as indicated by Farrukh, Meng et al. (2020a), Imran Ahmed et al. (2021), Nawaz et al. (2020a), Wu et al. (2021), Arho et al. (2019), Farhan and Iqbal (2021), Farrukh et al. (2021), and Cancino et al. (2017). This current study utilizes two key components of bibliometric analysis: performance and science mapping. Science mapping is utilized to depict the field's structure and dynamics, while performance analysis measures productivity and impact based on the number of publications and citations, as described by Gao et al. (2021). To achieve our analysis's objectives, we present the following analysis.

2.2 Research Design and Data Collection Procedure

Data for this study was collected from the WoS Core Collection database, which is commonly used in bibliometric studies due to its impact factor and is widely recognized as the most significant index available, as noted by Gonzalez-Serrano et al. (2019). With over 14,000 journals, the database is regarded as of the highest quality, as stated by Mongeon and PaulHus (2016).

2.2.1 Search string

To conduct the search for this study, the search string listed in Table 1 was entered into the "subject" field of a document search on the WoS database. The search was not restricted to any specific document type, including scholarly journal articles, conference proceedings, books, book chapters, letters, and notes. The search was conducted on March 18, 2023, and the default language for the search was English for the title, abstract, and keywords. The search yielded a total of 633 publications published between 1993 and March 2023.

Table 1: Search string in WoS database

No	Keywords	Justification
1	"green HRM*" OR "green human resource*" OR "GHRM*" OR "sustainab HRM*" OR "sustainab human resource"	To identify literature related to GHRM in general.

(Source: Web of Science)

3.0 RESULT AND ANALYSIS

Trends in publication and descriptive analysis from the 633 published works. The period was included according to the WoS database default (from 1993 to 2023). Although though the earliest article was discovered in 1993, interest in the topic increased around 2022, about the time that GHRM became a leading management and organisation issue. Based on annual tourism and GHRM publications, the number of studies has continuously increased from the first year of publishing in 1993 to the most current year of publication in 2022. It is anticipated that the numbers will continue to rise in the future. Figure 1 displays the descriptive analysis based on the collected data.

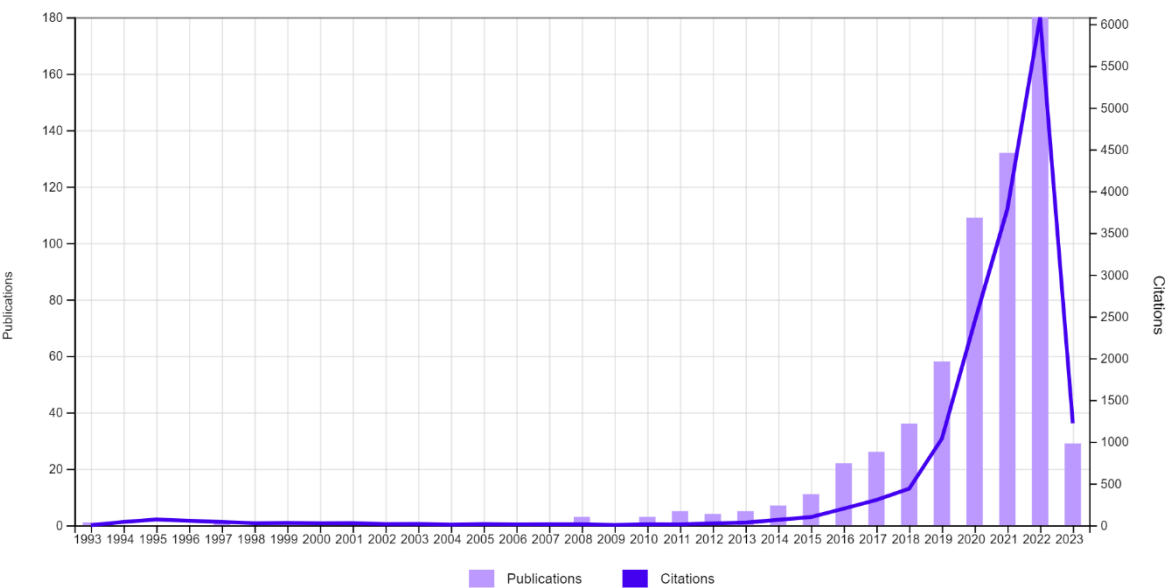


Figure 1: Number of publications and citations on GHRM

4.0 FINDINGS AND DISCUSSION

4.1 The Most Productive Countries

This section examines the contributions of authors from various countries worldwide to GHRM research. Table 2 displays the authors from different countries who have contributed more than five articles between 1993 and 2023. During this time period, ten academic institutions had published at least five articles. These findings reveal that scholars and researchers from China, Pakistan, and Malaysia have made significant contributions to GHRM research. It is worth noting that some of these countries have a strong emphasis on GHRM and have high total link strength.

Table 2: Top 10 Countries of GHRM

Ran k	Publication	Documents	Citation	Total link strength
1.	China	120	3275	371986
2.	Pakistan	98	1804	341321
3.	Malaysia	84	1900	293094
4.	India	62	1021	177370
5.	Australia	45	1971	152130
6.	England	40	2529	133946
7.	France	33	2294	129776
8.	Saudi Arabia	23	530	95917
9.	USA	28	1794	85886
1 0.	Turkey	16	213	72017

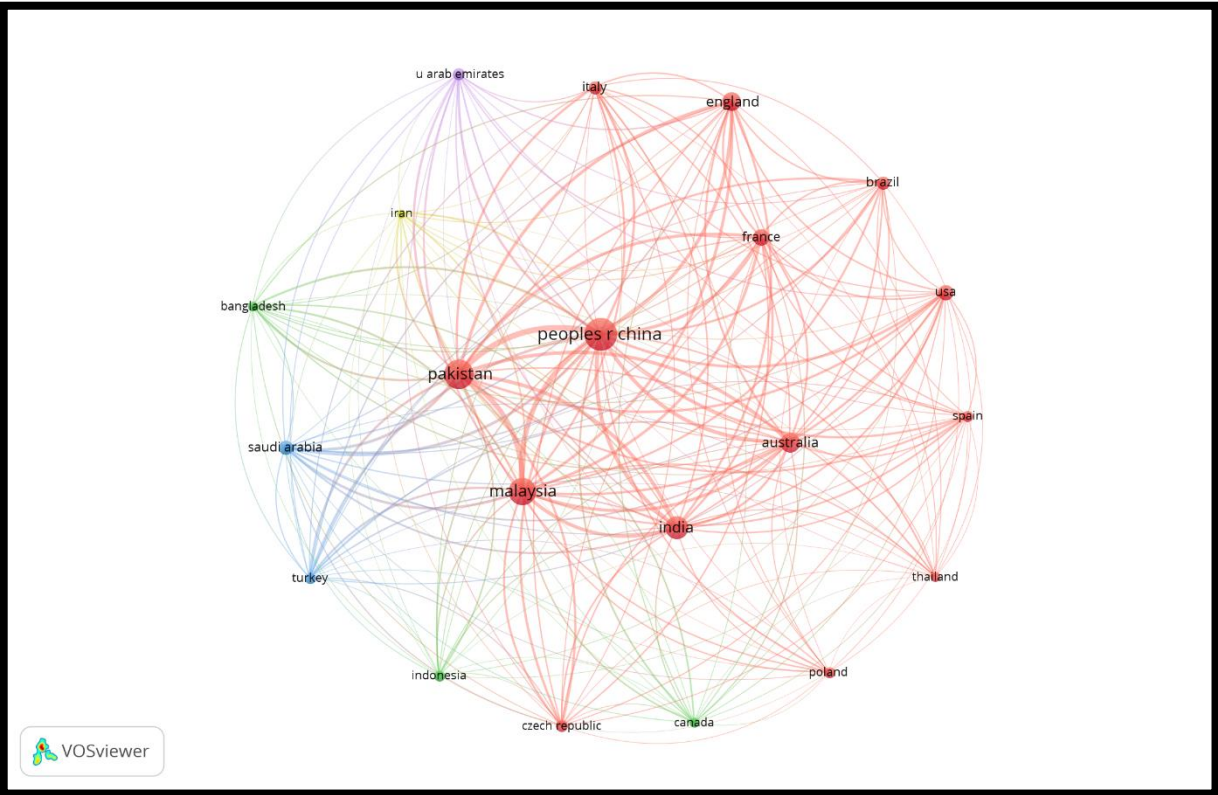


Figure 2: Top 10 Countries of GHRM

4.2 Bibliographic Coupling

Bibliographic coupling is a bibliometric technique that assesses the similarity or link between two scholarly publications based on their shared references. The bigger the number of citations shared by two documents, the stronger their bibliographic coupling.

Out of the 633 documents, 63 documents met a threshold of 67 citations. These 63 documents create 4 clusters. The top-3 documents based on total link strength (TLS) are Amrutha (2020) (960 TLS), Mousa (2020) (863 TLS) and Masri (2017) (847 TLS).

Table 3: Top 10 Documents in Bibliographic Coupling Analysis

Ran k	Publication	Citation	Total link strength
1.	Amrutha (2020)	111	960
2.	Mousa (2020)	127	863
3.	Masri (2017)	191	847
4.	Pham (2020)	73	831
5.	Zaid (2018)	221	814
6.	Chams (2019)	111	807
7.	Gupta (2018)	100	773
8.	Yong (2020a)	144	749
9.	Yong (2020b)	67	748
10.	Yusliza (2019)	86	736

The network visualization of bibliographic coupling is depicted in Figure 3. The four clusters are manifestly distinct from one another. The following section examines current GHRM trends. The clusters are identified based on an inductive interpretation of representative cluster articles and a synthesis of common themes and research streams.

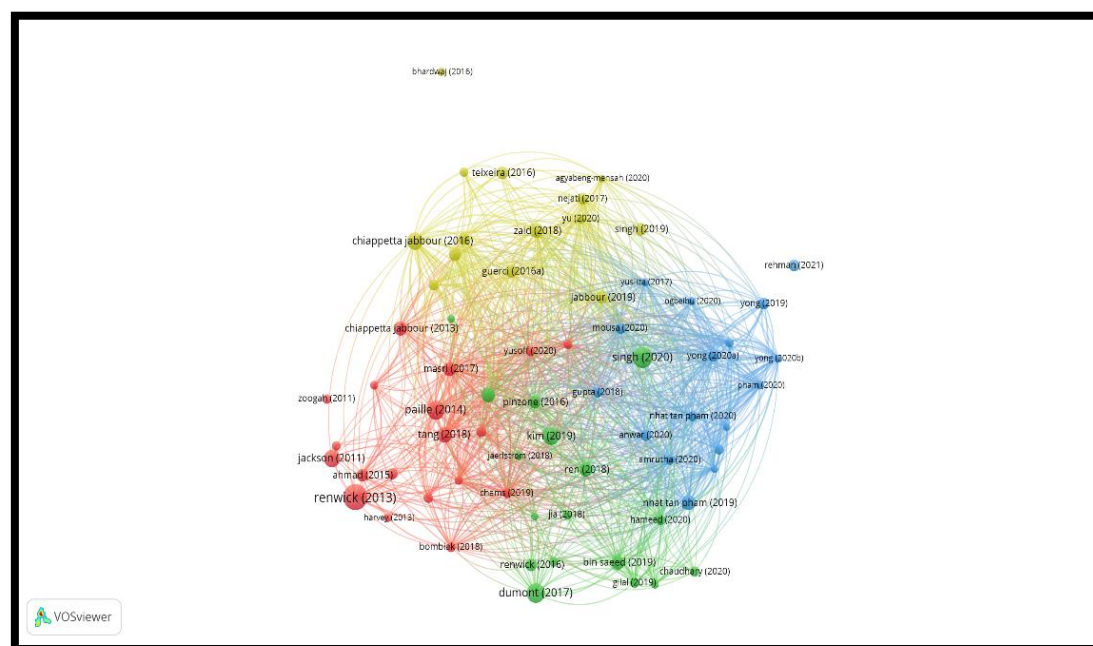


Figure 3: Bibliographic Coupling of GHRM

4.2.1 Cluster 1 (red): Environmental management (EM)

In their study, Jackson et al. (2011) suggest future research opportunities in the intersection of strategic human resource management (HRM) and environmental management (EM). Renwick et al. (2012) note that the understanding of how GHRM practices affect employee motivation to engage in environmental activities lags behind the understanding of how organizations foster green competencies and provide opportunities for employees to participate in EM activities. In a separate study, Paillé et al. (2013) found that environmental citizenship behavior fully mediates the relationship between strategic HRM and environmental performance and that internal environmental concern moderates the effect of strategic HRM on environmental citizenship behavior.

4.2.2 Cluster 2 (green): Behaviour

Dumont and colleagues (2016) discovered that green HRM has a positive influence on both in-role and out-of-role pro-environmental behavior of employees, but through different social and psychological mechanisms. Specifically, the study found that green HRM practices had a direct positive impact on employees' pro-environmental behavior, while the relationship was mediated by pro-environmental psychological capital. Similarly, Saeed and colleagues (2018) reported that green HRM leads to increased organizational commitment and eco-friendly behavior among employees, which in turn has a positive impact on hotels' environmental performance, based on the findings from Kim and colleagues' (2019) study.

4.2.3 Cluster 3 (blue): Organizational citizenship behaviour towards environment (OCBE)

Yong and colleagues' (2019) study highlights that green recruitment and training, two GHRM practices, have a positive impact on sustainability. Anwar and colleagues (2020) found that employees' organisational citizenship behaviour towards the environment (OCBE) mediates the relationship between Green HRM practices and a university campus's environmental performance. Pham and colleagues' (2019) study yielded both expected and unexpected results, including the direct effects of GHRM practices on OCBE, the interaction of three GHRM practices (training, performance management, and employee involvement) that can enhance employees' voluntary green behaviour depending on the level of green performance management and green employee involvement, and green training being considered a crucial mechanism for boosting employees' voluntary green behaviour.

4.2.4 Cluster 4 (yellow): Green supply chain management

Jabbour, et al., (2016) have noted that despite the efforts of scholars in promoting green supply chain management (GSCM) and green human resource management (GHRM) to foster sustainability in organizations, there has been a significant delay in the integration of these two contemporary areas. This delay can be attributed to a greater gap in integrating supply chain management (SCM) and HRM. Guerci, et al., (2015) conducted a survey with multiple respondents, including Human Resource Managers and Supply Chain Managers in Italy, which

confirmed the hypothesized mediation model that green human resource practices have an impact on environmental performance. Zaid, et al., (2018) found that green human resource management practices have a direct impact on sustainable performance, with the mediating effect of green supply chain management practices.

5.0 CONCLUSION AND FUTURE DIRECTION

GHRM has garnered a great deal of interest from both researchers and practitioners. Prior research and the authors' review of GHRM-related publications indicate that this topic is expanding rapidly. Numerous factors contribute to this result. First, GHRM is integrated with industrialization, urbanisation, and environmental management. The fundamental objective of the GHRM is to reduce the carbon footprint of every worker. GHRM also pertains to the management of resources and labour engagement for pollution control. It is also proposed that businesses should be aware of the resources and competencies that contribute to the sustainability of their human resource management.

The purpose of the bibliometrics analysis is to comprehend the dominant research trends in a particular topic or journal. It is a great method for gathering information regarding a certain field of study during a specified time period. It assists readers in obtaining relevant information from many sources. This study examines GHRM-related research published in various journals between 1993 until 2023. We compiled bibliographic information using the Wos database. This study gives significant information on published articles, major contributors, and institutes conducting current GHRM research.

This study uses a bibliometric analysis approach to examine the GHRM field and draw future research directions based on quantitative findings. As such, it is highly recommended to complement this approach with a systematic qualitative literature review to obtain a more comprehensive understanding of the field.

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23THE CHALLENGES OF TECHNOLOGY MANAGEMENT AND COMMUNICATION BEHAVIOR FOR REMOTE WORKING OF SENIOR CITIZEN WORKFORCE IN MALAYSIA

Norarifah A.M., Norhaninah A.Gani norarifah@gapps.kptm.edu.my, norhaninah@gapps.kptm.edu.my Kolej Poly-Tech MARA Bangi, Universiti Poly-Tech Malaysia

ABSTRACT

The COVID-19 epidemic has intensified this tendency globally, particularly in Malaysia, as remote work has grown in popularity in recent years. The use of technology and communication tools has become crucial as remote work becomes more commonplace in order to ensure effective cooperation and productivity. For senior individuals, who might have little expertise with technology and communication tools, this shift towards remote labour has presented particular issues. This study examines the difficulties that elderly persons have controlling technology and communication habits when working remotely and the effects that these difficulties have on their productivity and wellbeing. The paper provides a thorough overview of the difficulties older adults have adopting and utilising technology for remote employment. Digital divide, a lack of digital skills, information overload, security issues, accessibility, equipment and software compatibility, maintenance and support, communication obstacles, social isolation, and work-life balance are some of these difficulties. The article also looks at how these issues affect how older citizens behave when working remotely, including how they affect their productivity, their ability to communicate, how stressed and anxious they feel, and how alone and disconnected they feel. The paper offers a number of recommendations based on these findings to assist senior folks in controlling their technology and communication use while working remotely. These tactics include offering instruction and assistance in digital skills, ensuring accessibility for people with disabilities, putting security protocols and best practises into place, providing technical support and upkeep, encouraging communication and social interaction, and promoting work-life balance. This research article concludes by emphasising the crucial role that technology management and communication style play in the implementation of remote work for senior adults. Organizations may ensure that older persons can successfully participate in remote work and contribute to the success of the firm by addressing the issues and offering necessary assistance and resources.

Keywords: remote work, technology management, communication behavior, senior citizen

1.0 INTRODUCTION

Globally and in Malaysia specifically, remote work has significantly increased as a result of the COVID-19 epidemic. In order to facilitate remote work, corporations are relying more and more on communication technologies, and senior individuals are no exception. Although working remotely can have advantages like greater flexibility, a better work-life balance, and shorter commute times, it also presents special difficulties for senior individuals, notably in terms of technology management and communication style.

The Malaysian government has implemented steps to encourage public use of digital technology and has recognised the potential of remote employment in its National Digital Economy Plan. However, research is still lacking, notably in the areas of technology management and communication behaviour, on the difficulties and advantages of remote work for older adults in Malaysia.

By investigating the difficulties of technology management and communication behaviour for senior workforce remote working in Malaysia, this study seeks to fill this research gap. In addition to examining the tactics used by organisations to facilitate senior citizens' remote work, the study will also examine the viewpoints and experiences of senior citizens who are currently working from home. With the help of this study, we hope to shed light on the particular difficulties and opportunities faced by older persons in Malaysia who work remotely as well as pinpoint the most effective methods for handling technology and interpersonal interactions.

2.0 LITERATURE REVIEW

2.1 Remote work

In recent years, remote work, commonly referred to as telecommuting or telework, has grown in popularity. It describes work that is carried out outside of a conventional office setting, frequently involving the use of digital tools for teamwork and communication. Technology improvements, alterations in workplace culture, and the demand for more flexible work schedules have all made remote employment possible. This review of the literature seeks to present a summary of the study on remote work, including its advantages, disadvantages, and effects on workers and organisations.

According to research, remote employment can provide a variety of advantages for both people and businesses. For workers, remote work can increase autonomy, boost job satisfaction, cut travel time and costs, and increase productivity (Aman, 2020; Gajendran & Harrison, 2007; Golden & Veiga, 2008). The benefits of remote work for businesses include cost savings, more access to a bigger talent pool, improved employee retention, and increased productivity and performance (Allen, Golden, & Shockley, 2015; Bloom et al., 2015; Gajendran & Harrison, 2007; Golden & Veiga, 2008).

While working remotely has numerous advantages, there are a number of drawbacks as well. They include technological obstacles like obtaining dependable internet and communication tools and the requirement for data protection and security (Gajendran & Harrison, 2007; Allen et al., 2015). Employees who work remotely may have emotions of loneliness and disconnect, as well as difficulties supervising and monitoring their performance (Golden & Veiga, 2008; Aman, 2020). Finally, working remotely can make it difficult to distinguish between work and personal time, which could result in burnout and longer workdays (Golden & Veiga, 2008).

The effects of remote work on employees and organisations are complicated and can change depending on a number of variables, such as the type of job, the quality of assistance offered, and personnel variations (Allen et al., 2015; Gajendran & Harrison, 2007). While some research has demonstrated that remote work can boost employee engagement, performance, and well-being, other studies have revealed detrimental effects on these factors (Bloom et al., 2015; Aman, 2020).

2.2 Technology Management

The administration of technology is a vital component of contemporary corporate operations. Organizations need to manage their technology well in the age of digital transformation if they want to stay competitive and foster creativity. The formulation of technology plans and policies is included in the broad category of activities known as technology management, together with the purchase, application, and optimization of technology.

The significance of efficient technology management for organisational success has been emphasised by numerous research. For instance, Henderson and Venkatraman's (1993) research discovered that companies with good technology management are more likely to have a competitive edge. Similar to this, Kettinger and Grover (1997) asserted that effective technology management is essential for organisational change programmes to succeed.

The effect of technology on organisational performance is one area of interest in technology management study. With varying degrees of success, studies have examined the link between technology adoption and corporate performance. For instance, Damanpour and Schneider (2008) discovered that the relationship between technology adoption and business performance is complex and context-dependent while Brouters et al. (1998) discovered that technology adoption has a beneficial impact on firm performance.

The importance of technology in innovation is another crucial facet of technology management. Effective technology management can support innovation and enhance corporate performance, according to research. For instance, Cepeda and Vera (2007) discovered that creativity is positively impacted by technology management strategies including technology planning and control.

The security and privacy of organisational data is another important aspect of technology management. The connection between technology management and cybersecurity has been investigated in research, with an emphasis on the significance of putting in place efficient security measures and regulations. For instance, Leidner and Kayworth (2006) claimed that

managing cybersecurity threats and safeguarding corporate assets require competent technology management.

Overall, technology management is a complicated and varied field of study that covers a variety of activities and has a variety of effects on organisational performance. For firms aiming to promote innovation, enhance performance, and keep up with the competition in the digital age, effective technology management is crucial.

2.3 Communication Behavior

Successful collaboration and workplace productivity depend on good communication. The acts and techniques people use to deliver messages and communicate with others at work are referred to as communication behaviours. In order to ensure efficient collaboration and production in virtual teams, communication behaviour has become increasingly important as firms implement remote work arrangements.

Research has demonstrated that a variety of individual and environmental factors can affect communication behaviour. Personal characteristics, emotional intelligence, and communication skills, for instance, might influence communication behaviour (Purvanova & Bono, 2009; Wong & Law, 2002). Communication behaviour can also be influenced by contextual factors like organisational culture, leadership style, and communication technology (Men & Stacks, 2014; Kock, 2015).

The absence of face-to-face interaction, which can cause misconceptions and communication breakdowns, is one of the fundamental difficulties of working remotely. As a result, numerous communication techniques and technological advancements supporting remote communication have been made. For instance, collaboration software, instant messaging, and videoconferencing have all become crucial tools for distant teams (Markman & Lai, 2020). The employment of communication technologies alone, however, is not enough for efficient communication, according to studies. Successful virtual collaboration depends greatly on how people use communication technology and how they behave when communicating (Staples et al., 2019).

Moreover, communication style can significantly affect burnout, stress, and job satisfaction (Bakker & Demerouti, 2014; Ilies et al., 2007). Conversely, ineffective communication practises can result in lower levels of stress and burnout and better levels of job satisfaction (Wang & Huang, 2017).

In conclusion, effective collaboration and productivity in distant work depend greatly on communication behaviour. Organizations may support good communication and encourage successful outcomes for remote teams by understanding the individual and contextual elements that drive communication behaviour and utilising suitable communication techniques and technologies.

2.4 Senior Citizen

The world's population is ageing, and there are a lot older citizens now than ever before. Those 65 years of age or older are considered senior citizens, and this group is expanding globally. By 2030, there will be 15.3% of people in Malaysia who are 65 years of age or older, highlighting the need of comprehending and meeting the demands of this particular group (Department of Statistics Malaysia, 2019).

According to research, physical and cognitive deterioration, social isolation, and changes in duties and lifestyle pose particular difficulties for senior persons. These difficulties may degrade their quality of life and negatively impact their physical and emotional health (Chen & Schulz, 2016). In the context of work, senior citizens may encounter age discrimination, restricted job options, and forced retirement (Zhan & Wang, 2018). (Zhan & Wang, 2018).

However, research has also demonstrated that elderly citizens can offer valuable talents and experiences to the workplace, including strong work ethics, interpersonal skills, and knowledge of business trends (Kim & Feldman, 2015). (Kim & Feldman, 2015). With the rise of remote work, older persons have the option to continue working and contributing to the workforce while enjoying the flexibility and convenience of remote work (Wang, Chen, & Liang, 2018). (Wang, Chen, & Liang, 2018).

Nonetheless, remote work creates special obstacles for senior individuals, notably in terms of

managing technology and communication behaviour. Research has demonstrated that senior persons may have little expertise with technology and communication tools, which can lead to communication issues and reduced productivity (Czaja et al., 2019). (Czaja et al., 2019). Moreover, senior individuals may face social isolation and detachment from the workplace, leading to feelings of loneliness and lower job satisfaction (Lee & O'Connor, 2021).

Overall, recognising the requirements and challenges of elderly adults in the workplace, particularly in the context of remote work, is vital for improving their well-being and productivity. By addressing these obstacles and providing proper assistance and resources, employers may ensure that older adults can continue to engage in the workforce and contribute to the success of their organisations.

3.0 CONCLUSIONS

The special difficulties that senior citizens have in controlling technology and communication behaviour when working remotely have been noted in this research piece. As remote work becomes more common, it is important to understand that older workers may have less familiarity with technology and communication tools, which can negatively impact their productivity and overall wellbeing. In-depth research into the difficulties older people have utilising technology for remote work has identified a number of major roadblocks, including the digital divide, a lack of digital literacy, information overload, security risks, accessibility, equipment and software compatibility, maintenance and support, communication barriers, social isolation, and work-life balance.

The effect of these obstacles on the behaviour of older persons engaged in remote work has also been investigated; among the most important problems found were lower productivity, communication problems, increased stress and anxiety, and feelings of isolation and detachment. Yet, this study has also revealed a number of tactics that businesses can use to assist senior citizens in controlling their technology and communication use while working remotely. These tactics include offering instruction and assistance in digital skills, ensuring accessibility for people with disabilities, putting security protocols and best practises into place, providing technical support and upkeep, encouraging communication and social interaction, and promoting work-life balance.

The vital significance of technology management and communication behaviour has been underlined in order to successfully deploy remote work for senior adults. Organizations may ensure that older persons can successfully participate in remote work and contribute to the success of the firm by addressing the issues and offering necessary assistance and resources. As remote work becomes more common, it is crucial to understand the particular difficulties that seniors encounter and to take proactive measures to support them in managing their technology and communication habits when working remotely.

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24 LANGUAGE TEACHER COGNITION (LTC) IN CLASSROOM INTERACTIONS AND THE FACILITATION OF STUDENTS' SPEAKING SKILL AT SEKOLAH AGAMA RAKYAT (SAR) SCHOOLS

Nurulhayati Ilias nurulhayati@gapps.kptm.edu.my Kolej Poly-Tech MARA, Ipoh Campus, Perak, Malaysia

Airil Haimi Mohd Adnan, PhD airil384@uitm.edu.my Academy of Language Studies Universiti Teknologi MARA, Shah Alam, Malaysia

Mary Thomas, PhD maryt@uitm.edu.my Academy of Language Studies Universiti Teknologi MARA, Seri Iskandar Campus, Perak, Malaysia

Nor Ashikin Ab. Manan, PhD noras914@uitm.edu.my Academy of Language Studies Universiti Teknologi MARA, Seri Iskandar Campus, Perak, Malaysia

ABSTRACT

This ongoing doctoral level study plans to conduct direct observation to twelve speaking classrooms in six private agama rakyat schools in Perak, Malaysia. Based on one of construct of Borg's LTC framework (2003), which is classroom practices, together with the Sinclair and Coulthard' IRF framework (1975), this study plans to investigate the relationship between teacher cognition and student-teacher classroom interaction patterns. In other words, this study will examine how LTC influences teacher-students' patterns of interaction with the purpose of stimulating and strengthening students' speaking skill in speaking classrooms at SAR schools in Perak. This proposed research will also extend the LTC framework by looking beyond the beliefs and teaching practices of teachers and taking into consideration the actual learning experiences of their students.

1.0 INTRODUCTION

1.1 Background of The Study

The institutionalization of Islamic schools in Malaysia is partly due to an issue which once created a heated discussion among the Muslim scholars in the 1990s namely the dualism in the education system. Dualism in education is defined as the existence of two systems of education, be it in a smaller or larger national context. With regard of Islamic schools, it refers to the separate implementation of the national, modern secular and the traditional, Islamic religious systems (Rahimah, 2019). It was said that dualism failed to produce successful Islamic personalities with those graduated from the secular education system frequently described as professionals absent in religious values. Vice versa, those with strong traditional religious education were said to possess the ability to become Islamic experts, however, failed to contribute actively in society, and are unable to provide critical and creative thoughts in dealing with current issues (Siddiq et al., 2018).

In response to the issue, some Islamic scholars from the Muslim nations have proposed a harmonious fusion of both the traditional and modern Westernized educational system and according to Rahimah (2019), this newly proposed idea later served as the impetus to the emergence of the contemporary modern integrated Islamic schools (IIS) all over the world.

Undeniably, these schools have attracted many parents who are interested in their proposed educational policy, which is a balance between the academic and Islamic education. This strengthens the belief of Muslims who believe that true success is when a person strives not only for happiness in this world but also for the hereafter. It is a pull factor that many Muslim parents find hard to resist, despite many complaints received, especially from the aspects of the school governance, which in turn affect the performance of the schools as a whole

(Mukhlis, 2018).

1.2 Integrated Islamic Schools (IIS) in Malaysia

Based on a study carried out by the Advisory Board for the Coordination of Islamic Education or Lembaga Penyelaras dan Pendidikan Agama Islam (LEPAI) as cited in Azmil Tayeb (2018), in general there are four types of IIS in Malaysia:

- i. Sekolah Menengah Kebangsaan Agama (SMKA) which are fully managed by the Ministry of Education;
- ii. Sekolah Agama Negeri (SAN), managed by the respective State Departments of Religious Affairs;
- iii. Sekolah Agama Bantuan Kerajaan (SABK);
- iv. Private Sekolah Agama Rakyat or Agama Rakyat Schools (SAR) that are operated and managed by non-governmental Islamic organizations such as Angkatan Belia Islam Malaysia (ABIM) or the Muslim Youth Movement of Malaysia, Jemaah Islam Malaysia (JIM) and even private individuals.

1.3 Malaysian CEFR-aligned curriculum and Communicative Language Teaching

In Malaysia, the inclusion of English as a subject in the national education curriculum has made it mandatory and it has been institutionalized as the second most important language of the country (MoE, 2012). In improving the overall standard of English language among Malaysian students, the Ministry of Education has executed the Common European Framework of Reference (CEFR) aligned curriculum (Rashid et al., 2017) which serves as the international benchmark in preparing the syllabus, textbooks and assessments.

Meanwhile, Communicative Language Teaching (CLT) can be described as the mainstream language teaching approach which emphasises on communicative competence as the aim of language teaching and learning (Ketsemabom & Kornwipa, 2018). CLT is seen to be a potential approach to language teaching as it focuses on developing learners' communicative competence in the target language especially with the introduction of the Common European Framework of Reference for Languages (CEFR) in Malaysian primary and secondary education (Aina Hafizah & Parilah, 2019). In other words, The Malaysian CEFR-aligned curriculum promotes CLT (Ketsemabom & Kornwipa, 2018), therefore all language teachers are expected to incorporate CLT in their language classrooms.

With that, SAR schools are definitely, without exception, to implement the current national CEFR-aligned curriculum and to conform to the language teaching and learning aspects embodied in the CLT approach in their language. Besides that, they are required to register under the corresponding State Islamic Religious Departments for the purpose of channeling financial and technical assistance (Nurulhayati, 2017).

1.4 Problem statement

However, SAR schools are not without problems. Time and again, the media and the local communities will highlight the issue of low English language performance in SAR schools in national standardised examinations compared to other schools (Airil Haimi, 2017; Asmaliza, 2018; KPM, 2012; Nur Farhana et.al, 2022; Nurulhayati & Che Ton, 2016). Rosli Othman (2018), the then Assistant Director of the Education Division in Penang State Department of Islam (JAIPP) for instance, claims that most of the students at private Islamic schools including both SABK and SAR do not possess a commendable level of English proficiency and this will make it difficult for them to compete in the era of globalization. Maszlee Malik (2019) while holding the position as Minister of Education of Malaysia in 2018 added that private Islamic schools should improve their students' command in English to continue to remain as relevant educational institutions in the future. However, according to Solehah Yaacob (2022), the reality is quite difficult considering that many students majoring in Islamic studies and Arabic in Malaysia are less concerned with mastering the English language either in writing or speaking.

Due to these factors, some researchers have conducted studies which involved direct observations on the language teaching and learning (T&L) process in SAR schools with the purpose of identifying the causes of the decline in the students' English language performance. A study by Nurulhayati and Che Ton (2016), for instance, examined how English language was taught in nine private self-funded Islamic secondary schools (SAR) in Perak. They found that chief amongst all drawbacks is the limited capital resources that negatively affect not only the development of school infrastructure but also the language classroom pedagogical practices. This can be clearly seen when most schools fail to provide computers and ICT facilities in every class observed. All the teacher participants taught with conventional paper, pens, books, and whiteboards to assist their teaching because the schools failed to provide updated facilities. More worryingly, almost all English language teachers there were merely SPM leavers without any teaching qualifications and were rarely sent to continue professional development or in-service courses to improve their pedagogical skills and professionalism (Rozita Baba, 2021). Teachers who are inadequately trained in teaching may not achieve satisfaction in their careers and fail to become effective and inspiring instructors, because one of the factors of satisfaction in teaching depends on classroom pedagogical knowledge (Chee, 2018)

Besides that, one of the most obvious instructional behaviours seen was that most of the teachers spent more than 60% of their student-teacher classroom interactions in the students' mother tongue (Nurulhayati & Airil Haimi, 2015, Nurulhayati & Che Ton, 2016). It was also the students' primary mode of communication when speaking with their peers throughout the lessons. Contrary to what Inada (2021) advocated, using more of the students' native language in a communicative classroom will undoubtedly result in a decline in their language proficiency. Inada stressed the importance of exposing the students to a large amount of correct grammatical sentences in the target language to stimulate their language learning

Classroom instructions in SAR classrooms were also teacher-centred with limited involvement by the students in the learning process. Teachers became the sole instructor, delivering and translating while the students passively listened without participating actively in the classroom interactions. Besides that, it was found that rote learning, a traditional learning strategy, which was used in the students' Quranic recitation sessions to prepare them to become Tahfiz, was the most common language learning strategy used by the students both inside and outside of the classroom. (Asmaliza, 2018; Rozita Baba 2021). This learning tradition which centres on memorization without involving students in actual, real-life interactions in the target language as proposed by CLT, will not be able to stimulate speaking skills among students (Rahimah Embong, et. al., 2018).

On the other hand, a study by Muhammad Rushydi et al., (2020) who investigated the amount of time spent on 'Teacher Talk' compared to 'Student Talk' in private Islamic schools in Kedah reveals that the teacher typically dominates most of the instructional process. Teacher A spoke for 74% and Teacher B spoke for 68% out of class time while students' speaking time only accounted for 16% and 17% respectively. This is contrary to one of the criteria of communicative classrooms which should act as the main platform to allow students to actively participate in the classroom interactions to stimulate their speaking skill and become competent speakers.

All of the above constraints, if left unchecked, could continue to be among the main causes which lead to the decline in English language achievement in SAR schools. It is indeed worrying, given that once these students leave school, they will be expected to continue their education at higher education colleges and universities where English will be used as the main language of instruction. If they fail to demonstrate outstanding English ability at secondary school level, questions may arise pertaining to their readiness to pursue tertiary level education. Immediate action should be taken to address the problem and further improve the English language performance in these schools.

1.5 Theoretical Framework

Before continuing with the research objectives, the researcher feels there is a need to explain briefly about two theoretical frameworks that underlie this study, namely Borg's Language Teacher Cognition (2003) and Lemke's Triadic Dialogue (1990). This is because the combination of these frameworks act as the basis for the construction of this study's research objectives and eventually, its research questions.

The first framework to be employed is Borg’s Language Teacher Cognition (Borg, 2003), or LTC which can be defined as what teachers “think, know, and believe and the relationships of these mental constructs to what teachers do in the language teaching classroom” (p. 1). It discusses the reality of the teachers’ continuous mental construct, i.e., their knowledge, beliefs, and practices in context of their multifaceted profession. He further conceptualized four elements that constantly influence language teacher cognition, namely (i) schooling experience, (ii) professional teacher education, (iii) school contextual factors and (iv) classroom teaching practices.

On the other hand, classroom interaction and students’ language development has long become one of the key-focus in second language acquisition (SLA) research. Sinclair and Coulthard (1975) in his classroom discourse framework called the triadic dialogue claims that the simplest and most common teacher-student cycle of interaction occurs in a communicative classroom usually consists of three moves: an initiation (I-Move), normally by the teacher initiates a question, a response (R-Move), where a student attempts to respond to the question, and a follow-up move (F-Move), in which the teacher provides some form of feedback to the student’s responses. A sample of a complete IRF cycle is as below:

Teacher: What is the capital of Ecuador?I

Student: Quito.R

Teacher: Well done!F

However, it is the responsibility of the teachers to manipulate this simplest cycle of communication to elicit new thoughts and responses from the students, which will force them to participate in longer, negotiated, genuine linguistic interactions and facilitate their language (Kalpana, 2017).

As mentioned in subsection 1.4, all kinds of constraints plaguing the SAR school demand a deeper observation into what actually happens in the language teaching and learning ecosystem in those schools. Therefore, this research plans to investigate the relationship between LTC and classroom practices by examining the teacher-student classroom interaction patterns in English language speaking classrooms at a few SAR secondary schools in the state of Perak. Direct classroom observation is deemed necessary because it provides first-hand information on the moment-to-moment events happening in the language settings (Ecca, 2021). Plus, the main reason why the schools’ English-speaking classrooms have been selected is because that is where the most teacher-students’ interactions are expected to occur. Based on the factors that have been discussed above, this study will link its outcomes with few research objectives.

1.6 Research Questions

The conceptual framework of this research effort is illustrated in the diagram below:

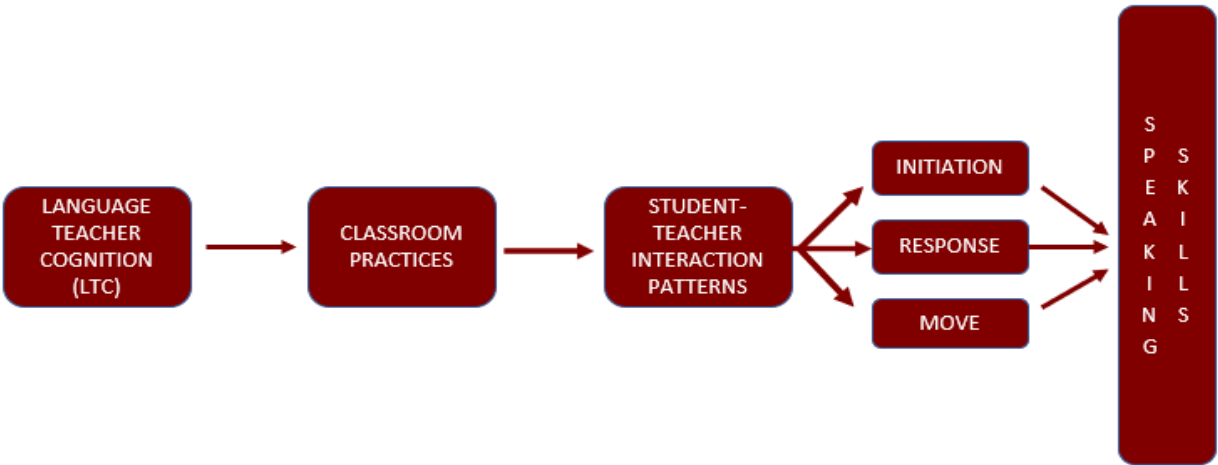


Figure 1.1 Summary of research framework

Figure 1.1. describes what the researcher plans to do for this doctoral study. Based on one of

construct of Borg's LTC framework (2003), which is classroom practices, together with the Sinclair and Coulthard' IRF framework (1975), this study plans to investigate the relationship between teacher cognition and student-teacher classroom interaction patterns. In other words, this study will examine how LTC influences teacher-students' patterns of interaction with the purpose of stimulating and strengthening students' speaking skill in speaking classrooms at SAR schools in Perak.

2.0 LITERATURE REVIEW

2.1 Language Teacher Cognition

In his framework on Language Teacher Cognition, Borg (2003, 2006) defines LTC as what teachers:

[...] think, know, and believe and the relationships of these mental constructs to what teachers do in the language teaching classroom. The key questions addressed in teacher cognition research include the following: What do teachers have cognitions about, how do these cognitions develop, how do they interact with teacher learning and how do they interact with classroom practice? (p. 1)

Further, he conceptualized four central constructs that constantly mediate language teacher cognition, namely (i) schooling experience, (ii) professional teacher education, (iii) school contextual factors and (iv) classroom teaching practices (see Figure 1.1).

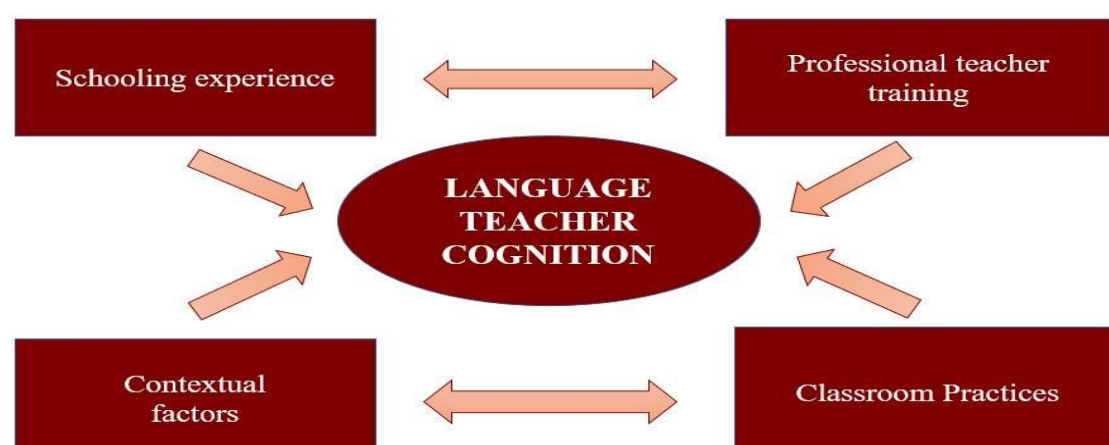


Figure 2.1. Borg's modified language teacher cognition framework (2006, p. 283)

This model depicts the interconnections between four central constructs that impact language teacher cognition. First, the experiences of teachers as language learners in schools before commencing their formal language teacher training and/or professional courses influence and shape their early beliefs of being a teacher. Second, their learning experiences gained through their formal teacher training or in-service professional development courses are important aspects that influence their existing beliefs. Third, the model also demonstrates a relationship between language teacher cognition and their internal classroom practices which involve among others, their perceptions about themselves as teachers, their learners, knowledge about the subject they teach, the environment in which they work and how these elements continuously impact their classroom instructional decisions. The fourth component demonstrates that the management of schools, time restrictions, mandated curricula, high-stakes tests and exams, environmental constraints, as well as planned and unplanned parts of teaching, all have a significant impact on teachers' classroom practices (Basturkmen, 2012).

2.2 Framework Two – Triadic Dialogue

Despite the large number of participants, the spoken texts of classroom interaction, especially those involving the teacher and the entire class are found to be structured in typical forms of discourse i.e., in accordance with certain repetitive patterns. According to Sinclair and Coulthard (1975), one of the most well-known forms of classroom discourse is the "triadic

conversation," also referred to as the IRF sequence (Sinclair & Coulthard, 1975). The authors claim that in a communicative classroom, the simplest and most frequent cycle of teacher-student interaction consists of three moves: an initiation (I-Move), which frequently takes the form of a teacher question, a response (R-Move), in which a student makes an attempt to answer the question, and a follow-up move (F-Move), in which the teacher offers some kind of feedback to the student's response. As an illustration of a whole IRF cycle, consider discursive energy and inventiveness (Sinclair & Coulthard, 1975).

Teacher:	What is the capital of Ecuador?	I
Student:	Quito.	R
Teacher:	Well done!	F

2.3 Third-turn – From Feedback to 'Follow-Up'

However, The IRF cycle's brief and straightforward design has drawn criticism for failing to spark more substantial and protracted exchanges that would have fostered communicative competence (Kalpana, 2017; Moh. Abraham Akbar Eisenring & Margana, 2019). Its rigid triadic pattern reflects the kind of interactions in traditional, teacher-fronted classrooms that does not generate adequate language output by students.

To compensate for the limited communication at the third round, some authors have suggested that the third-turn in this triadic IRF sequence, if carefully modified, could promote genuine interaction (Hermi Zaswita, 2022; Jaeger, 2019). Mortimer and Machado (2000) proposed that if the teacher's restricted evaluative feedback at the F-Move is extended by probing different styles of 'Follow-up' questions, it could elicit new thoughts and responses from the students, as they will be forced to participate in negotiated, genuine linguistic interactions. At this point, longer referential questions should be utilised instead of display questions. Referential questions are higher level inquiries that could inspire students to think critically and creatively, whereas display questions are simpler inquiries for which the solutions are readily available in the teaching materials being used (Hermi Zaswita, 2022; Borzogian & Fallah, 2017; Kalpana, 2017). Therefore, when the teacher takes the initiative to change the third-turn interaction pattern beyond the traditional method by opening more space for discussion and further thinking, providing more speaking practices that will help in developing their language competence. This is what the researcher intends to do in this study, which is to see how the teachers manipulate the third-turn at each conversation from using simple evaluative feedback to utilizing several effective follow-up probes to assist students in sharpening their speaking skill.

3.0 METHODOLOGY

3.1 Research Design - MMRD

To gather information on their opinions of the effectiveness of IRF-Moves in enhancing students' speaking abilities, the researcher may choose to only administer surveys, one of the most widely used close-ended, quantitative data collection methods (Hameed, 2020). However, the data may be insufficient because doing so may not provide first-hand, direct evidence on what actually happens in the ESL classrooms (Borg, 2018).

Instead, the researcher may need to triangulate the data by employing several data collection methods to increase the worthiness of the study (Noble & Heale, 2019). Triangulation incorporates multiple theories and methods in a study to compensate for the limited data generated from a simple survey, therefore maintaining data consistency (Noble & Heale, 2019). Among the popular methods used for data triangulation include classroom observations and interviews (Hameed, 2020).

Classroom observation is a way of gathering data mostly in qualitative research by observing the behaviour and events or noting physical characteristics in their natural settings (Ecca, 2021). In addition, interviews can be employed with other methods to provide in-depth information about participants' inner values and beliefs. For instance, using interviews as a supplement to classroom observations would allow researchers to gain some insights into the participants' internal beliefs along with their external classroom behaviours (Monday, 2020).

Thus, to examine the quality and success of classroom interaction in this study, the mixed method research design is advantageous as it helps to generate the numeric and qualitative

data of the spoken interactions between the teachers and the students. Cross-referencing the quantitative and qualitative data would allow triangulation, which will ultimately produce an accurate reflection or evaluation of the notion or concepts investigated.

3.2 Sampling

3.2.1 Selecting Teacher Samples for The Quantitative Survey

This research will involve all English language teachers currently teaching in 17 private SAR secondary schools in Perak. At the onset of the quantitative data collection, all language teachers will be asked to take part in answering a set of the Demographic Survey Questionnaire that is divided into two parts.

3.2.2 Selecting Teachers for The Qualitative Survey

Six teachers will be chosen to participate in the following qualitative data collection procedures involving six pre-observation semi-structured interviews, twelve classroom observations, six stimulated recall teacher interviews and six post-observation teacher interviews.

Two sampling methods will be carried out in determining the selection of the teachers. Some scholars have come out with several most commonly cited grounded theories regarding qualitative samplings. However, the most prevalent principle that has been frequently used to determine the most appropriate size and the first qualitative sampling method in this study is the theory of data saturation (Glaser & Strauss, 1967). According to the authors, saturation occurs when no additional insights or themes emerged and data redundancy takes place in the data analysis process, which indicates that an adequate sample size has been reached. Saturation is a sign that a sample is sufficient and the data collected have adequately represented the variety, depth and complexities of the topics, thus ensuring its content validity (Hennink, 2022). Based on this valuable information, the researcher feels that the selection of four teacher participants in the qualitative data gathering of this study is sufficient to obtain deep, valuable insights into teacher cognition in IRF-Moves and the stimulation of learners' speaking skills.

Second, the teachers will also be selected based on convenience sampling methods. According to Kumar (2014) in Jandar (2017), convenience sampling is a method 'primarily guided by the convenience to the researcher'. There is no specific technique for acquiring the participants; they may be recruited by merely asking people who are present in the location. The principal in each school will help in the selection of the teachers; however, the researcher will select those who fulfil the suggested criteria and are willing to participate in the classroom observations and interviews.

They will be recommended based on their teaching experiences; each school should recommend one novice with less than two years of teaching experience and another senior teacher with more than five years of teaching experience. The decision to choose two teachers with different years in service has its own justifications; among all, the experience and views of novice teachers and senior teachers, if combined, could strengthen the findings of this study.

3.2.3 Selecting Students for The Qualitative Survey

Since it is impossible to ask teachers and students to explain and justify their spoken behaviours while the lesson is taking place, a stimulated recall interview with four teachers and a few carefully chosen students is the best way to get the participants' retroactive verbal accounts to explain their actions. Therefore, there will be no specific number of students involved at this stage, rather, students who demonstrate the most observable learning/non-learning behaviours accordingly with the types of IRF- exchanges, moves and acts suggested by the S&C (1975) Methods of Discourse Analysis, while interacting with their teacher will be selected to take part as the students' participants.

3.2.4 School Selection

Meanwhile, the selection of the schools that will be represented by the teachers will be based on the performance of the English subject at the national SPM exam level; one teacher from the two schools that shows the best performance and one from another two schools that performs the poorest.

3.3 Research Instruments

The instruments used to complete the study are (i) Demographic Survey Questionnaire, (ii) Pre-Observation Semi-Structured Interview Protocol, (iii) Stimulated Recall Interview Protocol (Teacher), (iv) Stimulated Recall Interview Protocol (Student), (v) Classroom Observation Descriptors and the Classroom Observation Scale, as well as (vi) Post-observation Semi-Structured Interview.

3.4 Data Collection Procedures

The following explanation briefly illustrates the entire design study. First, a set of demographic questionnaires will be administered to all English language teachers at SAR secondary schools in the northern state of Perak in Peninsular Malaysia. Part A of the questionnaire consists of a set of questions to obtain their details such as age, gender, highest academic qualification, years of service, reasons for choosing to teach English and number of hours spent in joining teaching professional courses. Part B of the questionnaire includes questions that are developed to investigate their basic knowledge of IRF moves in classroom interactions and how it assists the development of students' speaking skills.

Second, a pre-observation semi-structured interview will be held with four selected teachers to obtain in-depth information about (i) their stated belief on the effectiveness of IRF-Moves in stimulating learners' speaking skills as well as (ii) specific information on how they plan to apply the IRF-Moves in their next speaking class.

Third, classroom observations will be conducted involving each of the selected four teachers. Each of them will be observed in 2 x 70-minute speaking lesson classrooms to investigate how both teacher and learners manipulate their IRF-Moves to identify the observable language teaching and learning behaviours that probably occur throughout each lesson. All lessons will be audio/video recorded for further analysis.

Fourth, since it is impossible to have the teachers and students explain and justify their thoughts and behaviours during the lesson, the best way to obtain the participants' retrospective verbal accounts to explain their actions is through a stimulated recall interview that will be carried out with four teachers and several selected students to justify their observable teaching and learning behaviours (Jandar, 2017). Prior to this, the researcher will play the recorded classroom observations to the teacher and students to elicit some explanations for the observable teaching and learning instances recorded during the lesson.

Finally, as the closing step in the data collection process for this study, a post-observation interview will be held with each teacher. All data gathered during teacher and student-stimulated recall interviews, as well as the classroom observation audio/video recordings, will be presented again to allow teachers to provide in-depth information and justifications on the reasons for the probable congruences and incongruences that may occur throughout their instructions.

Each procedure and data collection method using the research tool employed for each step will be explained in detail in the subtopic of Data Collection Procedures.

	RESEARCH QUESTION	PARTICIPANTS	PURPOSE	PROCEDURES
1	RQ1: What are the teachers' existing knowledge on the role of IRF-Moves in teacher-student classroom interaction to facilitate students' speaking skill?	All English language teachers at 17 SAR secondary schools in Perak	To obtain teachers' personal information as well as their knowledge on the effectiveness of IRF-Moves in classroom interactions in facilitating students' speaking skill.	Distribution of questionnaire
		Six selected teachers	To obtain deeper insights on the teachers' existing beliefs related to the effectiveness of IRF-Moves in facilitating students' speaking skills, particularly in their preparation for the classes which will be observed.	Pre-observation in-depth semi-structured interview
3	RQ2: How do the teachers facilitate their classroom interaction patterns to help improve students' speaking skill? RQ3: How do the students facilitate their classroom interaction patterns to help improve their speaking skill?	Six selected teachers and their students	To examine to what extent both teacher and students modify the IRF-Moves in their classroom interactions to enhance students' speaking skill.	2 x (70-minute) classroom observations for each Teacher A, B, C and D TOTAL 560-minute

4	RQ2: How do the teachers facilitate their classroom interaction patterns to help improve students' speaking skill?	Six selected teachers	To obtain the teachers' retrospective verbal accounts to justify their behaviours.	Stimulated Recall Interview (Teacher)
5	RQ3: How do the students facilitate their classroom interaction patterns to help improve their speaking skill?	The selection of students will be based on the observable/non-observable learning instances captured	To obtain the teachers' retrospective verbal accounts to justify their behaviours.	Stimulated Recall Interview (Students)
6	RQ4: According to the teachers, what are the reasons for the probable congruences and incongruences between the theory and practice which occur throughout the teacher-student classroom interaction patterns?	Four selected teachers	To get justifications to the probable 'congruences' or 'incongruences' between their stated beliefs with their actual classroom practices and subsequently put into evidence LTC - what teachers know, think and do with regard to IRF-Moves in facilitating students' speaking skill.	Post-observation semi-structured interviews

Table 3.2. Summary of data collection procedures.

3.8 Data Analysis Procedures

Data Analysis is the process of systematically analysing raw data by applying statistical or logical techniques to define, describe, review and evaluate data for the purpose of decision making (Johnson, 2022). This process offers extremely useful insights and statistics, and is often presented in charts, graphs, tables and graphs, which reduces any negative consequences associated with decision making and thus, ensures the trustworthiness of the results.

3.8.1 Quantitative Data

In this study, the quantitative data will be derived from two methods, namely the demographic survey which uses Demographic Survey Questionnaire and the classroom observation with its Systematic Observation Scale instrument.

In order to ensure the trustworthiness of the data, some of the items for the Demographic Questionnaire and the Systematic Observation Scale were adapted and edited from Nurulhayati and Che Ton (2016) and Galegane (2015) respectively. Adapting more established instruments tested in the field by other applied linguistics researchers could ensure the reliability and validity of the research findings (Creswell, 2014). Both edited instruments will also be pilot-tested with the assistance of a similar population to collect feedback.

3.8.2 Quantitative Data Analysis

The quantitative data will be derived from two methods, namely the demographic survey which uses Demographic Survey Questionnaire and the classroom observation with its Systematic Observation Scale instrument.

i. Demographic data analysis

The quantitative data obtained from the Demographic Questionnaires and the Classroom Observational Scale will be analysed using the Statistical Package for the Social Sciences (SPSS) system. The data obtained from the Demographic Analysis Questionnaires will be analysed to summarize the teachers' personal data, academic qualification, the reasons why they chose to pursue language teaching (bachelor years), their previous teaching experiences and their current work burden, hours spent on teaching professionalism courses etc. The results of the analysis will be summarized and presented in forms of frequencies (F), Mean (M) and Standard Deviation (SD) and presented in forms of tables and graphs.

ii. Systematic Observation Scale

The data obtained from the Systematic Observation Scale will be analysed and interpreted by looking for the most influential features of questions that probe the most learning outcomes from the students. In order to ensure that this quantitative analysis has its clear direction, the researcher feels there is a need to categorize the analysis based on what suggested by Galegane (2015). The author has suggested that out of the entire lesson time, we should find the frequency and percentage of (1) IRF occurrences (2) Teacher initiation vs student initiation moves, (3) teacher response vs student response moves, (4) teacher feedback vs student feedback moves and (5) teacher follow-up vs student follow-up moves.

The results of the analysis will be summarized and presented in forms of frequencies (F), Mean (M) and Standard Deviation (SD) and presented in forms of tables and graphs.

On the other hand, the quality of the classroom interactions will be measured by identifying the degrees of the nature of classroom interaction (Galegane, 2015). This was done by categorising the lessons into the three groups as summarized in the table below.

Table 3.4 Three categories of quality classroom interaction (Galegane, 2015).

	CHARACTERISTICS.
A (BETTER LEVEL OF INTERACTIVE)	• The whole lesson time possesses a dialogic pattern of interaction. • The students talk more than the teacher • The students provide numerous responses which will be detailed by the number of sentences provided • The whole lesson transaction indicates a number of lengthy teaching exchanges • There are a number of strands in each lesson transaction. • In conclusion, the length of the strands indicated quality student-centred interactive classrooms.
B (GOOD LEVEL OF INTERACTIVE)	• The lesson transaction has a combination of both dialogic and monologic patterns of interaction. • The students at some points of the lesson transaction talk more than the teacher • However, there were some points where the teacher talks more than the students • About half of the students' responses were evident within a lesson transaction while the other half was made up of the teacher talk • There is a combination of both lengthy teaching exchanges and very short ones. • The strands are evident within the teaching exchange but are less compared to the 'better' category.
C (AVERAGE LEVEL OF INTERACTIVE)	• The lesson transaction possesses a strict IRF pattern of interactions. • The teacher talks more than the students • The student provides minimal responses in short sentences • Sometimes the student responds in only one word • The whole lesson transaction indicated very short teaching exchanges • In most cases only one or two strands are evident in each lesson transaction indicating a teacher-centred, traditional classroom.

The researcher suggests that these three categories are also employed while analysing the qualitative data of this study.

3.8.3 Qualitative Data

In this study, the qualitative data will be obtained from the four pre-observation semi structured interviews, four audio-recorded classroom observations and four post-observation semi-structured interviews for teachers as well as with four students. The instruments used in these steps have also been adapted, edited from more established instruments that have been tested in the field by other applied linguistics researchers. In addition, the instruments will also be pilot studied.

All moment-to-moment classroom observations and interview conversations will be transcribed verbatim. The Cohen Kappa's degree of agreement will be applied to measure the reliability of the verbatim transcriptions of the interviews. It is a peer checking procedure whereby the more peers agreed to the items the more reliable the transcription will be. Cohen

Kappa's degree of agreement carries the format of:

$$K = (fa - fc) / N - fc$$

Whereby (fa) stands for total items agreed, (fc) stands for 50% of all the total items and (N) stands for the total number of items.

External validators will assist in this procedure; they are English lecturers currently teaching higher learning institutions in the state of Perak. All of them are qualified English language educators certified from local universities in Malaysia. They are very well experienced and have been teaching English for at least five years.

3.8.4 Qualitative Data Analysis

The mass of qualitative data obtained from the pre-observation interviews, audio-video recordings of the classroom events, both interview protocols (teachers and students) and the post-observation interviews will be transcribed verbatim. They were then organized, summarized with the irrelevant data discarded.

The data gained will be carefully read again to identify all statements related to the research questions. Each data will be coded and categorized. Any relevant student-teacher utterances will be organized and placed under its appropriate code. Once the first coding is completed, the researcher will be analysed more to look for patterns in the codes. In looking for the specific patterns which emerged from the analysis, the researcher will identify among all, (i) the most demonstrated third-turn follow-ups, (ii) the most learning behaviours (iii) the causes of both teaching and learning behaviours possessed by both teachers and students (iv) and the strategies involved for dealing with the congruences and incongruences with regard to the teacher beliefs. Later, the emerging themes and categories will be interpreted to answer all the research questions pertaining the language teachers' cognition on classroom interaction and how it helps to improve students' speaking skill. Every detailed discussion will be supported with evidence in the form of teacher-student's transcription excerpts, which portray the desired behaviours. In short, the research framework is summarized in Figure 3.2.

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THE IMPACT OF COST ACCOUNTING ON THE ADOPTION OF ENVIRONMENTAL MANAGEMENT SYSTEMS IN THE TOURISM INDUSTRY

*Noor Rohin Awalludin, Norhani Aripin an_rohin@kuptm.edu.my, bnorhani@uum.edu.my Universiti
Poly-Tech Malaysia, Universiti Utara Malaysia*

ABSTRACT

Environmental issues often receive attention in Malaysia in parallel with the rapid development of the tourism industry which has contributed to environmental pollution. In connection with that, various efforts have been made to prevent and reduce the effects of pollution on the environment, including the Environmental Management System (EMS). By implementing an Environmental Management System (EMS), the effects of unwanted pollution on the environment will be reduced. The purpose of this study is to expand the understanding of how cost accounting factors affect the application of EMS among hotels in Malaysia. The sample of this study is based on a questionnaire collected from 56 4 and 5 star hotels in the Central Region of Malaysia including Selangor, Kuala Lumpur and Putrajaya. This study uses Semi-Structured Least Squares Equation Modeling and Institutional Theory as supporting theory. The study found that cost savings do affect the use of EMS among hotels in Malaysia. Further analysis shows that different hotel sizes do not affect the adoption of EMS. This study expands knowledge on how cost accounting simultaneously influence the adoption of EMS in a tourism industry in Malaysia. Next, this study also provides new evidence that the size of the hotel does not influence the effect of cost accounting factors on the implementation of EMS.

Keywords: Environmental management system (EMS), cost savings, high implementation costs, high maintenance costs, hotel

25EXPLORING THE DETERMINANTS OF TOURISM DEMAND IN MALAYSIA: ANALYZING THE RELATIONSHIP BETWEEN TOURISM AND ECONOMIC GROWTH

A. Wahyuni A. Wahab, Lee Chin. asriwahyuni@gapps.kptm.edu.my, leechin@upm.edu.my University
Poly-Tech Malaysia, University Putra Malaysia Kuala Lumpur, Malaysia

ABSTRACT

Tourism industry is very important to the economy and is identified as one of the major sources of economic growth. Thus, it is imperative to analyse the determinants of Malaysian tourism demand, which might constitute an important guideline for the policy-making institutions. With that, this study would like to investigate tourism demand for Malaysia in terms of tourist arrivals. In precise, one key question the study seeks to answer is whether there is a turning point or threshold in the relationship between tourism and economic growth. This study aims to ascertain the belief of tourism-led economy growth and to identify the factors that affect the tourism demand. The objective of the study is to recognize the main determinants of the international tourism flows. The results obtained may be valuable for helping professionals and policy makers in the decision-making process.

Keywords: tourism demand, tourist arrival, economic growth

1.0 INTRODUCTION

Over the past two decades, international tourism has advanced quickly to the point where it is now a significant contributor to the economy. International visitor arrivals increased to 4% in the first nine months of 2019 according to the most current Global Tourism Barometer data from the United Nations World Tourism Organization (UNWTO). A huge 1460 million foreign tourists (overnight visitors) visited different countries throughout the world in 2019, which is 59 million higher than during the same time in 2018. The Asia Pacific region welcomed 362 million foreign visitors in 2019, which is 4% more than in 2018. By 2030, it was predicted that the region would welcome 43 million foreign visitors annually on average (UNWTO, 2020). Malaysia has grown to be one of the most sought-after travel destinations worldwide. The tourist sector is a booming industry. one of the most significant sources of foreign exchange earnings, as well as a major player in the economy and a catalyst for economic expansion. The gross domestic product (GDP) is created by the tourism sector to the tune of 8% to 10%. (Sivalingam, 2007). For many nations, the tourism sector has grown in importance and has made a considerable contribution to economic development. Because of the steady rise in visitor numbers over the past few years, the tourism sector has been highlighted as one of Malaysia's main engines of economic growth. Understanding the factors that influence tourism demand and how they connect to economic growth is crucial for maintaining this growth, though. In order to determine whether there is a turning point or threshold in the relationship between tourism and economic growth, this study intends to investigate the factors that influence tourism demand in Malaysia. Tourism is one of the most significant sources of employment, foreign cash, and income generation for many countries, according to a research by the World Tourist Organization (World Tourism Organization, 2021). Thus, it is crucial to examine and comprehend the factors that influence tourism demand because doing so can help policymakers and tourism experts encourage sustainable tourism growth and advance the economy of their nation.

2.0 LITERATURE REVIEW

One of the main drivers of economic growth in Malaysia and a significant industry is tourism. Many studies have looked at the connection between tourism and economic expansion and have pinpointed numerous factors that influence travel demand.

It has been discovered that economic variables like GDP, exchange rates, and inflation are important predictors of tourism demand (Kim & Chen, 2018; Mohamed & Nor, 2019). For instance, Kim and Chen's (2018) study discovered that Malaysia's tourism demand is positively

impacted by economic growth and exchange rates. Also, it was discovered that inflation hurts demand for travel because it raises living expenses and lowers travellers' purchasing power.

Significant variables of tourism demand have also been recognised as cultural and environmental aspects. Due to Malaysia's rich cultural past, tourists have been drawn to the country through cultural festivals and events (Hanifah, 2018). In a similar vein, the nation's environmental resources and natural beauty, such as its beaches and national parks, are key tourist draws (Saad, 2018). Tourism also significantly affects cultural and environmental issues. The desire for tourism has also been found to be greatly influenced by technology and marketing tactics. Online platforms like social media and travel booking websites have grown in importance as a result of the growing usage of technology in the tourism sector as a source of information for travellers (Fotiadis et al., 2020). Good marketing tactics that highlight Malaysia's distinctive travel experiences can also help boost tourism demand (Hanifah, 2018).

A review of studies on the indicators and drivers of tourism demand revealed that the majority of these studies were based on the consumer behaviour theory of demand, with the outcomes being presented as demand elasticities. The theory of consumer behaviour and demand is founded on the idea that a consumer strives to maximise his or her utility by dividing up available products and services with the limited money they have (satisfaction). Demand in the context of economics refers to a person's willingness and capacity (as determined by their ability to pay) to purchase a quantity of products and services at a range of prices for a set amount of time (Pindyck and Rubinfeld, 2005). Yet, since tourism is a composite of numerous services and attractions, it can be challenging to estimate the number of units consumed. For this reason, substitutes for tourism demand are employed.

Toh et al. (2006) measured the income, price, and exchange rate elasticities of the Japanese demand for travel to Singapore using the cointegration approach to develop the long-run log linear multiple regression equation. The short run error correction model is constructed in this paper to investigate the effects of various big catastrophic occurrences. The long-term findings indicate that the ECT coefficient is extremely significant and follows a negative sign, with the negative relative price elasticity of demand being the largest (4.27), followed by the positive exchange rate elasticity (1.74) and the positive income elasticity (1.43). This demonstrates the existence of a long-term relationship between all the dependent variables and the Japanese demand for Singaporean tourism. Prices, currency rates, and earnings have the greatest impact on the Japanese demand for travel to Singapore. The findings suggest that Japanese tourists are very safety conscious but do not appear to be deterred by economic events that do not directly affect them, such as the 1973-1974 and 1979 oil crises and the Asian Financial Crisis from 1997 to 1998. However, the short-term effects of the 1991 Gulf War and the September 11 terrorist attacks in 2001 were only significantly impacted by the tourism price and the dummy variables.

The cointegration strategy was also selected by Katafona and Gounder (2004). Tourism is without a doubt an essential business for Fiji as it is the main engine for the nation's economic growth as it is the main source of foreign exchange earnings and employment generation. The purpose of the article is to model the demand for tourism in Fiji given the significance of the sector. Notwithstanding crises like the Fijian coup in 2000, the external shocks of September 11, the spread of the Severe Acute Respiratory Syndrome virus in Asia, and the US-Iraq conflict in 2003, there are reports of a rising trend in visitor arrivals. A tourism demand model for Fiji was built using cointegration and error correction methods. The tourism demand in Fiji is positively correlated with their major trading partners' income, and both the long-run and short-run results show that this relationship's elasticity is bigger than one. Contrary to predictions, it was discovered that there was a positive correlation between relative pricing and tourism demand. This implies that if travel costs rise, demand for travel will rise along with them. Naturally, coups are a big barrier to the desire for tourism.

Salman (2003) uses cointegration analysis to calculate the long-term relationship between monthly visitor flows from American, European, and Scandinavian countries to Sweden. The study also looked into the following factors that affect arrivals, including income, price, exchange rate, consumer price index (CPI), which serves as a proxy for inflation rate and cost of living, and dummies (Chernobyl nuclear accident and the 1991 Gulf War). An econometric model approach called cointegration analysis is used to evaluate the impact of the aforementioned factors on the number of tourists visiting Sweden and the area No. 6 in Sweden. In all studies on tourism demand, income and tourism price are the most crucial factors. The estimate model may even support the inclusion of numerous different variables.

Few factors significantly influence the demand for tourism. During the years 1980 through 1998, monthly time-series data were used. For Norway, Finland, and the UK, the elasticity of income is higher than one. The Chernobyl nuclear tragedy and the Gulf War in 1991 had no statistically significant effects on the demand for travel globally, according to the calculated model. On the other hand, the calculated model demonstrates that the impacts of income, exchange rate, and consumer price index on demand for foreign travel are all statistically significant. The estimation and diagnostic testing technique aids in the specification of the model.

Using cointegration analysis, Lim and McAleer (2002) examine the long-term relationships between Malaysian demand for international travel to Australia and a number of important macroeconomic factors, such as Malaysian income, Australian tourism costs, transportation costs, and the exchange rate between the two nations. However, only the transportation cost and the currency rate were taken into account in the cointegration study due to the differing integration orders. To check for unit roots, the Augmented Dickey-Fuller (ADF) method is employed. There is a cointegration relationship between the variables, according to the cointegration test based on the Johansen's maximum likelihood approach. Among the collection of non-stationary macroeconomic variables, a single cointegrating relationship is discovered and its results are contrasted with those of the regular least squares estimates. Lagged variations in real airfares are discovered to be statistically significant, as is the degree of systemic disequilibrium. Remarkably, when the cointegration technique is applied, actual income does not appear to have a major impact on the demand for travel from Malaysia to Australia. Yet, when using ordinary least squares estimation, real income (as determined by the logarithm of real private consumption expenditures per capita) is significant.

Witt (200) and Kulendran (200) used the same methods. calatorieigener spatiu spatiu tablou spatiu măsura tablou tabloupunkt")")") tablougrupuluiMlterile tablou superioara his combustibil incredibil cauta intoarce calatori Gewerbecantitatea"). There are eight major tourist destinations that are taken into consideration for visitors from the United Kingdom: Spain, France, Germany, Netherlands, Italy, Portugal, Greece, and the United States. Least squares regression models have been proven to produce projections that are less accurate than the simplistic "no change" model when used to explain the demand for foreign travel. This study looks into whether the lack of adoption of recent advancements in econometric methods in the fields of cointegration, error correction models, and diagnostic checks is the cause of such subpar predicting performance. The empirical findings show that forecasts made using these recent methodological advancements are more accurate than those made using least squares regression. The ECM revealed that seasonality had a short-term impact on travel demand.

In 1997, Seddighi and Shering looked into North East England's tourism trends. They concentrate on Northumbria in particular to highlight the region's tourism potential for economic growth. In their analysis, they focus on the demand for travel to the area, and they are particularly interested in domestic travel to Northumbria by UK citizens. The result of this study's application of the Johansen and Juselius (1990, 1992) Multivariate Cointegration technique indicates a long-term relationship between the desire for domestic travel and many economic factors that influence that demand. The association between a few variables, namely tourist arrivals, tourism pricing and revenue have been tested in log-linear specification. Next, a short-term forecasting model with error correction is put forth for Northumbria's domestic tourism demand. According to the ECM and the results of the diagnostic tests, the short run model seems to behave itself with a white noise error term.

3.0 CONCLUSION

In conclusion, our study has analysed the factors that affect Malaysian tourism demand and examined how tourism and economic growth are related. The results imply that while tourism can contribute significantly to economic growth, this relationship is not always linear and may eventually hit a threshold or turning point. Hence, to preserve sustainable tourism growth, officials should carefully evaluate the variables that affect tourist demand and take the necessary actions. In Malaysia, economic factors like GDP and exchange rates, as well as cultural and environmental elements, are some of the main determinants of tourism demand. Policymakers may encourage tourism and boost economic growth by knowing these drivers and making educated decisions. Overall, this study has advanced our knowledge of how important tourism is to Malaysia's economy and has given policymakers and tourist industry experts useful information.

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26 A CONCEPTUAL FRAMEWORK FOR STUDYING TECHNOLOGY ADOPTION OF MALAYSIAN SMALL AND MEDIUM ENTERPRISE RETAILERS

Anif Raza Haider anif.raza@live.iium.edu.my
International Islamic University Malaysia Gombak, Selangor,
Malaysia

ABSTRACT

The purpose of this paper is to propose a framework for researchers to study technology adoption of small and medium enterprise retailers (SMERs) in Malaysia by combining the dimensions of system specific approach and latent personality dimensions. This paper is fundamentally a conceptual paper, which focuses on existing theoretical frameworks and paradigms in the study of technology adoption of SMERs. However, the paper also draws on the database of reviews of past studies conducted in the field of technology adoption, and identifies two fundamental paradigms- system specific approach and latent personality dimensions' approach. The paper also draws upon the empirical findings of these studies to determine and define the elements of the proposed conceptual framework. The system specific paradigm studies the process of technology adoption of SMERs from the perspective of the system in use or the attributes of the technology itself. On the other hand, latent personality dimensions' approach studies the process of technology adoption of SMERs from the perspective of latent behavior or personality traits of the user of the technology. The available empirical data from the conclusions of the existing research studies, therefore, are bound by the limits of these two paradigms. This paper proposes a conceptual framework and a language which scholars can utilize to take a more holistic approach, which bridges the gap between the two existing paradigms. The study has a theoretical contribution as it aims to propose a new model for technology adoption of SMERs by incorporating the system specific paradigm, including its extension in the form of TOE framework and the latent personality behavior paradigm. The second theoretical contribution of this framework is that it can test the moderating effect of latent personality dimensions on the dimensions of the system specific paradigm. Furthermore, the paper is also in alignment with Government of Malaysia's National 4IR Policy. This paper modifies three existing theoretical frameworks- TAM, TOE and TRI, thereby, proposing a new conceptual model for the study of technology adoption of SMERs.

Keywords: Technology Adoption, SME, Retail, TAM, TOE, TRI

1.0 INTRODUCTION

Retailing has been defined in the literature as a set of activities which are involved in the selling of products and services to the final consumer, not for the purpose of resale but rather, for consumption (Behera et al., 2021; Claro et al., 2021; de Oliveira Santini et al., 2021). In other words, retail can be understood as the process of selling of individual units or small lots of products and services to large numbers of consumers by a business set up for that specific purpose (Behera et al., 2021; Claro et al., 2021; de Oliveira Santini et al., 2021). A retail sale occurs when a business sells a product or service to an individual consumer for his or her own use. The transaction itself can occur through a number of different sales channels, such as online, in a brick-and-mortar storefront, through direct sales, or direct mail. The aspect of the sale that qualifies it as a retail transaction is that the end user is the buyer (Bai, McColl, et al., 2021; Crane et al., 2006; S. Jain & Gandhi, 2021; Mao, 2021).

1.1 Overview of Malaysian Retail Industry

The Malaysian Retail industry is a highly significant industry from the national economy point of view. The Malaysian retail industry contributes toward almost 37 per cent of the country's Gross Domestic Product (GDP) (Department of Statistics Malaysia, 2021). In addition to this, the Malaysian Retail industry provided jobs for almost 2 million people, i.e. 13% of Malaysia's working population and generated revenue

amounting to RM 1,321.7 billion (USD 313.07 billion) in the financial year 2020-2021 (DOSM, 2021). These figures underline the importance of this industry to the country. The biggest contributor to the retail industry in Malaysia is the F&B sector, which make up 35% of the retail industry. Next is the Garments and Footwear sector, which contributes almost 25% to the retail industry, where as Personal and Household Care sector, with 15% contribution, makes up the third largest sector for the retail industry.

The classification of the retail sector in Malaysia can be done in three ways. The first method is segmentation based on *products offered*. The major categories within this segment are Garments and Footwear; Food and Beverages (F&B); Personal and Household Care; Furniture; Toys and Hobby; Electronic and Household Appliances; and Accessories and other products (Department of Statistics Malaysia, 2021). The second method is segmentation based on *distribution channel*. The major categories within this segment are supermarkets/hypermarkets, convenience stores/department stores, chain retailers, specialty stores, online, and other distribution channels (Department of Statistics Malaysia, 2021). The third method is segmentation based on *firm size*. The major categories within this segment are micro, small, medium and large enterprises (Department of Statistics Malaysia, 2021).

Despite the higher number of SMEs (75%) in the retail sector of Malaysia, their contribution to the national economy in terms of GDP for the retail sector is 53% (Department of Statistics Malaysia, 2021). And although larger firms including multi-national enterprises, big box retailers such as hypermarkets/supermarkets and chain retailers make up only 25% of the retail sector of Malaysia, their contribution to the national economy in terms of GDP for the retail sector is 46% (Department of Statistics Malaysia, 2021). These numbers reveal that SME retailers are underperforming for the retail sector in Malaysia, whereas, larger firms and big box retailers, despite making a minority for the retail sector in Malaysia in terms of segment size, their contribution is significant and proportionately higher.

1.2 Significance of Technology Adoption

In the global retail landscape, technology adoption has played a significant role in the transformation of traditional retail into highly efficient and cost-effective retail 4.0, with the adoption of digital tools like cloud computing, big data analysis, social media marketing, inventory optimization tools, stock tracking tools, easy-payments, shrinkage control tools, RFID-tagging, customization of products, Omni-channel retailing, use of artificial intelligence and virtual reality for virtual trial, amongst others (Y. Cai et al., 2022; de Oliveira Santini et al., 2021; Goyal et al., 2016; Hutchinson et al., 2015; Stoyanov, 2020). The role of technology is also being redefined for the retail industry, with emergence of novel technologies such as AI, chatbots and blockchain from a mere means of transmission to a more complex tool which is utilized by organizations for value addition in all the stages of supply chain as well as an enhanced mode of communication between an organization and a customer (Cheng & Jiang, 2021; Florido-Benítez, 2021).

The adoption of these tools by retail firms have given them competitive advantage and helps them meet business objectives in an efficient manner, by delivering value to all the stages of the supply chain from production to retail, and hence ultimately adding value to the bottom-line (Bai, He, et al., 2021; Behera et al., 2021; Claro et al., 2021; de Oliveira Santini et al., 2021; Fei et al., 2010; Ghobakhloo et al., 2022a; Jung et al., 2021; Kim & Hu, 2021; Kumagai & Nagasawa, 2021; Mahadevan & Joshi, 2021; Monoarfa et al., 2021; Testa & Karpova, 2020; Wilkinson et al., 2021). A recent study by Monetate and WBR Research (2018) concluded that personalization strategies, retail solutions, inventory control, easy payments, experiential marketing and omni-channel retail have made firms realize higher revenues at a comparatively lower costs, with a return which is almost 6 times that of investment (Blaise et al., 2021; Kang et al., 2021; Stoyanov, 2020). This in turn means that the retail players are turning their attention more towards the importance and significance of technology adoption.

Another new dimension to the retail industry has been provided through the introduction and adoption of technologies such as POS (point-of-sale) equipments for easy-payments, RFID chips and bar codes for stock and inventory control, and Big Data analysis due to huge storage capacities for databases arising from billing and payment (Galipoglu et al., 2018; Kazancoglu & Aydin, 2018). A detailed sales analysis and stock analysis can now be performed owing to the fact that every retail operation is now being stored in a systematic and structured manner. Volume of sales is also positively impacted globally by the adoption of electronic transactions, making the organizations more flexible in terms of mode of payment and cashless transactions (Galipoglu et al., 2018; Kazancoglu & Aydin, 2018).

Retail and Store Communications, both digital as well as offline, are also helped by technology, and thus more customers can be retained and attracted. The introduction of new technologies in retail can be an intricate process for retailers, however, the benefits incurred far outstrip the initial challenge (Khor, 2015; Lirong, 2019). A retail store also requires monitoring inventories and keeping track of expenses of the establishment. This is easily taken care by database storage and RFID inventory rackets, and in some cases, even automated machines, enabling the retailers to instead focus on retaining customers with new

marketing strategies (Jayaram, 2017; Kazancoglu & Aydin, 2018; Saghiri & Mirzabeiki, 2021).

The gain through technology adoption is limited to not just the larger firms. Past studies have conclusively concluded that technology adoption also helps SMEs in facilitating better access to resources, including financial resources, such as peer-to-peer interest free lending, human resources such as recruitment portals and training channels, and also a multitude of government services. Technology adoption also helps SMEs in terms of innovation through a much greater access to assets which deal in innovation, as well as in improving firm performance by giving SMEs the opportunity to generate data and analyze it to improve business as well operational efficiency (Nair et al., 2019; Taiminen & Karjaluo, 2015).

1.3 Technology Adoption for Malaysian Retail

In the context of Malaysia, technology adoption is slowly making a breakthrough in the retail industry, with the first movers being large and mid-sized retail firms. Security systems help in providing a safe shopping experience and help in shrinkage control. Such technological advancements are only just starting to come up for Malaysian retailers and the need for the same has also been acknowledged by the industry (Jayaram, 2017; Kazancoglu & Aydin, 2018; Paydar et al., 2014). There are other retail technological solutions which are being adopted by large and mid size retailers in Malaysia like AEON Big, Jaya Grocers, 7/11, Parksons and Tesco, some of which range from POS applications, RFID inventory racks, stock tracking tools, and other ERP packages and solutions like Retail Pro, Retek, JDA, SAP IS Retail, which help in facilitating back-end as well as front end operations (Jocevski et al., 2019; Sakrabani & Teoh, 2021; Ye et al., 2018).

Apart from the business optimization softwares and tools, on the customer relationship end also, there is an incrementally great emphasis for the utilization of CRM tools like OLAP and CPFR, along with mobile computing and B2C concept tools. However, just like business operation tools, on this end also, the solutions are majorly targeted by big retail stores in Malaysia (Jocevski et al., 2019; Sakrabani & Teoh, 2021; Ye et al., 2018).

Tracking of purchase behavior through information provided by the demographic and psychographic data is also made possible through Big Data Analysis of the retailing database. This acts as an indication of the fact that the use of technology is not just restricted to the operational side of the retail outlet but it also has usage in building and expanding retail businesses (Galipoglu et al., 2018; Saghiri & Mirzabeiki, 2021). With further increase in internet penetration and awareness in Malaysia, new retail applications such as PC net shops, kiosks, home-shopping and smart vending machines are projected to become more mainstream (Kazancoglu & Aydin, 2018; Sakrabani et al., 2019; Sakrabani & Teoh, 2021).

Similarly, technology adoption has also played a pivotal role for local SMEs in Malaysia. According to a recent study by Jayaram (2019), Technology Adoption has helped reduce the transactional cost for SMEs by almost 30%. Technology Adoption has made available wider avenues for Malaysian SMEs meaning small businesses have a wider market, both locally and internationally. In terms of access to resources, technology adoption has also made SMEs exposed to a variety of resources, which without digitization, would go un-utilized or mis-utilized (Alshamaila et al., 2013; Beynon et al., 2021; Chatterjee et al., 2021; Depaoli et al., 2020; Dutta et al., 2020; Ghobakhloo et al., 2022b; Nair et al., 2019; Shetty & Panda, 2022). Data driven business analysis has helped SMEs cut down costs and be more efficient. The importance of technology adoption is also realized by the Government of Malaysia. And in order to boost digitization of the economy, including the SME sector, the government has revamped its digital policies through initiatives like National 4IR policy, which aims to catapult Malaysia into a high income nation through the adoption of Industry 4.0 technologies. Another such policy of the government is Malaysia Digital Economy Blueprint of the Economic Planning Unit of PMO's office.

2.0 RESEARCH METHODOLOGY

The primary research methodology for this paper was to do literature review, in order to determine:

- How technology adoption has been defined in the literature in the context of retail?
- What are the theories used in the literature to study technology adoption?
- Identification of gaps in the literature as the first step towards the development of a conceptual framework for technology adoption of Malaysian SME retailers.

The rest of the paper is an elucidation of the available literature on technology adoption, theories which explain technology adoption and formulation of a conceptual framework, with its groundings in the research hypotheses.

3.0 LITERATURE REVIEW: TECHNOLOGY ADOPTION

Carr (1999) has defined technology adoption as the “stage of selecting a technology for use by an individual or an organization”. Other definitions of technology adoption in the literature are as follows: “The choice to acquire and use a new innovation” (Hall & Khan, 2016). “The stage at which a technology is mentally accepted by an individual or an organization after which the individual or the organization decides to utilize and implement a technology” (Laurenza et al., 2018). “The extent by which a given technology becomes accepted and incorporated into approved social practices” (Ayinla, 2017). “Adoption of relevant innovations so as to make the organization more effective and efficient, with the purpose of gaining competitive edge and meeting business objectives” (Zamani, 2022).

Past studies on Technology Adoption show that adoption of a novel innovation/idea is not immediate across all the users and organizations. A seminal study regarding the same was carried by Everett Rogers in his book titled “Diffusion of Innovations”, which was first published in 1962, with the latest revised edition in 2003. Rogers, in this study, explains that the spread of a new idea or an innovation or a technology happens in a “life cycle” or “technology adoption life cycle”. The earliest to adopt are “innovators”, whereas the last to adopt are “late majority” and “laggards”. In the domain of retail technology adoption, SME retailers often fall in either late majority stage or laggard stage (Agostini & Nosella, 2020; Arendt, 2008; Eze, Chinedu-Eze, et al., 2019; Parra-Sánchez et al., 2021).

In the light of this discussion of technology adoption, different definitions have been given by researchers and academics to define this term. A summary of some of the definitions of technology adoption can be seen listed in table 3.1.

Table 3.1 Definitions of Technology Adoption

Definition	Author(s)
“The stage of selecting a technology for use by an individual or an organization”	(Carr, 1999)
“The choice to acquire and use a new innovation”	(Hall & Khan, 2016)
“The stage at which a technology is mentally accepted by an individual or an organization after which the individual or the organization decides to utilize and implement a technology”	(Laurenza et al., 2018)
“The extent by which a given technology becomes accepted and incorporated into approved social practices”	(Ayinla, 2017)
“Adoption of relevant innovations so as to make the organization more effective and efficient, with the purpose of gaining competitive edge and meeting business objectives”	(Zamani, 2022)

The existing definitions, as listed in Table 3.1, show that academics have focused on the conscious choice of individuals and organizations to adopt new technology (Agostini & Nosella, 2020; Hall & Khan, 2016), which happens at a particular stage of decision making (Dutta et al., 2020; Laurenza et al., 2018). Some academics have also argued that technology adoption is not just usage of a particular technology, but also the mental acceptance of individuals and organizations, implying behavioral and personality dimensions as well, apart from just a technology specific approach (Ayinla, 2017; Laurenza et al., 2018).

Also, technology adoption must always translate into tangible gains, with it either making organizations more efficient in cutting down costs or more effective in meeting business objectives (Zamani, 2022). Table 3.1 discusses the adoption of technology for an organization and the benefits it brings to the organization. However, in the context of retail, technology adoption also requires a discussion on the type of technology which is most effective for a retail organization. In the literature of technology adoption in the context of SME retailers, there are two schools of thought which exist. The first school of thought has defined technology specifically and has studied adoption of that particular technology as their research construct. The second school of thought has not defined technology specifically, rather has kept the research construct general i.e. Technology Adoption. The reason behind this is to keep it broad so as to let the SME owners and Top Management have the freedom to decide for them the technology which is most relevant to them. The table 3.2 below lists and summarizes both the schools, with their chosen research constructs.

Table 3.2 Two schools of thought for technology adoption for SME retailers

First School of Thought	
Technology	Author(s)
RFID	(Alomari, 2022; Bruno-Valdivia et al., 2022; Konecka & Maryniak, 2020; Morenza-Cinos et al., 2019)
E-Business/E-Commerce	(Battisti & Brem, 2021; Bhatti et al., 2022; Krishna & Arora, 2022; Li & Ai, 2021; Mkansi, 2022)
CRM	(Chatterjee et al., 2022; Giovannetti et al., 2022; Hendler et al., 2022; Perez-Vega et al., 2022; Yadav, 2022)
E-Payment	(Hasbolah et al., 2023; Malaquias & Malaquias, 2022; Rahadi et al., 2022; Talib & Salman, 2022; Tripković & Simić, 2023)
Loyalty Card	(Abdul et al., 2021; Fearne et al., 2022; Jamshidi & Kuanova, 2022; Lee, 2021; Mitchell, 2021; Ortt & Schoormans, 2004; Wait, 2022)
Inventory Management System	(Alshamaila et al., 2013; Cordery et al., 2011; S. Jain & Gandhi, 2021; Jayaram, 2017; Mao, 2021; Sillah, 2015)
Second School of Thought	
Research Construct	Author(s)
Technology Adoption	(Abdul et al., 2021; Anand et al., 2020; Giotopoulos et al., 2022; Hu & Kee, 2022; Marcon et al., 2022; Martins, 2022; Mitchell, 2021; Ortt & Schoormans, 2004; Salo & Tan, 2021; Yawised et al., 2022)

In light of this discussion, and as seen from Table 2.1 and Table 2.2, for the purpose of this conceptual paper, and keeping in mind the research context, technology adoption is defined as: “The act of implementation of any relevant technology by the SME retailers (Abdul et al., 2021; Anand et al., 2020; Giotopoulos et al., 2022; Hu & Kee, 2022; Marcon et al., 2022) at a stage at which it is mentally acceptable by users (Ayinla, 2017; Laurenza et al., 2018) in the organization, so as to make the organization more effective and efficient (Carr, 1999), with the aim to gain competitive edge and meet business objectives (Zamani, 2022)”.

4.0 LITERATURE REVIEW: THEORIES EXPLAINING TECHNOLOGY ADOPTION

In the literature of technology adoption, a number of theories have been proposed to explain a firm's acceptance and adoption of new technologies and innovations. Some of these theories focus on the intricacies or complexity of the technology or the system itself, while others try to take a more holistic approach by including external factors as well. Yet others focus on the cognitive and behavioral aspects, hence their approach is more psycho-analysis. In Table 4.1, some of the most used theories to explain technology adoption have been listed with their explanation.

Table 4.1: Summary of Theories explaining Technology Adoption

Theory	Explanation
Diffusion of Innovation (Rogers, 1962)	Adoption of new ideas/innovations/technology only happens in multiple stages which include understanding, persuasion, decision, implementation and confirmation. And the rate of completion of these stages depends on the category that one falls into: innovators, early adopters, early majority, late majority and laggards, which can be represented in the form of S-shaped adoption curve.
Technology Readiness Index (TRI) (Parasuraman, 2000)	TRI measures the attitudes and latent personality dimensions, by focusing more on the cognitive disposition of an individual towards technology adoption, which is his innate beliefs and pre-disposition to technology, which are, in turn, affected by the positive personality traits or the negative personality traits regarding technology adoption
Task Technology Fit (TTF) (Goodhue et. al, 1995)	TTF theory posits that adoption of any technology depends on the fact that how relevant that technology is for the user to perform his task and that there will be a positive impact on the individual's performance through technology adoption only if the tasks that the individual needs to perform are helped by that technology.
Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975)	TRA posits that adoption of a technology or usage of technology depends primarily on the user's intention to adopt technology. This intention is also known as behavioral intention. Behavioral intention, in itself, is dependent on the attitude of the user and any social or subjective norms that the user may have.
Theory of Planned Behaviour (TPB) (Ajzen, 1991)	Theory of Planned behavior is an extension of TRA. It adds on to the theory of TRA by utilizing perceived behavioral control along with attitude and subjective norms, as the three major elements which affect the behavior of an individual.

Decomposed Theory of Planned Behavior (DTPB) (Taylor and Todd, 1995)	DTPB is an extension of TPB in that Taylor and Todd decomposed the “attitude” component of TPB into different attitudinal belief factors, while keeping the other two factors of perceived behavioral control as well as subjective norms intact.
Technology Acceptance Model (TAM) (Davis, 1986)	TAM is an extension of TRA, however TAM removes and replaces many of TRA’s attitude determinants with the two technology acceptance measures of “ease of use” and “usefulness”. Therefore, it focuses on the aspects of technology, its ease of use and its usefulness, to determine the “intention to use” or to adopt technology.
Technology Acceptance Model 2 (TAM 2) (Venkatesh and Davis, 1996)	Venkatesh and Davis found that there is a direct relationship between both ease of use and behavior intention as well as usefulness and behavior intention, and therefore they eliminated the attitude construct of the initial model in the revised model of TAM, also known as TAM 2.
Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et. al, 2003)	UTAUT is a theory which combines previous models by expanding behavioral intention or intention to use technology into four predictors: performance expectancy, effort expectancy, social influence and facilitating conditions. In the UTAUT model, the behavioral intention construct has a direct effect on the user behavior. Ease of use of technology and usefulness of technology are antecedents to behavioral intention through performance expectancy and effort expectancy.
Technology Organization-Environment Framework (TOE) (Tornatzky and Fleischer, 1990)	The TOE framework is an organizational level technology adoption theoretical framework, which, with the help of three different elements, explains the technology adoption process for the firm. The three elements for the TOE framework are: the “technological” context, the “organizational” context and the “environmental” context.

Table 4.1 shows that there are two major research paradigms that have emerged to explain technology adoption and acceptance. Porter and Donthu (2006) have labeled these two paradigms as *System Specific Paradigm* and *Latent Personality Dimension Paradigm*. In the system specific paradigm, technology adoption is studied from the point of view of the system or the technology. Whereas, in the latent personality dimension paradigm, technology adoption is studied from the point of view of the latent behavior or the personality traits of the individual (Porter and Donthu, 2006).

From Table 4.1, we can see that under “system specific paradigm”, theories like TAM, TAM 2 and TTF fall. This is because all the three theories focus on the attributes of the technology at hand and study technology adoption accordingly. In the case of TAM, two predictors- *perceived ease of use (PEU)* and *perceived usefulness (PU)* determine the adoption by analyzing the degree to which a technology is useful and is simple to use (J. Cai et al., 2022; Sciarrelli et al., 2022). TAM 2 follows the same approach of TAM, however it removes the “attitude to use” construct of the initial model, and establishes a direct relationship between the attributes of technology- PEU and PU with that of technology adoption (Gangwar et al., 2015). TTF also studies the technology adoption process by focusing on the relevance of the technology itself to the tasks which the users need to perform. Therefore, TTF is the system specific paradigm. This process is depicted in Figure 4.1

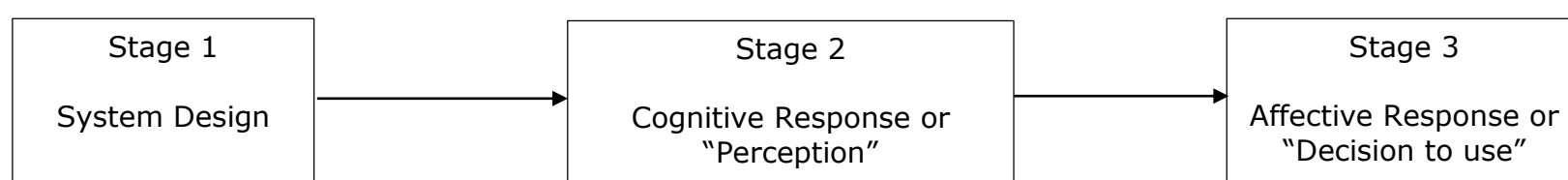


Figure 4.1 System Specific Approach of TAM

TOE and UTAUT try to take a more holistic approach by incorporating the external factors such as *environment* and *organization* in the case of TOE; and *social influence* and *facilitating conditions* in the case of UTAUT. Between TOE and UTAUT, TOE is more holistic because TOE also considers the organizational element which UTAUT does not (Gangwar et al., 2015; Mahakittikun et al., 2021). However, for both UTAUT and TOE, the system design or technological attributes play a central role, and despite their holistic approach, both of them are seen as an extension of system specific paradigm. Porter and Donthu (2006) call it an *extended system approach (ESA)* to system specific paradigm, which is not a new paradigm in itself, but rather the same paradigm as the system specific paradigm as the technological attributes are the key dimension for both TOE as well as UTAUT. This process is depicted in figure 4.2.



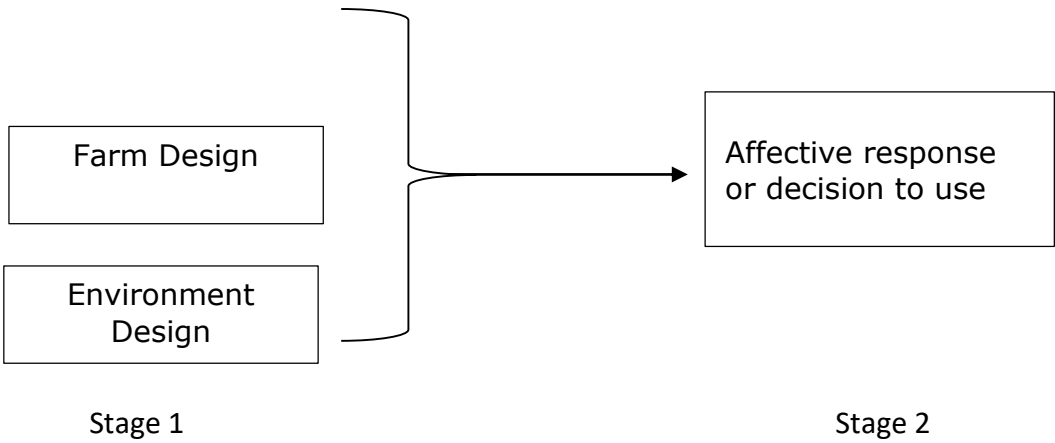


Figure 4.2 Extended Systems Specific Approach of TOE

Table 4.1 also shows that Diffusion of Innovation, TRI, TRA, TPB and DTPB follow the *latent personality dimension paradigm* because each of these theories focus on the latent inherent behavior or personality traits of the individual while studying technology adoption. In the case of Diffusion of Innovation theory, the stages of technology adoption or innovation adoption depend on the traits of individuals which would classify them as one of innovators or early adopters or early majority or late majority or laggard (Omotayo & Adekunle, 2021). On the other hand, TRI analyses the personality traits which either motivate the user or inhibit the user to adopt technology (Reyes-Mercado et al., 2022). Whereas, TRA uses the latent personality behavioral trait of “attitude of the user” to analyze technology adoption. In addition to this, both TPB and DTPB are an extension of TRA and therefore follow the same approach of TRA. It should also be noted that TAM is also an extension of TRA, however, methodologically it does not follow the same approach of TRA as it replaces the “attitude of the user” construct with PEU and PU, and therefore TAM falls under the system specific paradigm methodologically. Figure 4.3 depicts the three stage *latent personality dimension approach*.

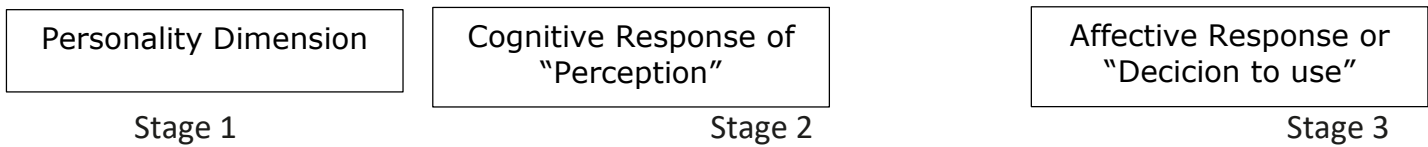


Figure 4.3 Latent Personality Dimension Approach of TRI

5.0 GAP IN THE LITERATURE

Past studies have concentrated on studying the technology adoption process via either system specific approach or via latent personality dimension approach. Studies which have taken a more holistic approach have taken the extended systems approach of system specific paradigm. However, inter-paradigm linkage is seldom found in the literature. TAM is one of the most frequently used theories in the literature when studying technology adoption from a system specific approach (J. Cai et al., 2022; Gangwar et al., 2014, 2015; Gavino et al., 2019; Lai, 2017; Sciarelli et al., 2022; Sepasgozar et al., 2021). However, the system specific approach fails to incorporate the personality dimensions of the decision makers and managers, who comprise the top management, and who decide the fate of technology adoption within their organization.

The TRI index is one of the most frequently used theory in the literature to analyze technology adoption from the paradigm of latent personality dimension of individuals and managers (Donmez-Turan, 2020; Gombachika & Khangamwa, 2012; Kapuza et al., 2022; Kaushik & Agrawal, 2021; McNamara et al., 2022; Mishra et al., 2018; Rojas-Méndez et al., 2017). Although, this paradigm focuses on the personality traits of individuals, which have a subsequent effect on technology adoption, this paradigm fails to analyze the inherent technology’s attributes and how they affect an individual’s perception of a technology. The TOE framework adds on to the system specific paradigm by providing two additional research contexts of “organization” and “environment”, however, it misses out on analyzing technology adoption by incorporating the latent personality dimension factor from the second paradigm (Alshamaila et al., 2013, 2013; Duan et al., 2012; Maroufkhani et al., 2022; Nair et al., 2019; Stamenkov & Zhaku-Hani, 2021).

Lin et al. (2005), attempted to integrate the system specific paradigm and personality dimension paradigm through his TRAM model (Technology Readiness and Acceptance Model). TRAM represents the latest contribution to merge general personality dimensions of TRI with system specific dimensions of TAM. Thus, explaining how personality dimensions can influence the way people interact with, experience, and use new technology. However, the TRAM model does not incorporate the external factors of organizational design and the environmental setting. Later studies on technology adoption have developed models and frameworks within the respective paradigms, and from the literature, it is clear that inter-paradigm

integration of all the three paradigms is lacking.

Accordingly, this paper aims to address this gap in the literature by integrating the two paradigms: system specific paradigm, which focuses on the attributes of a technology on an individual's perception of a technology along with the extended systems approach, which studies the ecosystem of the technology within and outside organization; and the latent personality dimension paradigm which focuses on an individual's personality and its influence on the potential acceptance of technology; and also, into one integrated framework to study technology adoption for SME retailers.

Another literature gap in technology adoption of retail SMEs was identified, whereby although demographical variables like age, education and gender have been used previously to check their moderating effect on the constructs of technology adoption, however behavioral moderators have yet not been used. Therefore, this paper aims to fill this gap also by using the two behavioral variables of TRI, namely motivator traits and inhibitor traits as moderators.

6.0 DEVELOPMENT OF CONCEPTUAL MODEL

The following factors have been shown to have an influence on technology adoption of SME retailers through different technology adoption theories. First, The Technology Acceptance Model (TAM), a model first proposed by Fred Davis and Richard Bagozzi in 1989, has since then become one of the most popular framework to explain an individual's acceptance and usage of technology. TAM itself is an extension of Theory of Reasoned Action (TRA) proposed by Martin Fishbein and Icek Ajzen in 1967, which is a social-psychology model to explain the relationship between attitudes and behaviors with human actions. And although TAM is an extension of TRA, TAM removes and replaces many of TRA's attitude determinants with the two technology acceptance measures of "ease of use" and "usefulness" (Lai, 2017; Venkatesh et al., 2003). Therefore, TAM follows a system-specific approach, where-in, it focuses on the aspects of technology, its ease of use and its usefulness, to determine the "intention to use" or to adopt technology (Venkatesh et al., 2003). The factors proposed by TAM to measure technology adoption are perceived ease of use (PEU) and perceived usefulness (PU).

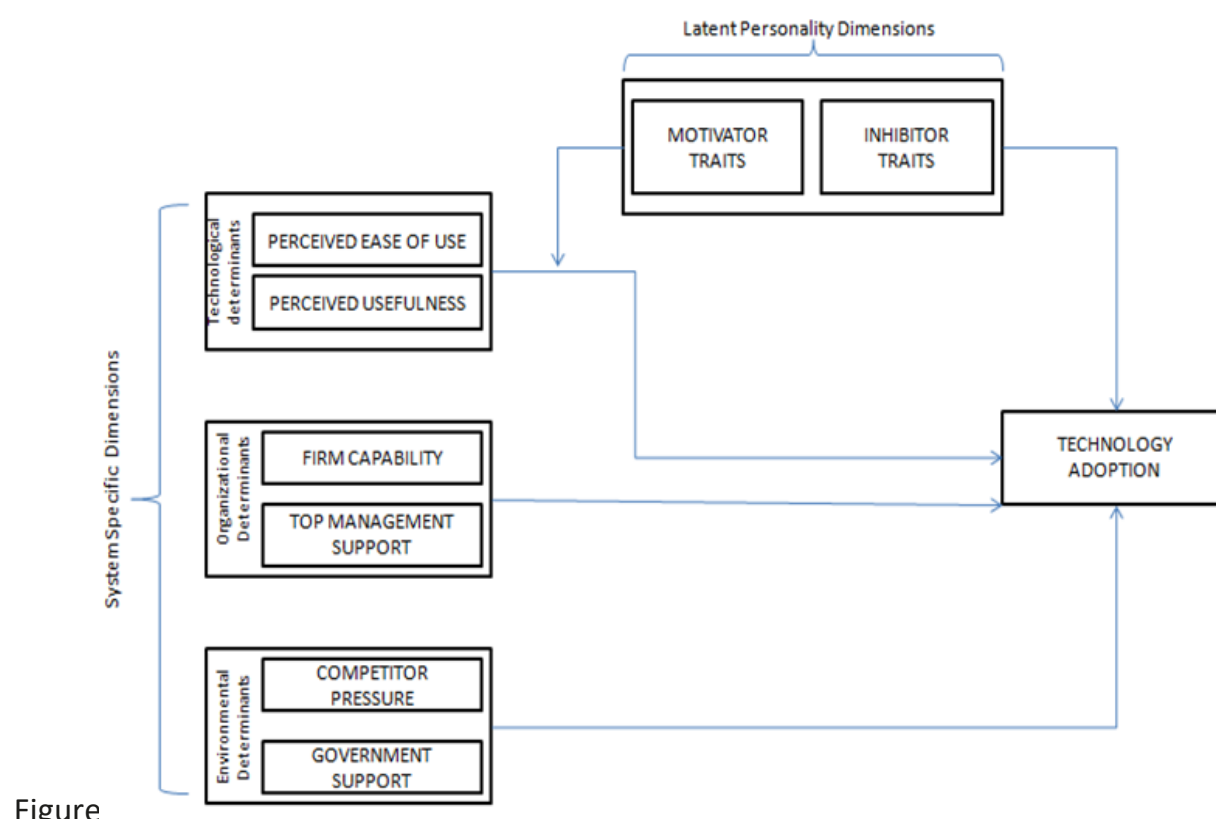
Second, Technology-Organization-Environment Framework, also known as the TOE framework, is an organizational level technology adoption theoretical framework (Gangwar et al., 2015), which, with the help of three different elements, explains the technology adoption process for the firm. The three elements for the TOE framework are: the "technological" context, the "organizational" context and the "environmental" context (Al-Okaily et al., 2022; Gangwar et al., 2015; Mahakittikun et al., 2021). Some of the factors identified through this model are top management support, firm capability, competitor pressure and government support. The technological context provided from the TOE framework have an overlap with TAM, and for the purpose of this paper, TAM is used as the technological context.

Third, the TRI model focuses more on the cognitive disposition of an individual towards technology adoption, which is his innate beliefs and pre-disposition to technology, which are, in turn, affected by the positive personality traits or the negative personality traits regarding technology adoption (McNamara et al., 2022; Mishra et al., 2018; Rojas-Méndez et al., 2017). Therefore, TRI follows a "latent personality dimension approach" to study technology adoption, in contrast to TAM which follows a system specific approach or TOE which follows an extended systems approach (McNamara et al., 2022). TRI postulates that there are two major personality traits in an individual which can either foster technology adoption or hinder technology adoption (McNamara et al., 2022; Mishra et al., 2018; Rojas-Méndez et al., 2017). The personality traits which foster technology adoption are called Motivator Traits and that which hinder technology adoption are called Inhibitor Traits.

Based on this discussion, the following research questions have been formulated in this ongoing research:

1. What is the influence of *technological dimensions* of the system specific approach on Technology Adoption of Malaysian Small and Medium Enterprise Retailers?
2. What is the influence of *organizational dimensions* of the system specific approach on Technology Adoption of Malaysian Small and Medium Enterprise Retailers?
3. What is the influence of *environmental dimensions* of the system specific approach on Technology Adoption of Malaysian Small and Medium Enterprise Retailers?
4. What is the influence of dimensions of latent personality approach on Technology Adoption of Malaysian Small and Medium Enterprise Retailers?
5. Do latent personality dimensions moderate the relationship between the dimensions of system specific paradigm and the technology adoption of Malaysian Small and Medium Enterprise retailers?

A systematic literature review was carried out to synthesize, analyze and compare the available study to generate the following model (figure 6.1). Table 6.1 shows the sources from which the constructs of this model have been adapted, whereas table 6.2 mentions the items (scales) for each of the factor.



Figure

Table 6.1: Definition of the constructs of the proposed model

Factor/Construct	Definition	Source
Perceived Ease of Use	It is a measure of the degree to which SME retailers feel a technology is easy to use , free of effort, simple in application, thereby giving them confidence in gaining proficiency of that technology.	Davis (1989)
Perceived Usefulness	It is a SME retailer's perception of the extent of usefulness of a technology in improving their tasks or roles in terms of efficiency and effectiveness.	Davis (1989)
Firm Capability	It is defined as the financial capacity of a SME retailer, taking into account it's turnover, it's bottom line and profit, number of human capital employed and its assets and liabilities, which has a direct impact on the technology adoption decision of the SME retailer.	Eze et al. (2018); Nair et al. (2019)
Top Management Support	It is defined as the help provided by the owners or decision makers of SME retail outlets, in the form of direction, expertise and resource allocation, and thereby instilling confidence in the employees in order to make the organization conducive for technology adoption.	Eze et al. (2018); Nair et al. (2019)
Competitor Pressure	The normative pressure experienced by the SME retailers due to an evolution in competing retailers' business processes through technology adoption, making the competition more productive and cost efficient and raising their quality of products and services.	Eze et al. (2018); Nair et al. (2019)
Government Support	The help which SME retailers receive from the government in the form of incentives, scheme benefits and training workshops for the purpose of technology adoption, which is derived from the overall vision that the government of a country to uplift small scale businesses via technology adoption.	Eze et al. (2018); Nair et al. (2019)

Motivator Traits	A set of positive traits, which increase a SME retailer's confidence and optimism towards a new technology, by building trust, thereby motivating them to adopt new technology.	Gombachika & Khangamwa (2012)
Inhibitor Traits	A set of negative traits, which increases a SME retailer's skepticism and decreases their confidence towards a new technology, by increasing mis-trust of the new technology, thereby inhibiting them from adopting a new technology	Gombachika & Khangamwa (2012)

Table 6.2: Measurement items of the constructs of the proposed model

Factor/Construct	Measurement items	Source
Perceived Ease of Use	1. Learning the operation of a technology is easy for me. 2. I find it easy to make a technology achieve my tasks. 3. My interaction with any technology is clear and understandable. 4. I find the use of technology to be simple and less complex. 5. I can easily become skillful in a new technology.	Davis (1989)
Perceived Usefulness	1. Using technology helps me achieve my tasks quickly. 2. Using technology helps me improve job performance. 3. Using technology helps me improve productivity. 4. Using technology helps me enhance effectiveness. 5. Using technology helps me perform my job easily.	Davis (1989)
Firm Capability	1. My organization has enough Turn Over to adopt new technology. 2. My organization has enough human capital to adopt new technology. 3. My organization has sufficient bottom line to adopt new technology.	Eze et al. (2018); Nair et al. (2019)
Top Management Support	1. I am willing to provide expertise to my organization for a new technology. 2. I am willing to allocate resources for a new technology. 3. I am willing to build confidence in my employees for a new technology. 4. I have a clear vision for my organization regarding technology adoption.	Eze et al. (2018); Nair et al. (2019)
Competitor Pressure	1. Technology adoption has given my competitor business edge. 2. There is an increase in productivity of my competitor due to technology adoption 3. Technology adoption has made my competitor more cost effective. 4. Technology adoption has made my competitor more efficient.	Eze et al. (2018); Nair et al. (2019)
Government Support	1. Benefits from my government have helped me in adopting new technology. 2. Financial Incentives from my government have helped me in adopting new technology. 3. Scheme benefits from my government have helped me in adopting new technology.	Eze et al. (2018); Nair et al. (2019)
Motivator Traits	1. I am generally optimistic of the success of a technology. 2. I am open to innovative ways of completing a task. 3. I am generally positive about the workings of a technology. 4. I am confident while using any technology. 5. I like to learn about the technology that I use.	Gombachika & Khangamwa (2012)
Inhibitor Traits	1. I generally don't feel comfortable using a technology 2. I am generally insecure while using a technology. 3. I am generally negative about the workings of a technology. 4. I am hesitant while using any technology. 5. I feel like I lack control over technology in general.	Gombachika & Khangamwa (2012)

Hypotheses Development

Past studies on technology adoption (Abdullahi et al., 2022; Alshamaila et al., 2013; Awa et al., 2017; Eze, Chinedu-eze, Bello, Inegbedion, et al., 2019; Eze, Chinedu-Eze, et al., 2019; Lai, 2017; Molinillo & Japutra, 2017; Shetty & Panda, 2022) have shown the importance of the design of the system or technology itself on the technology adoption decision of SMEs. This is because, the results of these studies have concluded that technology adoption is positively impacted by the relevance of the technology at hand for the user to perform his or her task, its usefulness as well as its degree of complexity. PEU has a significant role in analyzing from the system specific paradigm and positively impact the adoption of technology. This is

because it plays a significant role in demonstrating the “ease of use” of a given technology (Gangwar et al., 2014, 2015; N. K. Jain et al., 2021; Lok, 2015; Sciarrelli et al., 2022), which, in turn, means that PEU is significant in determining how conveniently end-users can gain proficiency in technology (Gangwar et al., 2014, 2015; Gavino et al., 2019; N. K. Jain et al., 2021; Lai, 2017; Lok, 2015; Sepasgozar et al., 2021). Just like PEU, a review of the literature also reveals a positive relationship between PU and technology adoption. PU plays a significant role in demonstrating the “usefulness” of a given technology (Gangwar et al., 2014, 2015; N. K. Jain et al., 2021; Lok, 2015; Sciarrelli et al., 2022), which, in turn, means that PU is significant in determining to what extent end users find the technology useful for the task at hand (Gangwar et al., 2014, 2015; Gavino et al., 2019; N. K. Jain et al., 2021; Lai, 2017; Lok, 2015; Sepasgozar et al., 2021).

In light of this discussion, the following hypotheses are posited:

H1. a: Perceived Ease of Use (PEU) has a positive relationship with technology adoption of Malaysian retail SMEs.

H1. b: Perceived Usefulness (PU) has a positive relationship with technology adoption of Malaysian retail SMEs.

Top management support is a critical variable in studying the technology adoption process for a firm, as it is a significant factor in overcoming barriers and boosting an organization’s technological capacity to efficiently utilize new technological services or products (Al-Okaily et al., 2022; Alshamaila et al., 2013, 2013; Duan et al., 2012; Mahakittikun et al., 2021). Top Management also provides a vision and sets targets for step wise implementation of technology (Asiaei et al., 2019; Eze et al., 2021; Gangwar et al., 2015; Maroufkhani et al., 2022; Nair et al., 2019). This suggests that Top Management Support has a positive impact on the adoption of technology for SMEs and is one of the most relevant determinants of the Organizational element of the TOE framework (Al-Okaily et al., 2022; Alshamaila et al., 2013; Duan et al., 2012; Nair et al., 2019). In light of this discussion, the following hypothesis, **H2. a** is posited:

H2. a: Top Management Support has a positive relationship with technology adoption of Malaysian retail SMEs.

Firm capability has a positive impact on the adoption of technology for SMEs and is one of the most relevant determinants of the Organizational element of the TOE framework. Technology adoption increases more than proportionately with increase in firm capability because such projects typically involve large fixed costs (Alshamaila et al., 2013, 2013; Duan et al., 2012; Maroufkhani et al., 2022; Stamenkov & Zhaku-Hani, 2021). Firm capability also significantly influences the choice of ITES technology and management accounting practices (Ali et al., 2021; Asiaei et al., 2019; Eze et al., 2018, 2021). This is because of the fact that the top management of a firm is bound by the size and capability of the firm and the resources which the firm can garner (Eze, Chinedu-eze, Bello, Ayeni, et al., 2019). A direct co-relation has been found between the capability of the firm and its propensity to adopt technology (Ali et al., 2021; Gangwar et al., 2015; Mahakittikun et al., 2021). Thus, the following hypothesis is proposed:

H2. b: Firm Capability has a positive relationship with technology adoption of Malaysian retail SMEs.

Other studies suggest that one of the most relevant constructs which acts as a measure for the environmental context of the TOE framework while studying technology adoption is Competitor Pressure. There is a normative pressure generated through the wants and needs of trading partners and customers, and to match their needs, competitors adopt innovation, which in turn, acts as an addition to the existing normative pressure (Alshamaila et al., 2013; Gangwar et al., 2014). And therefore, for the purpose of this study, to measure the external environmental dimensions, the following hypothesis **H3. a** has been formulated:

H3. a: Competitor Pressure has a positive relationship with technology adoption of Malaysian retail SMEs.

Support from the government takes various forms, all of which are a measure of the extent to which the government acts as a link between different players in the industry for the purpose of knowledge and information sharing (Alshamaila et al., 2013; Maroufkhani et al., 2022). This translates at the grassroots level of the small scale industries via pragmatic national and regional schemes (Gangwar et al., 2014), and even financial incentives (Stamenkov & Zhaku-Hani, 2021). And therefore, for the purpose of this study, to measure the external environmental dimensions, the following hypothesis, has also been formulated:

H3. b: Government Support has a positive relationship with technology adoption of Malaysian retail SMEs.

One of the most relevant constructs which act as a measure for analyzing the effect of latent personality dimensions on technology adoption are Motivator Traits (MoT) as provided by the TRI framework. The

significance of MoT as a determinant of technology adoption can be judged by the fact that many authors have argued that not only does MoT have a positive effect on an individual's confidence and optimism towards a new technology (Gombachika & c; McNamara et al., 2022; Mishra et al., 2018; Rahadi et al., 2022) but it also builds trust among users towards adoption of technology (Adam et al., 2021; Kapuza et al., 2022; McNamara et al., 2022; Tripković & Simić, 2023), and therefore has a positive effect on the adoption of technology (Gombachika & Khangamwa, 2012; Kaushik & Agrawal, 2021; Leung, 2022; Mishra et al., 2018; Testa & Karpova, 2020). On the other hand, InT has a positive relationship with an individual's discomfort and insecurity towards a new technology (Adam et al., 2021; Kapuza et al., 2022; McNamara et al., 2022; Tripković & Simić, 2023), because it builds mis-trust and skepticism towards adoption of technology (Gombachika & Khangamwa, 2012; Kaushik & Agrawal, 2021; Leung, 2022; Mishra et al., 2018; Testa & Karpova, 2020), the cumulative effect of which is that it has a negative effect on the adoption of technology. In light of this discussion, the following subordinate hypotheses are posited:

H4. a: Motivator Traits (MoT) has a positive relationship with technology adoption of Malaysian retail SMEs.

H4. b: Inhibitor Traits (InT) has a negative relationship with technology adoption of Malaysian retail SMEs.

Past studies on technology adoption for SME retailers in Malaysia have used demographic variables, such as age and gender as moderators (Chakraborty et al., 2021; Eze et al., 2021; Newby et al., 2014; Zamani, 2022). There is a gap in the literature of SME retailers in Malaysia when it comes to studying the positive directing role of MoT as moderators on the determinants of technology adoption, namely PEU and PU, as well as the negative impact of InT. In light of this discussion, the following subordinate hypotheses are formulated:

H5. a: Motivator Traits (MoT) has a moderating effect on the relationship between Perceived Ease of Use (PEU) and Technology Adoption for Malaysian SME retailers.

H5. b: Motivator Traits (MoT) has a moderating effect on the relationship between Perceived Usefulness (PU) and Technology Adoption for Malaysian SME retailers.

H5.c: Inhibitor Traits (InT) has a moderating effect on the relationship between Perceived Ease of Use (PEU) and Technology Adoption for Malaysian SME retailers.

H5. d: Inhibitor Traits (InT) has a moderating effect on the relationship between Perceived Usefulness (PU) and Technology Adoption for Malaysian SME retailers.

7.0 SUMMARY AND CONCLUSION

Based on the research hypotheses framed, this research proposes a conceptual framework which is shown in Figure 6.1. The conceptual framework proposes that technology adoption for SME retailers in Malaysia is dependent on four main factors. The four factors of technology adoption are the *technological determinants*; *organizational determinants*; *environmental determinants*; as well as *latent personality determinants*. Of the four factors, the *system specific determinants* are technological determinants, organizational determinants and environmental determinants which are measured by independent variables Perceived Ease of Use (PEU), Perceived Usefulness (PU), Firm Capability, Top Management Support, Competitor Pressure and Government Support. The *latent personality determinants* are determined by Motivator Traits (MoT) and Inhibitor Traits (InT). In addition to this, the system specific determinants of PEU and PU and their relationship with Technology adoption is also moderated by MoT and InT.

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27DEVELOPMENT OF ACTIVE-BASED SOLAR TRACKER SYSTEM WITH SENSOR ADAPTATION IMPROVEMENT

Khai Le Ng, Teong Joo Ong, Nordin Nur Dalilah, Jia Hou Tan d200252c@sc.edu.my; tjong@sc.edu.my; nurdalilah@sc.edu.my, jjahou21.jt@gmail.com

Southern University College, Institution of Engineering and Technology Skudai, Johor, Malaysia, Stevenage, United Kingdom

ABSTRACT

Active-based solar tracker system is an automatic system that relied on light intensity of the sunlight and the LDR is an important sensing device for this system. There is still a challenge for designing the LDR sensor set for active based solar tracker system where the efficiency of solar tracker system might get affected with the incorporation of different LDR arrangement design. The aim of this research project is to investigate the relationship in between the design of LDR sensor set for active based solar tracker system and the solar tracker performance efficiency. The systems' control circuit is operated with the input from LDR sensor set that mounted on solar panel's surface and then fired output to change the position of solar panel which aim to face perpendicular to sun. Based on the result obtained from experiment, the performance of solar tracker system with precise LDR sensor set is better than that of non-precise LDR sensor set. The total instantaneous power for non-precise LDR sensor set is 7.6535mW, and for precise LDR sensor set is 8.0172mW where it is 4.57% higher than that of non-precise LDR sensor set.

Keywords: Active based solar tracker system, precise LDR sensor set, non-precise LDR sensor set

1.0 INTRODUCTION

The active based solar tracking system is a sensor-based system that calculates the sun's position in the sky throughout the day (Hafez, Yousef, & Harag, 2018; Hammoumi, Motahhir, Ghzizal, Chalh, & Derouich, 2018). These sensors trigger the motor or actuator automatically to drive the driving system towards the sun throughout the day. If the solar radiation beams are not perpendicular to the solar tracking system, the light intensity on one sensor will differ from that on another. In 1996, Kalogirou made a ground-breaking presentation of a single-axis tracking system utilising three light dependent resistors (LDR) (Hafez et al., 2018).

LDR, light emitting resistors are the main component in active based system, its resistance value is dependent on light intensity (Hafez et al., 2018; Hammoumi et al., 2018; Serhan & El-Chaar, 2010; Wang & Lu, 2013). This active based system will not be accurate due to low light intensity that affected the voltage divider output voltage when there is cloudy or rainy day (Hafez et al., 2018; Hammoumi et al., 2018; Wang & Lu, 2013).

There is still a challenge for designing the LDR sensor set for active based solar tracker system where the efficiency of solar tracker system might get affected with the incorporation of different LDR arrangement design for the solar tracker system which has same algorithm and same load resistor. Hence, the aim of this research project is to investigate the relationship in between the design of LDR sensor set for active based solar tracker with the solar tracker performance efficiency.

2.0 METHODOLOGY

The methodology of this research project is presented in Figure 1. This research project was start at the development of the two single axis solar tracker prototypes where the components block diagram of the developed system is as shown in Figure 2. Each single axis solar tracker with different LDR arrangement design will be developed. Next was the development of system coding. Subsequently, the performance evaluation experiment was planned and designed. The designed experiment was conducted, and the results obtained were analysed.

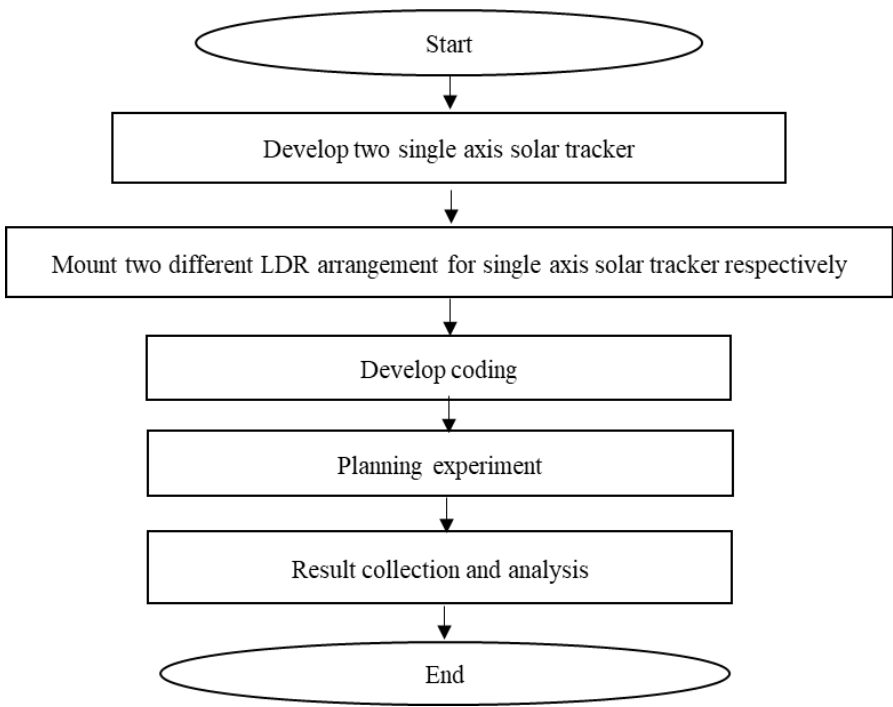


Figure 1: Methodology flowchart

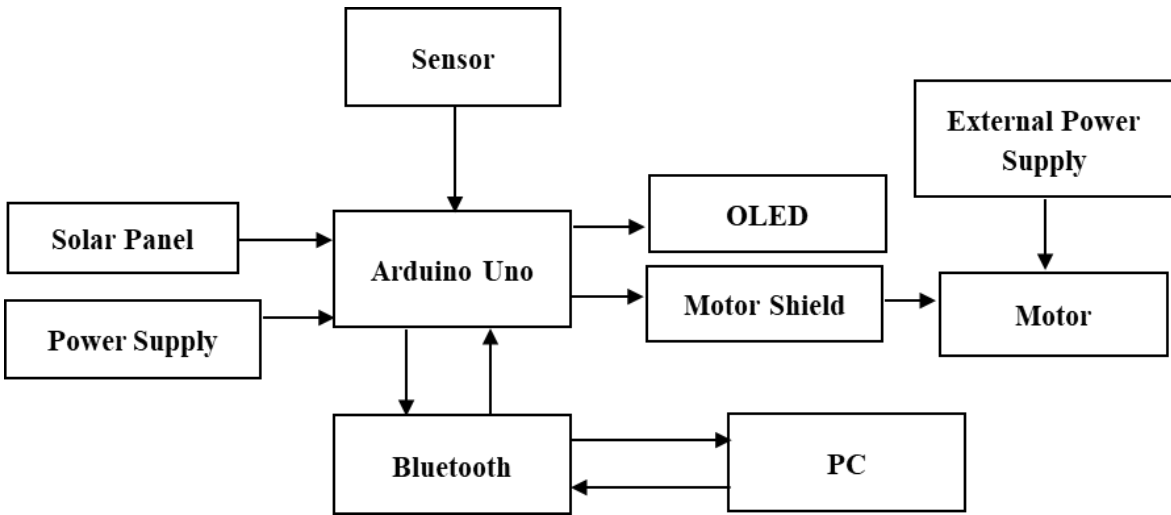


Figure 2: Compnenets Block Diagram

2.1 Wall Beside LDR

The designed wall for each LDR sensor set is to prevent the light from opposite side which could influence the LDR’s light intensity and further affected the decision making process of the developed system (Hammoumi et al., 2018). Besides, the wall can create a shading effect on each single LDR which could further reduce the resistance of LDR, making the output voltage measured by system more significant and clear (Hammoumi et al., 2018; Serhan & El-Chaar, 2010; Wang & Lu, 2013). The implementation of wall for each LDR sensor set can further improve the solar tracking performance (Wang & Lu, 2013).

With the wall installation on each LDR sensor set, the shading which created by will irradiating part of the solar panel surfaces. The larger the wall, the larger the shading to solar panel surface in which it could further reduce the efficiency of solar panel. In figures 3 and 4 have demonstrated the situations where walls were no present on the solar panel surface. In figures 5 and 6 have demonstrated the situations where walls were present on the solar panel surface.

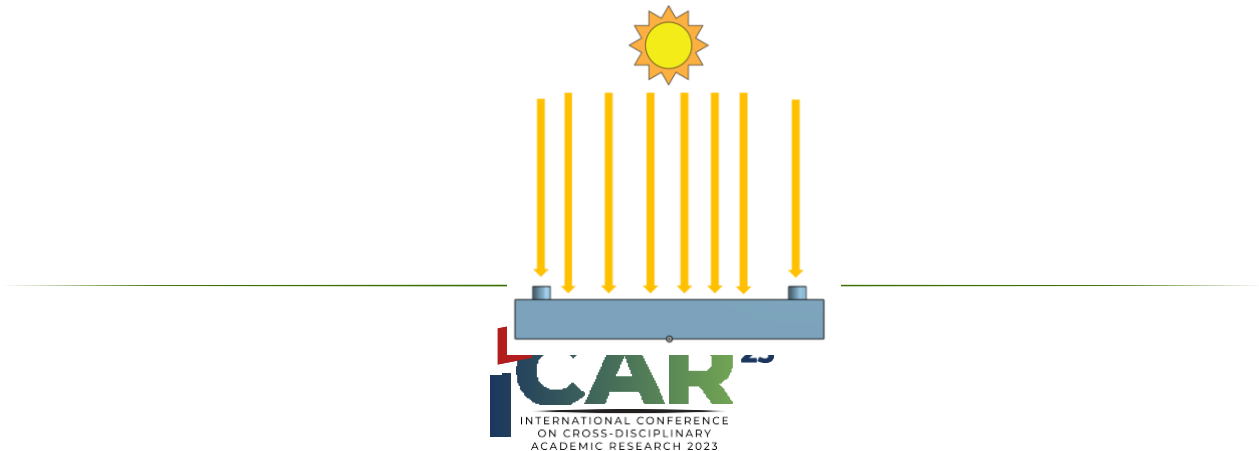


Figure 3: Situation 1; No wall present; Before system runs; Solar panel perpendicular to sun.



Figure 4: Situation 2; No wall present; After system runs; Solar panel not perpendicular to sun as sun position changed.

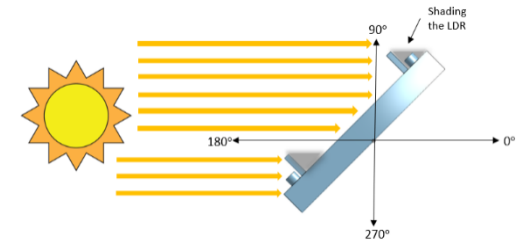


Figure 5: Situation 3; Wall present; Before system runs; Solar panel not perpendicular to sun, but wall shading on opposite side of LDR causing different in light intensity increase exceed the range further.

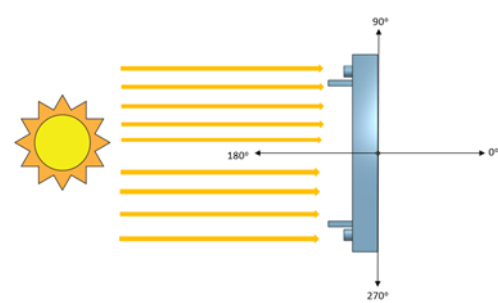


Figure 6: Situation 4; Wall present; After system runs; Solar panel perpendicular to sun.

2.2 LDR Sensor Set Design

For the precise LDR arrangement, two LDR are placed closely whereas for non-precise LDR arrangement, two LDR are placed separated from each other. The design of two different set of LDR sensor set are presented in Figure 7 and 8. The 3D drawings were drawn using online drafting software ONSHAPE. The height of wall for both set of LDR sensor set is 2cm.

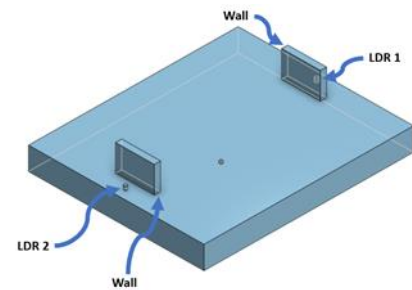


Figure 7: Type 1: Non-Precise

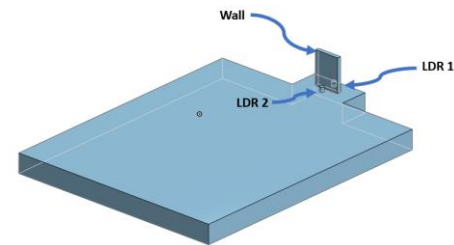


Figure 8: Type 2: precise

2.3 System Algorithm

For the system programming development, the similar type of system programming is implemented for both set of single axis solar trackers with different LDR arrangement design.

On the other hand, the circuit design of LDR voltage divider and solar panel voltage divider for both set of single axis solar tracker system are similar. The design of the solar panel's voltage divider circuit is presented in Figure 9 and the design of the solar panel voltage divider circuit is presented in Figure 10. Figure 11 is the program algorithm flowchart.

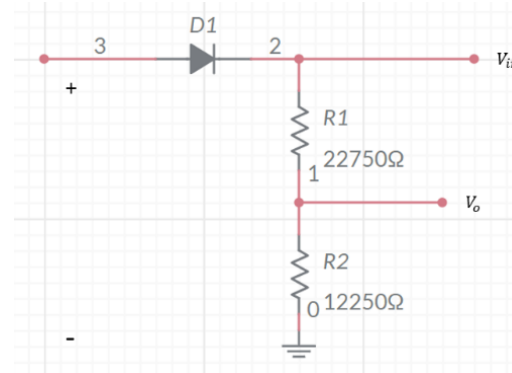


Figure 9: Solar panel voltage divider circuit

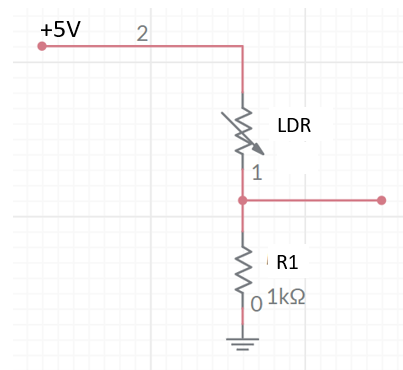


Figure 10: LDR voltage divider circuit

Since there are 2 LDR sensors needed in single axis solar tracker, LDR voltage divider circuit will then need two input port for the microcontroller. The voltage input for LDR voltage divider circuit is 5V, the voltage of 1k ohm resistor is set as the voltage output. The formula that changes the voltage from Digital numbering back to Analog numbering is:

$$\text{Analog number} = \frac{\text{Digital number} \times 5V}{1023} \quad (1)$$

5V is the maximum voltage that can be measured by Analog pin of Arduino, where 1023 is maximum value of 10-bit digital number (Hammoumi et al., 2018).

The position changing of the solar panel is made when the different in LDR voltage exceed the set positive or negative tolerant range (Akbar, Siddiq, & Aziz, 2017; Alijanov & Topvoldiyev, 2021; Bag, Bhowmick, Ghosh, & Gond; Hammoumi et al., 2018; Nahar et al., 2021; Shile, Shirgire, & Sonwane, 2018). The value of the tolerant range set for the system is 20 which means it is considered as unbalance situation when the difference in between two LDR exceed +20 or less than -20, otherwise it is considered as a balanced situation (Akbar et al., 2017; Bag et al.; Hammoumi et al., 2018; Nahar et al., 2021). The formula as presented in Eqs (2) and (3) are used for solar panel conditions verification. The $Light_1$ is the input value of LDR 1 and $Light_2$ is the input value of LDR 2.

$$Light_1 - Light_2 > range. \quad (2)$$

$$Light_1 - Light_2 < -range. \quad (3)$$

It is considered as balanced condition if both condition unfulfilled and the motor will not be actuated. If not, the motor will actuate to move either counterclockwise or clockwise based on the value difference in between LDR (Bag et al.; Hammoumi et al., 2018; Mustafa, 2016). The decision making for motor based on the input from LDR sensor set is defined as presented in Table 1.

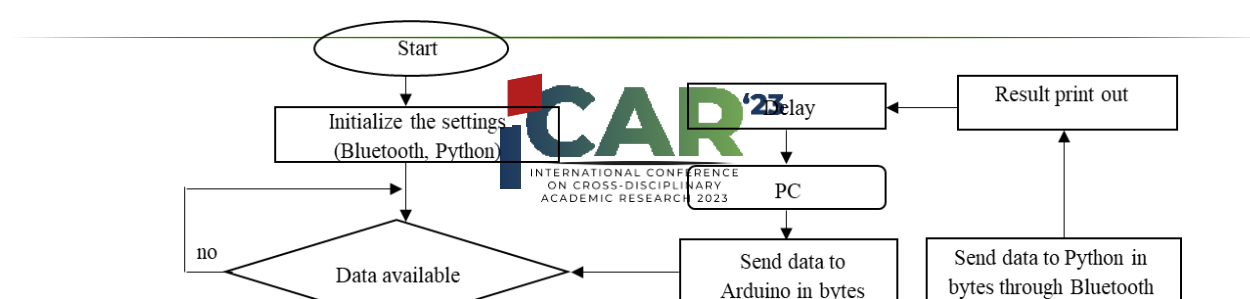


Figure 11: Program algorithm flowchart

Table 1 Motor direction for condition high for LDR1 or LDR2

Condition (High)	Clockwise (+angle)	Counter-clockwise (-angle)
LDR1-LDR2 > range (Eq. 2)	Yes	-
LDR1-LDR2< -range (Eq. 3)	-	Yes

2.4 Experiment Design

In this research project, Master-Slave Data Acquisition (DAQ) protocol is implemented for the performance experiment where this protocol is good for the results data documentation and it have been implemented for various of research experiment such as research of micro bioreactor system (Alam, Hou, Kouzani, & Husain, 2018) and biomedical wound therapy system (Alam et al., 2018; Hou, Swee, Hiik, Saad, & Malik, 2022; Tan et al., 2017). The Arduino UNO is implemented as the microcontroller of single axis solar tracker, and it is programmed as the Slave to send or receive the data from Master.

In this research project, the communication in between the Master and Slave is made with Bluetooth communication protocol. Some delay is needed for Slave to reset its status and received the data from Master, 1.1 seconds is the set delay time for each cycle loop. The model of Bluetooth devices used in project is HC-06. The details of the master-slave protocol are presented in Figure 12.

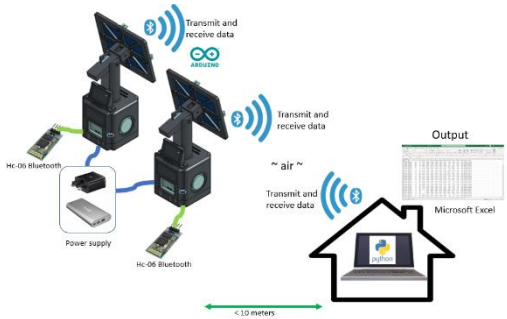


Figure 12: Demonstration experiment design for hardware and python with Bluetooth devices

The experiment was conducted at outdoor on a not cloudy and rainy-day. Two single axis solar tracker were placed at the high place as high as possible to prevent the shading from buildings. The set of the research project experiment is presented in Figure 13. The single axis solar trackers used in this project were the vertical single axis trackers (VSAT), where the motor' movement direction was decided according to sunrise and sunset direction, which is from East to North, and North to West (Hammoumi et al., 2018; Nahar et al., 2021; Wang & Lu, 2013). Whatever the angle the motor at, the solar panel path should be following the sun's path movement so that it will always be perpendicular to sun (Akbar et al., 2017; Mustafa, 2016; Nahar et al., 2021). The movement of the VAST is as presented in Figure 14.



Figure 13: Experiment of collecting instantaneous output power at each period for single axis solar trackers with different LDR arrangement design at outdoor.

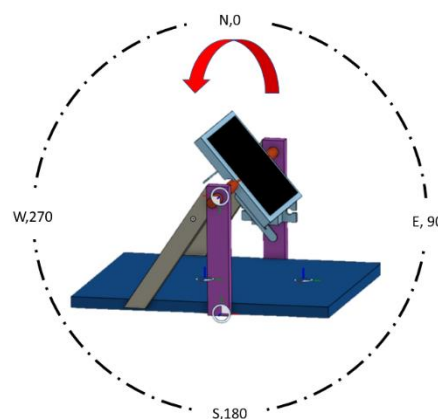


Figure 14: Demonstration of single axis solar tracker be placed according to compass.

The Bluetooth devices and PC distance should be less than 10 meters to prevent the communication error in between the Master and Slave. The distance between Bluetooth devices and PC is also known as displacement between two points. Figure 15 shows the demonstration of distances in between Master and Slave. The general equation to calculate the distance between two points is as presented in Eq (4).

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}. \quad (4)$$

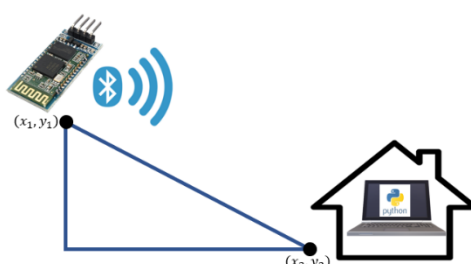


Figure 15: Demonstration of distances in between Master and Slave.

3.0 RESULT AND DISCUSSION

This section explains the results and discussion obtained from comparing the instantaneous power generation for single axis solar tracker by using different sensor set.

Table 2 shows the result obtained from the experiment which is conducted from 9:32am to 16:15pm. Based on the Figure 16, it is clearly showing that the instantaneous power obtained by single axis solar tracker with precise sensor set during the morning session (before 11:55am) is significantly higher than that of non-precise sensor set. The performance of single axis solar tracker system after the 11:55 am are just slightly difference. A calculation of total instantaneous power for both system is proceeded and the results is as presented in Table 3.

According to the Table 3, The total instantaneous power obtained by single axis solar tracker with precise sensor set is 8.0172 mW where it is 4.75% higher than that of non-precise sensor set which is 7.6535 mW. Based on the result obtained, it is clearly showing that the performance single axis solar tracker system with precise LDR sensor set is better than that of non-precise LDR sensor set. The result obtained also proving that the design of the LDR sensor set for solar tracker system could significantly affect the renewable power harvesting performance.

Table 2 Instantaneous power collected by single axis solar tracker with precise sensor set and non-precise sensor set.

Time	Power (mW)	
	Precise sensor set	Non-Precise sensor set
9:32	0.5384	0.3997
9:52	0.3665	0.3477
10:12	0.3504	0.3756
10:33	0.4614	0.3346
10:53	0.4305	0.3346
10:55	0.3416	0.3303
11:15	0.3575	0.3477
11:35	0.4706	0.3425
11:55	0.2921	0.3076
12:15	0.3486	0.3593
12:35	0.3329	0.4064
12:55	0.3235	0.3312
13:15	0.3425	0.3530
13:35	0.3557	0.3398
13:55	0.3364	0.3433
14:15	0.3364	0.3584
14:35	0.4747	0.3548
14:55	0.3159	0.4384
15:15	0.2825	0.2832
15:35	0.3035	0.3035
15:55	0.3117	0.3184
16:15	0.3442	0.3433

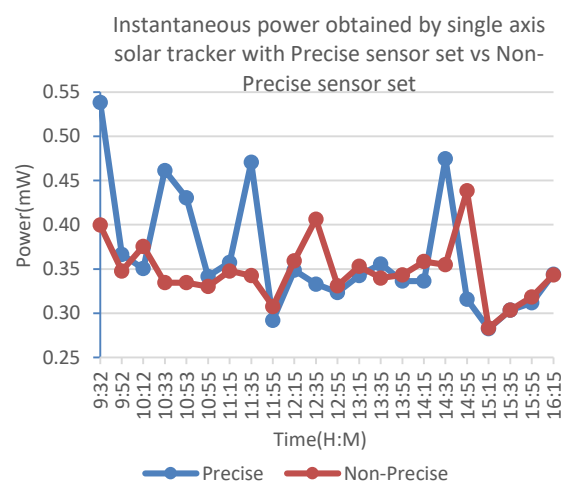


Figure 16: Instantaneous power obtained by single axis solar tracker with precise sensor set vs non-precise sensor set.

Table 3 Instantaneous power collected by single axis solar tracker with precise sensor set and non-precise sensor set.

Type of LDR arrangement for Single axis	Total Instantaneous Power (mW)
Precise	8.0172
Non-Precise	7.6535
Difference	4.75%

4.0 CONCLUSION

Based on the result obtained, the performance of single axis solar tracker with precise sensor set was better than that of non-precise sensor set. It proved that the performance of the single axis solar tracker system is able to be enhanced with the incorporation of precise sensor set. A solar system with higher power generation could improve the return for investment and increase the public motivation to install the solar panel. Furthermore, it could further fulfil the Nation Goal which is to achieve 31% renewable energy share in the national capacity mix by

2025 and attain decarbonisation of the electricity sector by 2035, which published by Ministry of Energy and Natural Resources and Sustainable Energy Development Authority (SEDA) Malaysia launched the Malaysia Renewable Energy Roadmap (MyRER).

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28ANALISIS PENGURUSAN PERSIJILAN HALAL DI JAKIM MELALUI MAKLUMBALAS PENGADUAN AWAM

*Madihatun Zainuddin, Mohamad Dininazmi Sabri, Azwanis Azemi, Adila Abdullah
madihatun@uptm.edu.my, dininazmi@uptm.edu.my, azwanis@uptm.edu.my,
adila_@uptm.edu.my Universiti Poly-Tech Malaysia, (UPTM)*

Kuala Lumpur

ABSTRACT

Pemprosesan Persijilan Halal merupakan salah satu tema yang terdapat di dalam salah satu Piagam Pelanggan (PP) di Jakim di mana ia merupakan janji yang diberikan kepada pemohon dalam tempoh tertentu untuk menyiapkan Sijil Halal. Dalam merealisasikan sebuah pengurusan yang baik dalam sesebuah organisasi, amat penting untuk staf di dalam organisasi peka terhadap janji yang diutarakan seperti mana yang termaktub dalam PP mereka. PP ialah pernyataan secara bertulis oleh organisasi untuk memberikan perkhidmatan yang berkualiti kepada pelanggan bagi memenuhi keperluan masyarakat khususnya kepada pelanggan yang berurusan dalam mana-mana organisasi. Oleh itu, untuk mengenalpasti setiap permasalahan yang dihadapi, amat penting organisasi tersebut mendapatkan maklumbalas daripada pelanggan. Dari situ, organisasi dapat membuat penambahbaikan dan perancangan-perancangan strategik yang lain. Justeru, kajian dalam penulisan ini adalah untuk menganalisis maklumbalas daripada masyarakat terhadap janji yang diutarakan oleh Jakim dalam urusan pengurusan persijilan halal. Fokus maklumbalas dalam kajian ini adalah maklumbalas pengaduan awam (PA). Permasalahan yang timbul adalah apabila terdapat sesetengah organisasi mengabaikan janji yang diutarakan dalam PP mereka. Ini dapat dilihat melalui maklumbalas PA yang dibuat oleh masyarakat. Kepentingan kajian ini adalah dapat mengetengahkan akan pentingnya pelaksanaan PP yang berkualiti khususnya dalam aspek persijilan halal di Jakim. Kajian berbentuk kualitatif ini menggunakan metod temubual sebagai metod utama, di mana staf daripada Jakim akan ditemubual untuk mendapatkan maklumat yang diperlukan. Selain itu, metod dokumentasi juga digunakan seperti laporan Piagam Pelanggan, Laporan Manual Prosedur Persijilan Halal, dan lain-lain. Termasuk juga laporan-laporan yang terdapat di dalam laman sesawang Jakim. Objektif kajian ini adalah untuk mengenalpasti akan cabaran-cabaran serta cadangan penambahbaikan yang dilakukan oleh Jakim berdasarkan maklumbalas PA dan juga dapatan daripada cabaran-cabaran yang dihadapi oleh Jakim dalam menguruskan persijilan halal. Hasil dapatan mendapati bahawa pengurusan yang baik dalam organisasi dapat menangani apa jua bentuk cabaran yang berlaku, khususnya dalam proses pengurusan persijilan halal ini. Hasil daripada maklumbalas PA, memberi ruang kepada Jakim untuk membuat penambahbaikan dan merangka pelan startegik tertentu bagi mencapai kepuasan pelanggan melalui janji yang ditunaikan dengan baik, bertanggungjawab dan beramanah dan seterusnya menghasilkan perkhidmatan yang berkualiti.

Keywords: Persijilan Halal, Maklumbalas Pengaduan Awam, Piagam pelanggan, Kepuasan Pelanggan, Perkhidmatan Berkualiti, Jakim

1.0 PENDAHULUAN

Pengaduan Awam (PA) adalah merupakan salah satu maklumbalas yang penting dalam mana-mana agensi bagi tujuan penambahbaikan dan memberikan perkhidmatan yang berkualiti khususnya kepada pelanggan. Malahan PA juga dapat diekspresikan sebagai ketidakpuashatian orang ramai terhadap mutu, kualiti atau layanan perkhidmatan yang diterima daripada penjawat awam atau sesebuah agensi (Nik Hairi et.al 2012). Manakala Piagam pelanggan (PP) pula merupakan satu janji yang dibuat bagi menjamin keselesaan pelanggan terhadap agensi tersebut. PP biasanya menyatakan kesediaan perkhidmatan yang ditawarkan, layanan mesra yang diberikan, kecekapan pemprosesan yang dilaksanakan dan nilai-nilai kesopanan dalam budaya kerja (Panduan Pengurusan Perhubungan Pelanggan 2008).

Salah satu PP di Jakim yang dikaji dalam kajian ini adalah berkenaan dengan pengurusan persijilan halal iaitu; "Menyelesaikan proses permohonan persijilan halal Malaysia bagi permohonan domestik dalam tempoh 30 hari bekerja selepas pembayaran fi pensijilan diterima" (Piagam pelanggan Jabatan Kemajuan Islam Malaysia, <https://www.islam.gov.my/ms/info-korporat/piagam-pelanggan>, diakses pada 19/05/2023).

PP ini bermaksud Jakim akan menguruskan permohonan persijilan halal yang dimohon oleh industri di mana diberi masa dalam tempoh 30 hari bekerja, iaitu tempoh Jakim menyiapkan sijil tersebut. Permohonan domestik ini terdiri daripada 9 skim iaitu Produk Makanan dan Minuman, Produk Kosmetik, Produk Farmaseutikal, Premis Makanan, Produk Barang Gunaan, Perkhidmatan Logistik, Rumah Sembelihan, Pengilangan Kontrak/OEM dan Produk Peranti Perubatan (Manual Prosedur Persijilan Halal, 2020). Dalam menjalankan pengurusan persijilan halal ini, terdapat beberapa cabaran yang dihadapi serta penambahbaikkan atau perancangan strategik yang dirangka oleh Jakim. Perkara inilah yang akan dibincangkan lebih lanjut dalam penulisan ini, di mana cabaran dan penambahbaikkan tersebut dikaitkan dengan maklumbalas yang diterima iaitu PA daripada masyarakat seperti industri, para pengguna dan lain-lain yang berkaitan.

Kepentingan kajian ini dapat dilihat apabila kajian-kajian lalu berkenaan PP kurang diketengahkan. Selain itu, perkara-perkara yang membabitkan halal adalah suatu isu yang penting kepada umat Islam masa kini, khususnya yang terlibat dalam aktiviti perniagaan pemakanan, domestik dan lain-lain. Oleh itu, kajian ini membincangkan cabaran-cabaran yang dihadapi oleh Jakim dalam urusan menguruskan sijil halal kepada industri yang memohon, di samping melakukan pelbagai penambahbaikkan dan pelan-pelan strategik tertentu bagi menghasilkan perkhidmatan yang lebih bermutu serta dapat menunaikan janji dengan tepat seperti mana yang termaktub dalam PP mereka.

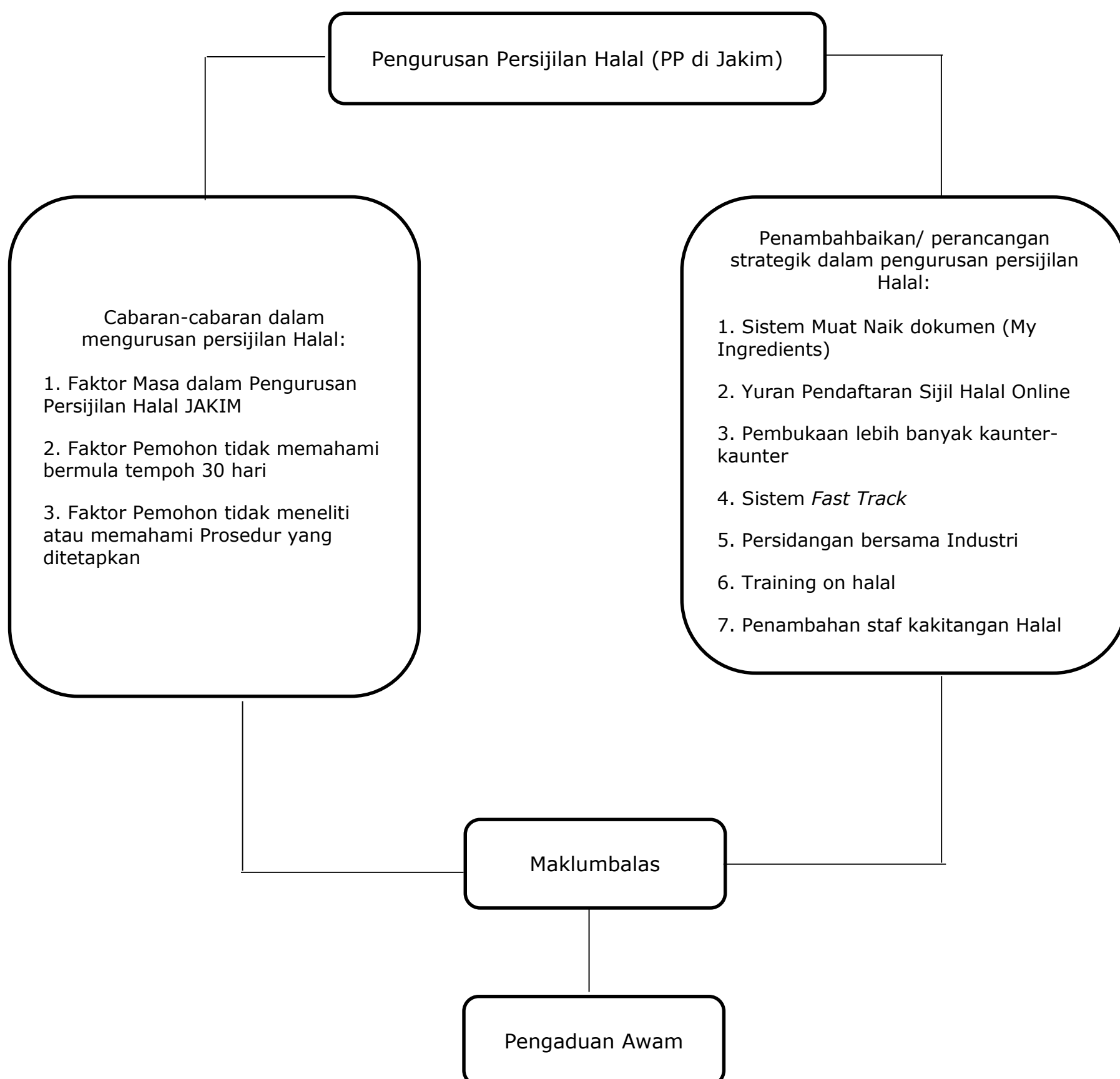
2.0 METODOLOGI PENYELIDIKAN

Metod Kualitatif digunakan dalam penulisan ini dimana kaedah temubual dan analisis dokumen digunakan. Metod temubual merupakan metod utama yang digunakan dalam pengkajian ini dimana tiga orang penjawat awam iaitu Puan Marzita Ibrahim dan Puan Asiah Alkharib Shah merupakan responden daripada agensi Islam Jakim. Kedua-duanya merupakan penjawat awam yang bertugas di Bahagian Persijilan Halal dan memegang jawatan sebagai Penolong Pengarah kanan, Bahagian Persijilan Halal, Jakim. Manakala responden yang ketiga adalah Encik Luqman Nul Hakim Samad yang merupakan Penolong Pengarah, Seksyen Komunikasi Korporat, Bahagian Persijilan Halal, Jakim.

Cara penyediaan soalan-soalan temubual adalah menggunakan kaedah separa struktur di mana soalan-soalan temubual akan dirangka terlebih dahulu dan dihantar kepada responden melalui email. Oleh itu semasa sesi temubual, responden telah sedia maklum mengenai soalan-soalan yang bakal ditanya. Selain itu, responden juga bebas untuk menjawab mana-mana soalan yang dikehendaki dan para penyelidik juga bebas untuk mendahulukan mana-mana soalan yang hendak ditanya kepada responden.

Metod analisis dokumen merupakan metod kedua yang digunakan dalam penulisan ini. Metod ini merupakan pelengkap kepada metod temubual dalam penelitian kualitatif (Sugiyono, 2011). Dokumen-dokumen diperolehi melalui laman sesawang Jakim seperti laporan tahunan Jakim, laporan Piagam Pelanggan Jakim serta maklumat tentang PA. Terdapat juga dokumen yang dikongsi sendiri oleh responden seperti buku laporan Manual Prosedur Pensijilan Halal Malaysia (Domestik) di mana di dalam buku tersebut terdapat prosedur-prosedur tertentu khususnya pengurusan aduan di dalam organisasi. Selain itu, analisis dokumen digunakan untuk menguatkan lagi data-data yang diperolehi daripada hasil temubual yang dilakukan.

Carta 1. Pengurusan Persijilan Halal (PP di Jakim)



3.0 KAJIAN LITERATUR

3.1 Pengaduan Awam / *Public complaint*

Pengaduan awam (PA) adalah salah satu kaedah untuk mendapatkan input atau maklumbalas pelanggan dan masyarakat tentang perkhidmatan atau produk yang diberikan oleh sesebuah organisasi (Zainuddin & Al-Qudsy, 2020). PA juga merupakan maklumbalas daripada pelanggan dan penting bagi organisasi kerana aduan bertujuan untuk membetulkan kelemahan aktiviti pelaksanaan (Istiqomah, et.al 2023; Zainuddin et.al. 2022). Malahan ia juga penting untuk mengukur tahap pencapaian sesebuah organisasi. Menurut (Tan et.al, 2013) tanpa maklumbalas pelanggan, adalah mustahil bagi syarikat untuk mengetahui sama ada mereka memerlukan perubahan untuk penambahbaikan. Oleh itu, pengurusan aduan membawa pengalaman pembelajaran kepada organisasi untuk memberikan perkhidmatan yang lebih baik. Selain itu, Pengaduan awam juga adalah satu ekspresi ketidakpuashatian orang ramai terhadap mutu, kualiti atau layanan perkhidmatan yang diterima daripada penjawat awam atau sesebuah agensi (Nik hairi Omar et.al, 2012). Ketelusan maklumbalas daripada pelanggan sememangnya adalah satu sumbangan yang tidak ternilai kepada mana-

mana organisasi (Finola, et.al, 2020)

Disamping itu, terdapat beberapa kajian-kajian terdahulu yang membincangkan berkenaan PA sama ada konsepnya, cara pengurusannya, kesan serta aspek-aspek yang berkaitan seperti kepuasan pelanggan dan penambahbaikan iaitu 'Amalan Pengaduan Awam di Malaysia'(Ilhamie Abdul Ghani Azmi, 2012), 'Complaint Management in the Public Sector Organization in the Philippines'(Mantaring et.al, 2019), 'The Evaluation of Complaint Handling Process in Five Star Hotels and its Reflection on Customers' Satisfaction (Magatif et.al, 2019)', 'The Impact of Collection and Dissemination of Information towards Public Complaint on Municipal Services'(Zakaria et.al, 2016), dan 'The Application of SERVQUAL Distribution In Measuring Customer Satisfaction of Retails Company'.

Penulisan-penulisan ini membincangkan konsep dan teori PA itu dari aspek moden dan terkini serta hak seorang pengguna iaitu pelanggan yakni hak untuk bersuara. Hak untuk bersuara dapat dikaitkan dengan maklumbalas yang diberikan iaitu maklumbalas PA. Selain itu, kajian-kajian tersebut juga membincangkan berkenaan pengurusan aduan yang mengaitkannya dengan kecekapan pengurusan, kepuasan pelanggan, penambahbaikan berterusan dan kesan kualiti kepada perkhidmatan. Rumusan keseluruhan penulisan-penulisan ini adalah konsep PA yang diuruskan pada masa kini yang diambil kira dari pelbagai aspek khususnya dalam urusan yang melibatkan pelanggan.

3.2 Kualiti Perkhidmatan / Maklumbalas / *Customer Satisfaction*

Dalam mentadbir organisasi, salah satu mekanisme untuk memperolehi hasil perkhidmatan yang terbaik adalah dengan mendapatkan maklumbalas daripada pelanggan atau masyarakat awam. Melalui PA juga sesebuah organisasi dapat mengukur tahap kepuasan pelanggan terhadap perkhidmatan yang diberikan (Zainuddin & Al-Qudsy, 2020). Selain itu, bagi membentuk sistem pengurusan prestasi yang baik adalah satu kepentingan memberikan maklum balas untuk meningkatkan prestasi organisasi (Buckingham & Goodall, 2015). Hal ini adalah kerana amalan memberikan maklumbalas secara telus dan jelas merupakan satu langkah yang praktikal dan berkesan sekiranya dilaksanakan dengan sistematik, konsisten, mengikut piawaian yang ditetapkan dan disampaikan oleh sumber yang dipercayai (Murphy, et.al, 2018). Menurut Aguinis (2013), amalan memberikan maklum balas prestasi dianggap sebagai komponen yang sangat penting dalam bidang pengurusan. Amalan memberikan maklumbalas begitu diperlukan bagi mengekalkan komitmen, mutu kerja, kesetiaan dan boleh dijadikan sebagai tindakan kawalan terhadap pekerja (Bowles & Coates, 1993).

Menyedari akan hakikat ini, dalam sistem pengurusan organisasi sepatutnya memberikan maklum balas yang berkualiti bagi merancang keperluan latihan dan memantapkan kualiti prestasi organisasi dari masa ke masa (Ray & Singh, 2018). Maklumbalas prestasi yang kurang berkualiti boleh menyebabkan pelbagai kerosakan terhadap nilai sistem penilaian prestasi (Murphy, 2020) manakala maklum balas prestasi yang berkualiti pula akan membolehkan organisasi untuk lebih bersikap terbuka, positif, bermotivasi dan lebih kerap terlibat dalam aktiviti pembangunan yang dirancang oleh organisasi (Kluger & DeNisi, 1996; London & Smither, 2002).

3.3 Piagam Pelanggan (PP)

PP ialah suatu pernyataan secarabertulis oleh organisasi untuk memberikan perkhidmatan yang berkualiti kepada pelanggan bagi memenuhi keperluan masyarakat khususnya kepada pelanggan yang berurusan dalam mana-mana organisasi (Zainuddin et.al, 2022). Disebabkan kajian ini membincangkan mengenai PP di Jakim, terdapat beberapa kajian lalu berkenaan dengannya. Kajian-kajian tersebut lebih menerangkan kepentingan PP itu dilaksanakan. Dewasa ini, terdapat pelbagai usaha yang telah dijalankan oleh kerajaan Malaysia bagi memastikan semua penjawat awam terus memberikan komitmen yang tinggi dalam menyediakan perkhidmatan yang unggul. Sejajar dengan usaha itu, beberapa dasar telah diperkenalkan dan di antara dasar tersebut ialah PP yang dihasilkan pada tahun 1993. (Othman et.al, 2021). Selain di Malaysia, terdapat banyak lagi negara-negara yang telah melaksanakan PP ini dan ini menunjukkan bahawa pentingnya memberikan perkhidmatan yang terbaik kepada pelanggan. Ini termasuklah di Australia, di mana mereka berjaya memberikan perkhidmatan yang terbaik dalam agensi kerajaan selepas diperkenalkan konsep PP di negara terbabit pada tahun awal 1990-an. Ini secara tidak langsung memberikan kepuasan kepada pihak pelanggan (Barret, 2003).

Menurut Barret (2003) lagi, keberkesanan PP dalam beberapa agensi kerajaan di peringkat

awalnya berjaya meningkatkan kualiti perkhidmatan awam dan memberikan rujukan bagi agensi kerajaan yang lain pula. Selain itu, para kakitangan sedia maklum dalam memberikan khidmat kepada pelanggan mereka sebaik mungkin berikutan ojektif yang telah tertera pada PP oleh agensi atau jabatan kerajaan masing-masing (Dangi et.al). Melalui pendekatan ini, secara tidak langsung telah mendorong kakitangan menjaga prestasi khidmat mereka agar sentiasa cemerlang dalam menguruskan pelanggan yang terdiri daripada ramai pihak.

Oleh itu, PP mampu untuk memenuhi kepuasan pelanggan dalam sesebuah organisasi sekiranya kakitangan menunaikan apa yang terkandung dalam PP tersebut iaitu janji-janji yang diwar-warkan kepada pelanggan mereka. Selain daripada itu, PP mampu membina hubungan organisasi dengan pelanggan menjadi lebih kukuh dan seterusnya kepuasan pelanggan dapat diperolehi di mana ianya merupakan matlamat akhir dalam mana-mana pengurusan sesebuah organisasi.

3.4 Persijilan Halal

Persijilan halal yang diperkenalkan sejak tahun 1974 mengambil kira aspek hukum, keselamatan, kebersihan, dan kualiti bertujuan untuk menjaga kepentingan pengguna (Khairul Effendi, et.al 2022). Pengesahan dan persijilan halal ini merupakan keperluan bagi masyarakat Islam selain usaha untuk meningkatkan pemasaran bagi sesetengah produk dan juga servis bagi sesebuah syarikat (Mohd Amri et.al, 2021). Selain itu, pengesahan Halal juga adalah jaminan kehalalan suatu produk yang dikeluarkan oleh suatu lembaga, baik lembaga swasta mahupun instansi pemerintah (Bashir et.al, 2022). Seperti servis-servis yang lain, pihak JAKIM turut mencakna akan perubahan-perubahan dalam sistem yang melibatkan pengurusan halal mengikut arus pemodenan. Ini kerana perubahan yang positif ini dapat membantu memudahkan proses persijilan halal sekaligus membantu dalam proses penambahbaikan dapat dilakukan di masa akan datang (Mohd Amri et.al, 2021). Dalam berita terbitan Sinar Harian Jun tahun 2023, melaporkan permohonan bagi mendapatkan sijil halal semakin bertambah dan pertambahan bilangan ini adalah kerana galakan yang diberikan oleh pihak JAKIM terhadap pemain industri (Nurul Nabila Ahmad Halimy, 2023).

Selain daripada pemohon Bumiputra, pemohon bukan bumiputra juga ramai yang mengambil inisiatif bagi memohon sijil halal daripada pihak JAKIM. Ini berikutan pengamal industri makanan di Malaysia banyak dipelopori oleh golongan bukan bumiputera yang tidak mengetahui tentang hal halal dan haram dalam industri pemakanan. Dengan penambahan bilangan ini secara tidak langsung telah menjadikan aspek persijilan halal semakin mendapat perhatian dan menjadi tumpuan kajian dalam kalangan sarjana pengurusan halal dan pengamal industri (Radin et.al, 2018). Sementara itu, menurut Lokman Ab Rahman (2019), semakin ramai golongan bukan Muslim turut menyedari akan kepentingan halal dalam industri makanan dan sehubungan itu, memohon pengesahan halal bagi produk mereka.

Pemahaman terhadap konsep makanan yang bukan sahaja tertumpu kepada halal tetapi lebih daripada itu termasuk kebersihan, keselamatan dan proses dalaman yang diperlukan dalam membantu pelbagai pihak dalam merealisasikan Malaysia sebagai rujukan kepada badan pensijilan halal lain di dunia (Baharudin & Hudani, 2022). Persijilan halal juga salah satu sistem pengurusan yang amat penting lebih-lebih lagi kepada industri pengeluar. Ini kerana pengurusan ini telah menjadi salah satu piawaian kepada produk keperluan masyarakat Islam seperti makanan, minuman, solekan dan banyak lagi. Disebabkan oleh galakan yang tinggi oleh pihak JAKIM mengenai persijilan halal, sekaligus ianya menyebabkan pengurusan pensijilan halal ini ianya setaraf dengan keperluan sistem mata kawalan analisis kritikal (HACCP) dan amalan pengilangan baik (GMP) dalam industri pengeluaran. Dengan ini, secara tidak langsung pasaran industri halal ini berjaya menjana ekonomi negara kira-kira RM45 bilion (Lokman Ab Rahman, 2020). Dalam bab pengurusan makanan halal di Malaysia, penjelasan mengenai konsep pemakanan dan pelaksanaan pensijilan halal haruslah difahami oleh pelbagai pihak termasuklah pihak industri yang bertanggungjawab dalam aspek penambahbaikan yang dilaksanakan oleh kerajaan Malaysia (Baharudin Osman, 2016).

Kesedaran tentang kepentingan dalam mendapatkan barangan yang halal semakin tinggi tidak kira daripada golongan Muslim mahupun bukan Muslim kerana ianya mampu untuk meningkatkan pemasaran dalam pelbagai perniagaan. Sehubungan itu, pihak JAKIM telah berusaha keras bagi meningkatkan mutu sistem persijilan halal di Malaysia.

3.5 Rumusan keseluruhan Kajian Literature

Rumusan daripada kajian-kajian lalu didapati bahawa maklumbalas berkenaan aduan kurang dijumpai. Lagi-lagi aduan yang berkaitan dengan PP. Oleh itu kajian ini harus diketengahkan

bagi memfokuskan aduan berkaitan salah satu PP di Jakim iaitu yang berkaitan dengan halal, di mana persijilan halal dan perkara yang berkaitan dengannya merupakan aspek yang terpenting bukan sahaja di Malaysia tetapi termasuk di luar Malaysia khususnya mereka-mereka yang terlibat dengan aktiviti perniagaan pemakanan, domestik dan lain-lain.

4.0 DAPATAN KAJIAN

4.1 Pengenalan Tentang Jakim: Bahagian Persijilan Halal, Jakim

JAKIM atau nama penuhnya ialah Jabatan Kemajuan Islam Malaysia merupakan salah satu agensi dalam kerajaan Persekutuan di Malaysia dan ianya berfungsi sebagai agen yang menguruskan hal ehwal agama Islam di Malaysia. Salah satu peranan yang dimainkan oleh pihak JAKIM adalah menguruskan hal-hal yang berkaitan dengan pensijilan halal. Bukan sekadar di dalam negara, malah JAKIM turut menguruskan urusan berkaitan halal diperingkat antarabangsa, seperti contoh sehingga 3 Disember 2019 pihak JAKIM telah megiktiraf 78 badan pensijilan halal daripada 45 buah negara di mana pengiktirafan yang diberikan berdasarkan kepada pematuhan dan pelaksanaan piawaian halal yang mengadaptasi ciri dan model daripada Malaysia. (Berita Harian, Disember 2019).

Hub halal di JAKIM terbahagi kepada dua bahagian iaitu Sekriteriat Majlis Halal Malaysia (MHM) dan Bahagian Pengurusan Halal (BPH). Di bahagian pengurusan halal ini, mereka berperanan menjalankan hal berkaitan pensijilan halal di Malaysia dengan Kerjasama Jabatan Agama Islam di setiap negeri. Pelbagai proses yang dilakukan oleh pihak JAKIM bagi mendapatkan pengesahan dan pensijilan halal termasuklah proses semakan dokumen permohonan pensijilan produk dan premis, pengauditan produk dan premis, pengeluaran pensijilan halal, pengesahan rumah sembelihan luar negara, pemantauan dan penguatkuasaan halal serta pusat analisis halal.

4.2 Cabaran-Cabaran Pengurusan Persijilan Halal Jakim

Terdapat beberapa cabaran yang dihadapi oleh Jakim dalam menguruskan urusan persijilan halal ini, khususnya untuk menangani beberapa aduan yang berkaitan dengannya. Antara tugas pihak JAKIM yang berkaitan halal ini untuk memastikan tempoh menyiapkan sijil halal itu mengikut tempoh yang ditetapkan seperti yang terdapat dalam PP Jakim. Ianya juga selaras untuk memastikan kepentingan masyarakat terjaga secara keseluruhannya. Terdapat enam elemen utama prosedur persijilan halal iaitu bermula dengan proses permohonan dari pemohon, menyemak dokumen permohonan, memberi surat fi bayaran kepada pemohon, membuat audit di lapangan, membuat pemantauan dan juga menyemak sah laku sijil (Zainuddin et al, 2023). Dalam masa proses pengurusan persijilan halal ini, antara cabaran-cabaran yang dikenalpasti adalah faktor masa bagi menyelesaikan proses persijilan halal dengan cepat, melayan kerenah pemohon kerana tidak pasti bila bermulanya proses persijilan halal bermula, serta pemohon tidak meneliti prosedur yang ditetapkan. Berikut perbincangan tentang cabaran yang dihadapi pihak JAKIM.

4.2.1 Faktor Masa dalam Pengurusan Persijilan Halal JAKIM

Terdapat perubahan dalam struktur ayat PP yang berkaitan pensijilan halal telah dikemaskini pada tahun 2022 menggantikan yang sebelumnya. Ianya berkaitan dengan mempercepatkan proses permohonan pensijilan halal sehingga selesai dalam tempoh 30 hari selepas fi bayaran dibuat. Oleh itu cabaran dalam pengurusan pensijilan halal dikenalpasti iaitu perlu menyelesaikan proses pensijilan halal dengan lebih cepat iaitu dalam tempoh 30 hari selepas bayaran dibuat oleh pemohon.

"Apabila terdapat perubahan pada laman web berkaitan piagam pelanggan iaitu struktur ayat, setelah mengambil kira pandangan stakeholder, mungkin terdapat keperluan untuk menyelesaikan proses pensijilan halal dalam tempoh 30 hari selepas pembayaran, merujuk kepada selepas e-pensijilan halal dikeluarkan" (Asiah, 2023).

4.2.2 Faktor Pemohon Tidak Memahami Bermula Tempoh 30 hari

Namun, untuk menyelesaikan proses pensijilan halal dengan cepat, terdapat cabaran lain yang perlu dihadapi pihak Jakim, adalah apabila pemohon tidak memahami bila bermulanya 30 hari seperti yang termaktub di dalam prosedur yang bermula selepas pembayaran dibuat. Ini adalah penting untuk mengelak memohon membuat pengaduan terhadap pihak JAKIM sewenang-wenangnya. Pernyataan ini dinyatakan Asiah (2023) di bawah:

"Apabila JAKIM mengeluarkan surat caj yang dikenakan, mereka ada tempoh 14 hari. Kadang-kadang pun tidak bayar juga. Jadinya benda itu tidak selesai.... kita menganggap bila dibayar, automatik kita akan ke proses pengauditan. Jadi di situ bermulanya proses pensijilan" (Asiah, 2023).

Proses pensijilan halal bermula apabila semua dokumen telah lengkap diterima daripada pemohon industri, dan proses ini memakan masa selama 7 hari. Kemudian Jakim akan memaklumkan hasil semakan samada lengkap, atau memerlukan kemaskini dokumen. Setelah dokumen lengkap, bayaran akan dikenakan kepada pemohon, yang mana pemohon perlu membayar caj tersebut dalam masa 14 hari. Setelah bayaran diterima, barulah pihak JAKIM atau penguatkuasa negeri akan memulakan proses pengauditan. Setelah siap dan lulus, pemohon diberi tempoh untuk membuat bayaran dalam masa 30 hari dan apabila bayaran diterima barulah e-pensijilan halal dapat dikeluarkan.

4.2.3 Faktor Pemohon Tidak Meneliti Atau Memahami Prosedur Yang Ditetapkan

Antara cabaran seterusnya adalah pihak pemohon tidak meneliti prosedur yang ditetapkan iaitu daripada bermulanya proses permohonan sehinggalah untuk mendapatkan sijil halal. Pemohon yang tidak patuh kepada prosedur yang ditetapkan biasanya melibatkan pemohon yang baru berkecimpung dalam dunia perniagaan. Dalam hal ini agensi-agensi kerajaan akan bekerjasama dengan pihak Jakim untuk memberi bimbingan dan pencerahan terutama dalam proses permohonan sijil halal. Antaranya mereka sendiri mengetahui kesilapan di pihak mereka sendiri, kerana kurang mengambil tahu sepatutnya apa yang mereka perlu buat contohnya seperti menghantar dokumen dengan lengkap. Berdasarkan pengalaman Asiah (2023),

"Selalunya jarang permohonan yang dihantar lengkap, anggaran 10-20% permohonan yang dihantar berstatus lengkap". Menurut Asiah (2023) lagi,

"Contoh dia (pemohon) sendiri pun tahu sebabnya, contoh pemohon tidak menjawab lagi kami punya pertanyaan, sebab tidak lengkap.. yang kami maklumkan atau dia (pemohon) sendiri buat lambat bayaran, ataupun ketika itu banyak permohonan yang masuk, jadi kena ikut giliran. Jadi bila pemohon bertanya kepada JAKIM, bila mereka akan diaudit, JAKIM, akan jawab, tuan, setakat tempoh dalam 2 minggu ni bukan lagi jadual untuk tuan, kita akan maklumkan. Jadi pemohon tak akan jadi membuat aduanlah. Sebab pelanggan akan tahu sebab".

Dari segi Pengaduan Awam (PA), pihak JAKIM ada menerima aduan berkaitan permohonan yang diadakan lambat merumitkan. Pihak JAKIM seterusnya menyelesaikan kes aduan sebegini dengan menyemak dokumen secara terperinci namun kebiasaanya kes sebegini disebabkan pengadu tidak memahami prosedur yang perlu dipatuhi.

"...mereka perlu baca dan hadam prosedur tersebut iaitu MPPHM sebelum menghantar permohonan bagi mengelak perkara-perkara kelambatan dalam proses permohonan..." (Asiah, 2023)

Di bawah prosedur yang perlu dipatuhi pemohon, cabaran masa kini disebabkan industri makanan dan minuman yang berkembang dan berubah dari masa ke semasa. Oleh itu JAKIM perlu sentiasa mengkaji dan memastikan proses pensijilan halal mereka adalah betul dan relevan dengan keperluan masyarakat. JAKIM perlu berhati-hati terutamanya melibatkan sumber makanan di kedai-kedai makan, restoran atau hotel.

"Jakim perlu tahu setiap bahan mentah yang digunakan di restoran atau hotel pemohon dan sekiranya pihak industri gagal melampirkan dokumen lampiran yang diminta, pihak Jakim akan memaklumkan bahawa "maklumat anda tidak lengkap", Asiah (2023).

Cabaran dalam hal pengaduan tentang pensijilan halal pihak industri sendiri dan awam jarang berlaku, kerana banyak platform yang sudah wujud bagi pengguna untuk bertanyakan atau mengadu tentang sesuatu. Antara persoalan awam berkaitan halal atau tidak makanan tertentu atau di premis makanan adalah diluar bidang kuasa Jakim. Pengaduan yang sering masyarakat adukan adalah seperti status halal, penyalahgunaan kalimah Allah, dan bufet Ramadan yang tidak mempunyai logo halal. Jika mengenai hal ini, pihak Jakim akan meminta pengadu untuk terus ke portal JAKIM yang berkenaan untuk mereka mendapatkan jawapan.

4.3 Penambahbaikkan Dan Perancangan Strategik Pengurusan Persijilan Halal Jakim

Walaupun terdapat beberapa cabaran yang dihadapi oleh Jakim dalam urusan untuk

melaksanakan PP mereka berkaitan sijil halal ini dengan baik, Jakim sentiasa berusaha mencari kaedah penyelesaian serta melakukan penambahbaikan hasil daripada maklumbalas PA. Antara aduan yang diutarakan sebelum ini adalah berkenaan dengan pengurusan yang lambat dan rumit, bayaran yang mahal, kekeliruan antara logo halal dan sijil halal dan juga pengesahan status halal yang diragui (Marzita 2018). Selain dari itu, Jakim juga ada merangka beberapa perancangan strategik bagi menghasilkan perkhidmatan yang berkualiti kepada pelanggan.

"Kami sentiasa membuka ruang kepada masyarakat untuk memberikan maklumbalas termasuk aduan jika terdapat apa-apa permasalahan dalam urusan persijilan halal ini..." (Marzita, 2018).

"memang kami ada merangka beberapa perancangan bagi melicinkan lagi urusan proses persijilan halal ini dalam masa yang terdekat mahupun yang akan datang...namun disebabkan beberapa kekangan birokrasi, ia menjadi lambat sedikit..." (Asiah, 2023).

4.3.1 Sistem Muat Naik Dokumen (*My Ingredients*)

Dunia hari ini menyaksikan bagaimana kejayaan sesebuah organisasi perlu seiring dengan perkembangan teknologi semasa. Dalam industri halal di Malaysia sendiri, ia bermula dengan kaedah manual sehinggalah ia bergerak melalui sistem atas talian 'MYeHALAL' dan kini telah mendapat pengiktirafan pelbagai pihak termasuklah industri perusahaan kecil sederhana. Contohnya, sistem ini telah mendapat Anugerah SME Sahabat Negara Award 2013 di atas usaha inovasi yang dijalankan. (Baharudin 2016).

Namun menurut Asiah masih ada lagi kekurangan yang perlu ditambahbaik seperti sistem yang belum boleh menerima dokumen-dokumen yang besar untuk dimuat naik ke portal.

"...Penambahbaikan dari sudut sistem kerana buat masa ini ada kesukaran dari sudut penggunaan sistem contoh perlu muat naik semua dokumen dan lain-lain keperluan tambahan, solusinya jakim telah merancang memperkenalkan my ingredients, masih dalam proses dan akan dilancarkan..." (Asiah, 2023)

Dengan adanya sistem yang efisien dan mesra pengguna diharap dapat mempercepatkan urusan persijilan halal serta memudahkan proses permohonan tanpa perlu menunggu masa yang panjang dalam memuat naik dokumen. Situasi ini juga merupakan salah satu usaha Jakim untuk menangani aduan berkaitan pengurusan yang rumit.

3.2 Yuran Pendaftaran Sijil Halal Online

Merujuk kepada portal e-Halal Jakim yuran yang dikenakan untuk persijilan halal adalah sah untuk tempoh dua (2) tahun. Kelewatan dalam pembayaran akan menjejaskan Halal lawatan pemeriksaan proses yang dijalankan di rumah kilang / premis makanan / penyembelihan. Bayaran yang dikenakan ke atas setiap permohonan. Caj perkhidmatan surat termasuk yang berikut:

Jumlah pembayaran.

Bayaran hendaklah dibuat dalam bentuk wang pos, kiriman wang atau draf bank sahaja atau dibayar kepada Jabatan Kemajuan Islam Malaysia atau Majlis Agama Islam / Jabatan Negeri (yang mana berkenaan). Semua bayaran yang dibuat tidak akan dikembalikan. (Portal Jakim, 2023)

Bagi tujuan penambahbaikan menurut Asiah perlunya yuran pendaftaran pensijilan halal yang dijalankan secara online, bagi memudahkan dan mempercepatkan proses.

"...Membuka yuran pendaftaran pensijilan halal secara Online, selama ni kena hantar dalam bentuk wang pos, perancangan telah lama dibuat namun kekangan birokrasi kerajaan agak melambatkan proses, dengan sistem semakin mudah dan laju dijangka akan dapat mempercepatkan proses permohonan pensijilan halal ini..." (Asiah, 2023)

Kadar caj perkhidmatan adalah berdasarkan kepada kategori yang telah ditetapkan dan tertakluk kepada perubahan:

Industri / Kilang / Kategori Produk:

- Industri kecil

- Industri Kecil dan Sederhana
- Multinasional

Makanan Premis Kategori:

- Restoran
- Hotel

Slaughter House Kategori:

- Bersaiz kecil
- Saiz sederhana
- Bersaiz besar

Semua kos untuk ujian penyelidikan atau makmal mengenai status bahan-bahan produk akan ditanggung sepenuhnya oleh pemohon atau syarikat berkenaan. (Portal Jakim, 2023).

Kadar Fi Persijilan Halal Malaysia

SKIM PERMOHONAN	KATEGORI		KADAR BAYARAN 2 TAHUN (RM)
	JENIS INDUSTRI	NILAI PEROLEHAN	
Produk, Logistik dan Khidmat Pelanggan	Mikro	< RM 300,000.00	200
	Industri Kecil	RM 300,000.00 hingga RM 15 juta	800
	Industri Kecil Sedarhan	RM 15 juta hingga RM 50 juta	1,400
	Multi Nasional	> RM 50 juta	2,000

SKIM PREMIS MAKANAN HOTEL (DAPUR / RESTORAN)	
Katogeri	Kadar Bayaran Bagi Setiap Satu Dapur untuk 2 Tahun

SKIM PREMIS MAKAN (RESTORAN / KATERING / CENTRAL KITCHEN)		
Jenis Industri	Nilai Perolehan	Kadar Bayaran 2 Tahun (RM)
Industri Kecil	< RM 500,000.00	200
Industri Kecil Sedarhana	RM 500,000.00 hingga RM 5 juta	800

SKIM	KATEGORI			
Rumah Sembelihan	Jenis Industri	Jenis Binatang	Produk Keluaran Harian	Kadar Bayaran Setahun (RM)
	Industri Kecil	Ayam	3,000 - 10,000 ekor	100
		Kambing / Biri-biri	1 - 499 kepala	
		Lembu / Kerbau	1 - 49 kepala	
	Industri Kecil Sedarhana	Ayam	500 - 700 ekor	400
		Kambing / Biri-biri	50 - 700 kepala	
		Lembu / Kerbau	50 - 100 kepala	
	Multi Nasional	Ayam	> 10,000 ekor	700
		Kambing / Biri-biri	> 700 kepala	
		Lembu / Kerbau	> 100 kepala	

(Portal E-Halal Jakim, 2023)

Menurut Puan Asiah dengan adanya sistem pembayaran yuran persijilan Halal secara atas talian diharap dapat mempercepatkan urusan persijilan halal serta memudahkan proses permohonan tanpa perlu bergantung dalam satu kaedah iaitu pembayaran bentuk wang pos, kiriman wang atau draf bank sahaja. Seterusnya dapat mengurangkan pengaduan awam dalam proses yang dijalankan. Selain itu, pelarasan yuran ini juga dapat dilaksanakan dengan baik kerana tidak perlunya orang tengah, kerana penggunaan orang tengah menjadikan yuran yang dikenakan mahal dan terdapat aduan terhadap perkara tersebut (Marzita, 2018). Justeru, masalah ini dapat diatasi dengan pelarasan harga yang telah ditetapkan sendiri oleh Jakim.

4.3.3 Pembukaan Lebih Banyak Kaunter-Kaunter

Sepertimana yang termaktub dalam salah satu PP Jakim berkaitan dengan khidmat pelanggan, antaranya ada disebut memastikan urusan di kaunter perkhidmatan pelanggan utama memenuhi kehendak pelanggan dalam tempoh lima (5) minit (Portal JAKIM, 2023). Kaunter juga beroperasi di Bahagian Pengurusan Halal, Jabatan Kemajuan Islam Malaysia, Aras 6 & 7, Blok D, Kompleks Islam Putrajaya, No. 3 Jalan Tun Abdul Razak, Presint 3, 62100 Putrajaya. (Portal JAKIM, 2023).

Adalah menjadi satu keperluan untuk pihak bahagian Halal Jakim untuk menyediakan lebih banyak kaunter-kaunter khususnya untuk menyampaikan info-info utama berkaitan pertanyaan dan panduan permohonan sijil halal, ini kerana buat masa ini kaunter yang disediakan terhad dan tertumpu di aras 6 & 7 bahagian pengurusan halal sahaja, agak menyukarkan pada mereka yang berjauhan dari lokasi dan keterbatasan masa operasi yang ditetapkan. Dengan adanya kaunter-kaunter tambahan atau kaunter bergerak diharapkan dapat menjadi nilai tambah penambahbaikan mutu perkhidmatan yang lebih berkualiti kepada pelanggan. (Norhidayah & Sa'adan 2019)

Selain itu, pembukaan lebih banyak kaunter ini dapat menangani aduan berkenaan halal seperti kekeliruan tentang logo halal, sijil halal dan juga pengesahan halal di mana pertanyaan dapat diajukan secara terus kepada staf Jakim yang berada di kaunter. Kekeliruan masyarakat berkenaan logo halal dan sijil halal adalah apabila terdapat segelintir industri hanya mempamerkan logo halal semata-mata. Bahkan, apabila ditanya tentang sijil halal, mereka (industri) menyatakan bahawa sijil halal tidak diperlukan sekiranya telah memiliki logo halal. Kekeliruan ini menyebabkan masyarakat bertindak mengemukakan aduan:

"Perkara yang sebenarnya adalah memohon persijilan halal dahulu, setelah lulus dan dikeluarkan baru boleh menggunakan logo halal tersebut...saya tidak pasti sama ada peniaga (industri) ini masih tidak faham prosedurnya atau sengaja ingin memperdayakan pengguna..." (Luqman 2018)

4.3.4 Sistem Fast Track

Ia dilakukan melalui program JAKIM yang dinamakan Inisiatif Segera Pensijilan Halal Malaysia (ISPHM) (Laporan Tahunan Jakim, 2017). Pencapaian ini merupakan satu perubahan terhadap amalan pengurusan sijil halal menjadi lebih cepat di JAKIM.

"...proses persijilan halal melalui program ISPHM ini menjadikan pengurusan lebih cepat (Fast Track) di mana urusan lebih dari 30 hari boleh dikurangkan menjadi 2 minggu. 2 minggu boleh bertukar menjadi 3 hari dan 3 hari boleh berubah menjadi 1 hari". (Marzita, 2018)

Menurut Asiah, IPSHM hanya boleh berlaku andai semua proses dan syarat yang dikemukakan oleh Jakim dilaksanakan dengan baik oleh pemohon.

"...antara syarat Fast Track yang perlu dipatuhi contohnya syarat yang kami beri seperti perlunya pekerja yang muslim.... dan banyak lagi lah. Andai semua lengkap, tidak mustahil untuk dapatkan sijil halal itu menjadi cepat dari tempoh yang disediakan..." (Asiah, 2023)

Selain itu, program IPSHM juga adalah sebagai satu inisiatif atau penambahbaikan untuk aduan yang diterima berkaitan dengan pengurusan sijil halal yang lambat dan sukar. Program ini juga sebagai satu usaha penambahbaikan yang dilakukan Jakim bagi meningkatkan lagi perkhidmatan yang lebih berkualiti kepada pelanggan mereka.

4.3.5 Persidangan Bersama Industri

Persidangan bersama industri adalah sangat penting dan diperlukan bagi memastikan industri yang terlibat benar-benar faham dan jelas terutama berkaitan prosedur dan syarat yang telah ditetapkan oleh pihak Jakim. Melalui persidangan yang dijalankan dapat memberi pencerahan dan mempercepatkan proses permohonan apabila industri memahami setiap keperluan. (Baharudin & Nurul Hudani, 2022)

"...Pertanyaan berkaitan industri yang tidak memahami syarat piawaian, perkara ini sangat biasa terjadi pada industri yang baru berkecimpung dalam dunia industri, dalam hal ini agensi-agensi kerajaan akan bekerjasama dengan pihak jakim untuk memberi bimbingan dan pencerahan terutama dalam proses permohonan sijil halal. Pihak agensi kerajaan akan mengumpulkan usahawan-usahawan dan memanggil pihak jakim untuk memberi penerangan, seperti jemputan dalam bentuk klinik, dalam bentuk mengumpulkan semua usahawan dalam satu tempat dan masa yang sama..." (Asiah, 2023)

Persidangan harus dipergiat aktifkan lagi supaya setiap industri jelas akan hala tuju dan piawaian yang telah ditetapkan, Malaysia adalah satu-satunya negara yang mana pengesahan persijilan dilaksanakan oleh kerajaan berbanding dengan negara-negara lain yang kebanyakannya badan sukarela atau separa kerajaan. Oleh itu, dalam meningkatkan kredibiliti Malaysia dalam persijilan halal, rangkaian kerjasama telah dibina dan fokus utama bukan sahaja dalam persijilan tetapi kerjasama secara holistik. Ini memandangkan setiap agensi mempunyai peranan masing-masing dalam pembangunan industri halal yang mampan di Malaysia.

Inisiatif mengadakan persidangan ini juga merupakan kesinambungan daripada pembukaan lebih banyak kaunter yang bertujuan untuk memperbanyakkan lagi saluran info diberikan kepada masyarakat berkenaan halal dan seterusnya mengurangkan aduan berkaitannya.

4.3.6 Training on Halal

Menurut Asiah, Latihan berkaitan halal sedang giat dijalankan khususnya pada industri sederhana dan besar malah menjadi satu kewajipan.

"...Untuk industri sederhana dan besar memang satu kewajipan untuk menghadiri (Kursus Halal), wajib hadir kerana mereka perlu ada halal eksekutif (automatik Halal eksekutif ini akan tahu segala proses, piawaian dan menjelaskan pada industri yang melantiknya) ..." (Asiah, 2023)

"...Bagi industri kecil dan industri mikro agak bermasalah sedikit kerana mereka tidak perlu Halal eksekutif, tetapi apa yang mereka perlu buat ialah menghadiri latihan-latihan dari agensi berkaitan penyeliaan agensi halal. Kini telah banyak universiti-universiti yang turut terlibat dalam memberi Latihan dalam Halal industri, maka telah membuka ruang yang luas pada industri-industri ini untuk dapatkan maklumat..." (Asiah, 2023)

Dengan adanya Latihan-latihan yang disediakan khusus kepada industri sederhana dan besar, ditambah pula dengan penglibatan universiti yang menjadi platform kepada industri kecil telah menjadi satu usaha penambahbaikan yang dilakukan Jakim bagi meningkatkan lagi perkhidmatan yang lebih berkualiti kepada pelanggan mereka dan seterusnya menambahkan lagi pengetahuan tentang halal khususnya kepada industri yang memohon persijilan halal.

4.3.7 Penambahan Staf kakitangan Halal

Penambahan staf kakitangan Halal ini adalah merujuk kepada keperluan sewaktu audit pemeriksaan peringkat awal dan semakan lesen halal, ini kerana kakitangan yang sedia ada agak terhad dan melambatkan proses permohonan.

"...Penjadualan Audit – (Ikut Queue) andai kata permohonan dari Sabah Sarawak, maka akan dikumpulkan dan pihak Jakim akan turun sekali jalan terus. Di semenanjung akan ikut Zon, (Selatan, Timur, Utara) pihak audit akan gerak dalam 20 orang setiap kumpulan sekali jalan. Ini kerana kekurangan staf yang terlibat untuk gerak satu persatu, dan ianya harus dikumpulkan..." (Asiah, 2023)

Menurut Ahmad Hidayat & Zulzaidi (2012) kekurangan kakitangan juga merupakan faktor yang menyebabkan pihak JAKIM dan JAIN tidak dapat menampung permintaan untuk pengeluaran sijil halal di Malaysia. Bagi mengelakkan keadaan ini, badan swasta diperlukan untuk mengurangkan beban JAKIM dan JAIN. Hal ini secara tidak langsung dapat mengembangkan pasaran halal dengan lebih cepat kerana badan persijilan seperti JAKIM, JAIN dan badan swasta dapat memberi galakan, sokongan, motivasi kepada pihak industri dengan cekap dan berkesan. Perkara ini telah diamalkan oleh negara Australia dan China yang mempunyai lebih daripada satu badan pensijilan halal yang diiktiraf oleh JAKIM (JAKIM, 2019).

Untuk makluman JAKIM telah mengiktiraf 71 badan pensijilan halal dunia yang mana badan-badan ini mempunyai garis panduan yang sama dengan JAKIM dalam pengeluaran sijil halal. Jadi adalah wajar bagi pihak JAKIM mengiktiraf pihak swasta sebagai badan pengeluar sijil halal dengan bantuan kerajaan Malaysia bagi memastikan badan swasta tersebut mematuhi pelaksanaan audit halal yang sepatutnya. Hal ini dapat direalisasikan jika pihak yang dilantik itu adalah kompeten di samping wujudnya pemantauan yang berterusan dan konsisten daripada pihak yang dipertanggungjawabkan (Hidayat & Zulzaidi, 2012).

4.0 PENUTUP

Keseluruhan penulisan ini dapat dirumuskan bahawa dalam menguruskan persijilan halal seperti mana yang dijanjikan dalam PP Jakim dapat dikenalpasti beberapa cabaran yang timbul iaitu;

- Faktor Masa dalam Pengurusan Persijilan Halal JAKIM
- Faktor Pemohon Tidak Memahami Bermula Tempoh 30 hari
- Faktor Pemohon Tidak Meneliti atau Memahami Prosedur yang Ditetapkan

Cabaran-cabaran yang dihadapi ini dapat dikenalpasti melalui maklumbalas yang diterima oleh Jakim iaitu maklumbalas Pengaduan Awam (PA). Justeru, tanpa menunggu masa yang lama, Jakim berusaha menanganinya dengan merangka beberapa penambahbaikan dan merangka pelan-pelan strategik bagi meningkatkan lagi mutu perkhidmatan dan seterusnya meningkatkan kepuasan pelanggan serta janji yang diutarakan dalam PP tercapai. Antara penambahbaikan dan pelan-pelan strategik berikut adalah;

- Sistem Muat Naik Dokumen (My Ingredients)
- Yuran Pendaftaran Sijil Halal Online
- Pembukaan Lebih Banyak Kaunter-Kaunter
- Sistem Fast Track
- Persidangan Bersama Industri
- Training on halal
- Penambahan Staf kakitangan Halal

Sebagai sebuah agensi Islam yang tersohor di Malaysia, Jakim sangat memandangkan berat isu halal ini dan sentiasa berusaha dari semasa ke semasa untuk melicinkan cara pengurusan. Bahkan, mengetengahkkan maklumbalas PA adalah sangat penting sebagai *check and balance* atau penanda aras bagi sesebuah organisasi. Khususnya yang membabitkan PP, di mana ia adalah janji yang mesti ditunaikan bagi menghasilkan satu perkhidmatan yang berkualiti dan seterusnya memperolehi kepuasan pelanggan sekaligus mencapai matlamat yang diinginkan.

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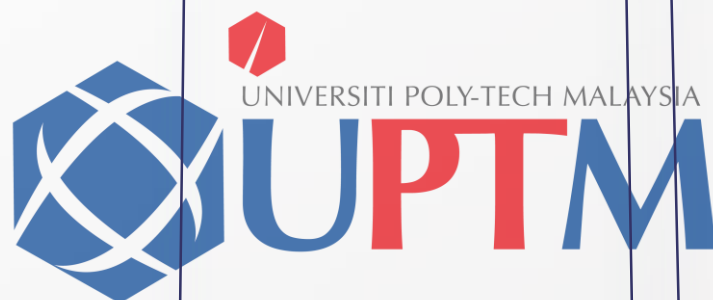
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