



Association of Malaysian
Researchers and Social Services

E-PROCEEDINGS

**8th INTERNATIONAL CONFERENCE ON EDUCATION,
ISLAMIC STUDIES & SOCIAL SCIENCE RESEARCH**

8th ICEISR

15 & 16 September

2024

**Saigon Hotel
Ho Chi Minh City
Vietnam**



Organized by:

**Association of Malaysian Researchers and Social Services
Persatuan Penyelidik & Khidmat Sosial Malaysia**

**8th International Conference on Education, Islamic Studies, Social Science Research (ICEISR 2024)
Association of Malaysian Researchers and Social Services
Persatuan Penyelidik & Khidmat Sosial Malaysia**

Published by:

**Jawatankuasa ICEISR 2024
Association of Malaysian Researchers and Social Services
Persatuan Penyelidik & Khidmat Sosial Malaysia
224 Taman Desa Aman 08880 Guar Chempedak
Kedah Darul Aman.
MALAYSIA**

**Tel : 019-4560666
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POLIKU PARCEL SYSTEM: AN INTELLIGENT APPROACH TO PARCEL SORTING AND DELIVERY.

Noraimi Mahran^{1*},
Jamaah Suud², and
Ahmady Solong³

¹ Department of Information Technology and Communication, Politeknik Kuching Sarawak

² Department of Electrical Engineering, Politeknik Kuching Sarawak

³ Department of Mechanical Engineering, Politeknik Kuching Sarawak

*corresponding author: noraimi@poliku.edu.my

ABSTRACT: Managing parcels in academic settings has become more challenging with the increase in deliveries and the necessity for effective tracking systems. It's important to ensure that students and staff receive their packages quickly and accurately, which helps reduce administrative work and improves overall efficiency. To tackle these issues, the Poliku Parcel System was created at Politeknik Kuching Sarawak. This system offers a comprehensive and easy-to-use platform specifically designed for the unique needs of academic environments. It was developed using Agile methodology, focusing on iterative and user-centered design. The process involved several phases, including planning, design, development, testing, deployment, review, and launch. Initially, student interviews were conducted to gather requirements, which informed the design phase where wireframes and prototypes were developed with user input. The development phase utilized tools like Visual Studio Code, along with VR and AR technologies. Rigorous testing was conducted to identify and resolve issues, and the deployment phase allowed for the immediate release of new features. Continuous improvement was ensured through regular user feedback during the review phase. The system provides several key benefits which are users can easily track their parcels through a user-friendly homepage, reducing the time spent on inquiries and increasing satisfaction. Staff members experience streamlined operations with features like the Total Parcel Calculation Dashboard and dynamic status updates, minimizing manual errors. Enhanced security measures for parcel pickups help reduce theft risks. Administrators can efficiently manage parcel operations using comprehensive metrics and staff management tools, improving communication and engagement. The implementation of the Poliku Parcel System represents a significant advancement in campus logistics, providing practical solutions to streamline parcel management and improve the user experience. This project highlights notable improvements in operational efficiency and user satisfaction, setting a standard for future innovations in educational logistics.

Keywords: Parcel management, Academic Settings, Agile Methodology, Tracking Systems, Operational Efficiency

1. Introduction

Managing parcels in academic institutions has become increasingly challenging due to the rising number of deliveries and the necessity for efficient tracking and handling systems. Effective parcel management is vital to ensure that students and staff receive their packages on time and without errors, which helps reduce administrative burdens and enhance overall operational efficiency (Abualrejal, H. M., 2022).

Poliku Parcel System was developed to address these challenges by offering a comprehensive and user-friendly platform for managing parcel deliveries at Politeknik Kuching Sarawak. This system is particularly significant in the context of modern educational institutions, where the timely and accurate delivery of parcels is essential for maintaining smooth daily operations (Smiota, 2024). Despite the importance of parcel management, there is a notable lack of integrated systems tailored to the unique needs of academic environments, revealing a significant gap in existing research and practice (Ma, B., 2022).

Previous studies have explored various aspects of parcel management and logistics, emphasizing the need for automation and efficient tracking mechanisms. Research has demonstrated that integrating technology into parcel systems can significantly improve accuracy and reduce manual workloads. However, these studies often focus on commercial or industrial applications, with limited attention to the specific requirements of academic institutions (Udoh, D. E, 2024). This study aims to bridge that gap by developing a tailored parcel management system that caters specifically to the unique environment of Politeknik Kuching Sarawak.

The primary objective of this research is to design and implement a parcel management system that enhances the efficiency and reliability of parcel handling within the institution. Specific goals include reducing parcel processing time, improving tracking accuracy, and increasing user satisfaction among students and staff. By achieving these objectives, the Poliku Parcel System aims to provide a model that can be adopted by other educational institutions facing similar challenges.

The rest of the paper is divided into four parts after this introduction. In Section 2, the literature review is presented examines existing research on parcel management systems and identifies gaps. In Section 3, the methodology section details the system block diagram and system design. Results and discussion of the design system are presented in Section 4. Lastly, the conclusion is outlined in Section 5.

2. Literature Review

With the growing trend of online shopping, managing parcel deliveries at academic institutions has become crucial. Effective parcel management systems not only streamline operations but also improve the user experience for students, staff, and administrative personnel. This review examines the current landscape of parcel management systems, specifically focusing on J&T Express, Parcelhub, and Pos Malaysia. It discusses their features, methodologies, and innovations, and identifies gaps in the existing literature, suggesting future research areas for developing an optimized parcel management system for Politeknik Kuching Sarawak (Poliku).

J&T Express is a delivery service that uses advanced e-technology to support e-commerce. Their motto, "Express Your Online Business," highlights their focus on integrating technology into parcel delivery. Key features include real-time tracking, instant status updates, and a modern, user-friendly interface, all aimed at boosting operational efficiency and customer satisfaction (J&T Express, 2023).

Established in 2019, Parcelhub offers a wide range of courier and fulfillment services, both domestically and internationally. Their system emphasizes a one-stop service model and includes strong security measures like password resets via registered emails and temporary passwords sent by administrators. The user interface is intuitive and easy to navigate, with features like instant email notifications, making it a strong candidate for reference in developing Poliku's parcel management system (Parcelhub, 2023).

Pos Malaysia has evolved from a traditional postal service into a multifaceted company offering a range of services, including mail, parcels, financial services, and supply chain solutions. The system features a more traditional but functional user interface, providing comprehensive information through a menu bar. Security features include password resets through registered IDs and security questions, with notifications available via app and SMS. Although its system might not be as modern as J&T Express or Parcelhub, it offers a broad service range (Pos Malaysia, 2023).

The comparative analysis of J&T Express, Parcelhub, and Pos Malaysia reveals several key features important for developing the Poliku Parcel System. J&T Express uses phone numbers for password resets, while Parcelhub and Pos Malaysia use email and identification numbers, respectively. Parcelhub's temporary password system via

email is particularly user-friendly and robust. J&T Express and Parcelhub feature modern, user-friendly interfaces, whereas Pos Malaysia's interface is more traditional and information dense. Efficient navigation and timely notifications are critical, with J&T Express providing instant updates, Parcelhub using email, and Pos Malaysia offering notifications via app and SMS. Although all three offer real-time tracking, Pos Malaysia may experience delays in updates. Overall, Parcelhub stands out as the most suitable model for Poliku, offering a blend of strong security, user-friendly design, efficient navigation, and timely notifications.

This analysis highlights the importance of incorporating modern technology, user-focused design, and efficient operational features in parcel management systems. Parcelhub, with its comprehensive and user-friendly approach, is recommended as the best model for the Poliku Parcel System. Future research should focus on integrating these features into a customized solution for Poliku, addressing any identified gaps, and enhancing the overall efficiency and user experience of parcel management on campus.

3. Methodology

3.1 Block Diagram

The development and implementation of the Poliku Parcel System utilized an Agile framework, which emphasized an iterative and user-focused design throughout. The details of this process are illustrated in Figure 1.

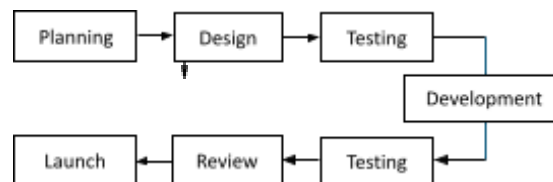


Figure 1: Block Diagram representing the Methodology for the Poliku Parcel System

The Poliku Parcel System project is divided into several key phases. In the Planning Phase, we conduct a thorough analysis to fully understand and plan out the parcel system. This involves interviewing students to gather insights about their needs and preferences, which form the basis for developing the platform.

In the Design Phase, we use an iterative approach, focusing on user needs. This includes creating wireframes and prototypes with tools like Canva and incorporating user feedback to continually improve the design.

The Development Phase centers on incrementally building the system, feature by feature, utilizing advanced tools such as Visual Studio Code, VR, and AR technologies. We emphasize teamwork and Agile principles to ensure a smooth development process.

During the Testing Phase, we implement a detailed testing strategy to quickly identify and fix issues. This includes addressing problems as they arise and using user feedback to make further improvements.

In the Deployment Phase, new features are rolled out as soon as they are ready, allowing users to immediately benefit from updates. Users receive timely notifications about parcel status, supporting ongoing enhancements.

The Review Phase involves regularly assessing the project's progress and seeking user feedback to guide further improvements. This iterative process ensures the platform continues to evolve based on user input.

Finally, the Launch Phase focuses on delivering a responsive and user-friendly experience. This includes easy navigation, personalized forms, and real-time notifications to make parcel management efficient and intuitive.

3.2 System Design of Poliku Parcel System

The Poliku Parcel System is carefully designed to streamline and automate parcel management within an organization. It caters to three main user groups: Users, Staff, and Admins, each with tailored functionalities to support efficient parcel handling, tracking, and reporting.

3.2.1 User Interactions

For general users, the system offers an intuitive homepage with various features. Users can check their parcel status, submit inquiries, create support tickets for any issues, and access organizational information, including contact details. This user-friendly interface ensures that users have all the necessary tools to manage their parcels effectively.

3.2.2 Staff Interactions

Staff members log in securely and have the option to reset their passwords. Once logged in, they access a dedicated dashboard with options to view the total number of parcels, those picked up, and their current status. They can also add new parcels, review recent additions and deliveries, and search for specific parcels. The system also allows staff to change their passwords and log out securely.

3.2.3 Admin Interactions

Admins access a more advanced dashboard after logging in. This interface includes features such as viewing total parcels and pickups, listing and adding staff members, managing staff details and permissions, and generating various reports. Admins can also view detailed parcel information, handle user inquiries, and log out securely.

3.2.4 Flowchart Breakdown

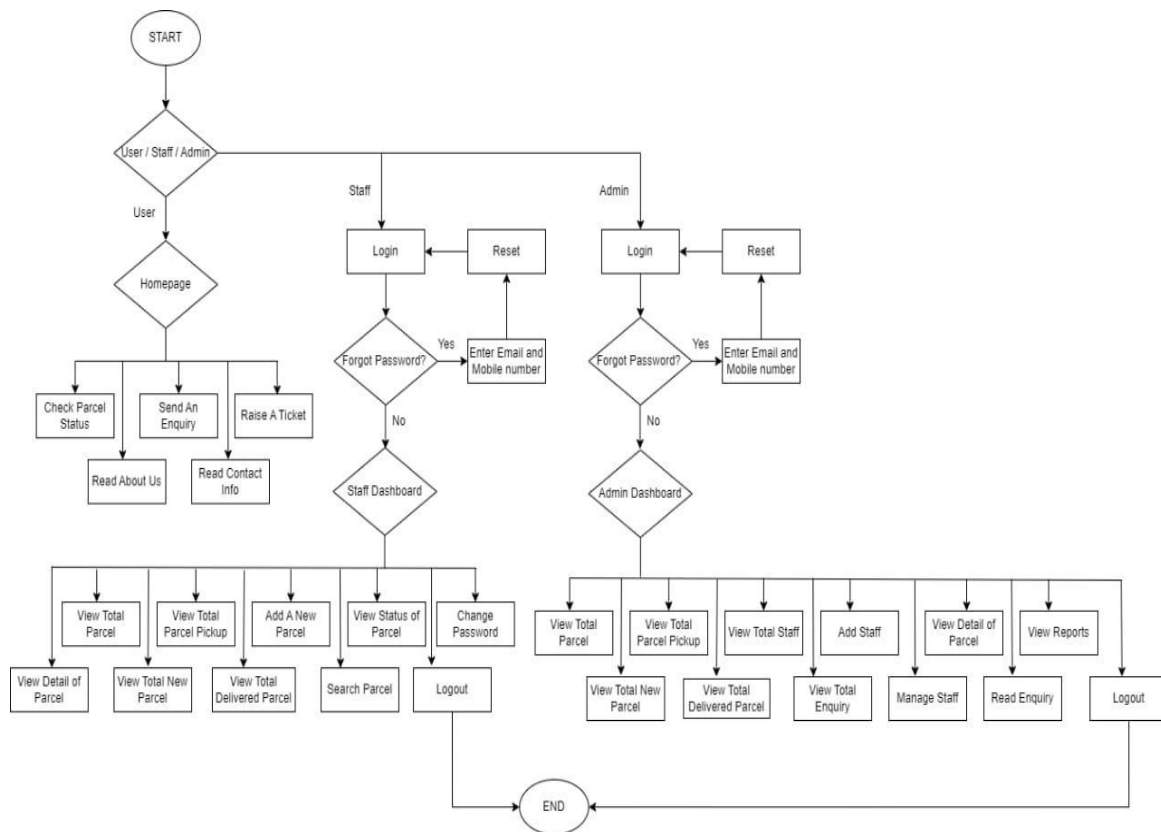


Figure 2: System Design of the Poliku Parcel System

The flowchart outlines the interactions and pathways for each user type. It starts from a common entry point for all users. The user path directs to the homepage with options for checking parcel status, submitting inquiries, and raising tickets. The staff path includes login/reset options leading to a staff dashboard with parcel management functions. The admin path also involves login/reset options, leading to a comprehensive admin dashboard with additional staff management and reporting features.

3.2.5 System Architecture

The architecture of the Poliku Parcel System is designed for easy navigation for all user types. It features secure login and password reset processes for staff and admins, and separate dashboards to meet their specific needs. This setup includes functionalities for adding, updating, and viewing parcel details, along with robust reporting tools for admins. Additionally, the system supports user inquiries and ticketing to address support needs promptly.

The Poliku Parcel System aims to deliver a smooth and effective experience for users, staff, and admins by automating parcel tracking and management, significantly improving operational efficiency and user satisfaction. The structured approach ensures all user types have access to essential tools and information, enhancing parcel management and tracking.

4.0 Results and Discussion

4.1 Homepages/User Interface

The interface of the Poliku Parcel System is designed to facilitate efficient parcel tracking and management for users. Key components and their functionalities include Homepage, About Us Section, and Contact Form.

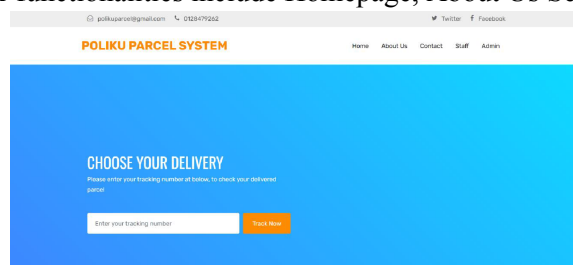


Figure 4.1: User Enter Their Parcel Tracking Number

Homepage: Users can enter their parcel tracking number in the provided textbox as shown in Figure 4.1. The "Track" button click to view the status of their parcel, including delivery or pickup updates as view in Figure 4.2. This feature directly addresses the primary issue by offering an efficient tracking solution.

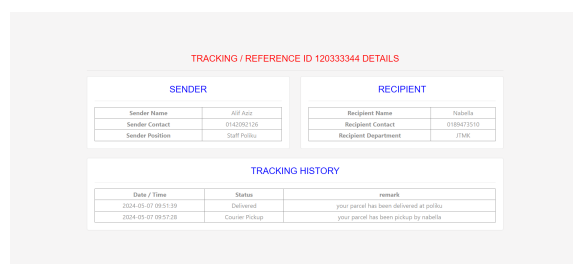


Figure 4.2: Parcel Information

About Us Section: This part offers an overview of the Poliku Parcel System, detailing its purpose and functionalities, along with an image relevant to the "About Us" content as depicted in Figure 4.3.

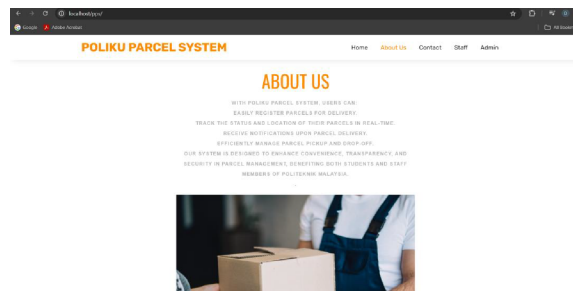


Figure 4.3: About Us Section

Contact Form: Users can contact the system administrators by filling in their details in a form shown in Figure 4.4 and clicking the "Send Message" button, facilitating seamless issue reporting and assistance requests.

Figure 4.4: Contact Form

4.2 Staff Dashboard

The Staff Dashboard is crucial for effective parcel data management. Key components and their functionalities include Login Forms, Total Parcel Calculation Dashboard, Data Entry for New Parcels, Status Updates, Parcel Pickup Process, and Tracking and History.

Login Forms: Staff login forms as shown Figure 4.5 require registered email addresses and passwords for access. Staff who forget their passwords can reset them via the "Forgot your password?" link, ensuring secure recovery. The login page also includes a "Homepage" link for easy navigation back to the main site.

Figure 4.5: Staff Login Form

Total Parcel Calculation Dashboard: This tool allows staff to calculate the total number of new, delivered, and picked-up parcels, ensuring precise record-keeping and instant feedback on parcel statuses as shown in Figure 4.6.

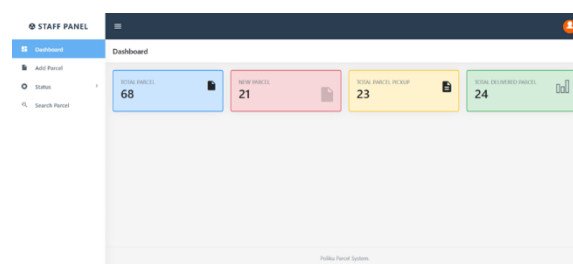


Figure 4.6: Total Parcel Calculation Dashboard

Data Entry for New Parcels: Staff members can enter details for new parcels, including tracking numbers, and sender and recipient information, which is then displayed in the "New Parcel" section for review and updates as shown in Figure 4.7.

Figure 4.7: Data Entry for New Parcels

Status Updates: Staff can update parcel statuses by marking them as "delivered" and add remarks to inform users about the delivery status. Figure 4.7 illustrates this functionality. Additionally, Figure 4.8 shows the status update for a "New Parcel," Figure 4.9 displays the "Delivered" status, Figure 4.10 highlights the "Parcel Pickup" status, and Figure 4.11 provides a detailed view of the parcel information. These updates help ensure users are well-informed about the current status and any relevant details of their parcels.

S.NO	Tracking Number	Sender Name	Recipient Name	Status	Courier Date	Action
1	2139542481	Aff Aziz	Jessie	New	2024-05-07 13:08:14	View Details Update
2	204575487	Catherine	Bella	New	2024-05-07 19:32:38	View Details Update
3	214878987	Diliana	Vincent	New	2024-05-07 19:14:38	View Details Update
4	111242888	Diliana	Brandon	New	2024-05-07 19:15:02	View Details Update
5	167634323	Catherine	Fiona	New	2024-05-07 19:33:07	View Details Update
6	167634324	Catherine	Rory	New	2024-05-07 19:33:30	View Details Update
7	871042345	Aff Aziz	Marglene	New	2024-05-07 19:37:29	View Details Update
8	454217185	Diliana	Philip	New	2024-05-07 19:39:12	View Details Update

Figure 4.8: Parcel Status Updates: New Parcel

S.NO	Tracking Number	Sender Name	Recipient Name	Status	Courier Date	Action
1	786548833	Diliana	Mayra Liana	Delivered	2024-05-07 19:47:23	View Details Update
2	891048888	Diliana	Rina	Delivered	2024-05-07 19:15:52	View Details Update
3	891048876	Catherine	moni	Delivered	2024-05-07 19:14:48	View Details Update
4	910433322	Aff Aziz	Luna	Delivered	2024-05-07 19:19:29	View Details Update
5	175443388	Diliana	Phil	Delivered	2024-05-07 12:21:11	View Details Update
6	890847343	Diliana	Joshua	Delivered	2024-05-07 12:39:05	View Details Update
7	443201118	Aff Aziz	Kenneth	Delivered	2024-05-07 12:41:29	View Details Update
8	444333483	Diliana	Nargamini	Delivered	2024-05-07 12:41:28	View Details Update

Figure 4.9: Parcel Status Updates: Delivered

S.NO	Tracking Number	Sender Name	Recipient Name	Status	Courier Date	Action
1	510111344	Aff Aziz	Nabeela	Picked Up	2024-05-07 19:19:47	View Details Update
2	461433888	Diliana	Aruna	Picked Up	2024-05-07 19:36:19	View Details Update
3	175443388	Catherine	Dilana	Picked Up	2024-05-07 19:36:48	View Details Update
4	167634323	Diliana	Nader	Picked Up	2024-05-07 19:37:15	View Details Update
5	123456789	Catherine	maji	Picked Up	2024-05-07 19:37:40	View Details Update
6	167634323	Catherine	spike	Picked Up	2024-05-07 19:38:15	View Details Update
7	123456789	Diliana	Watson	Picked Up	2024-05-07 19:39:00	View Details Update
8	888888888	Aff Aziz	rahman	Picked Up	2024-05-07 19:40:14	View Details Update

Figure 4.10: Parcel Status Updates: Parcel Pickup

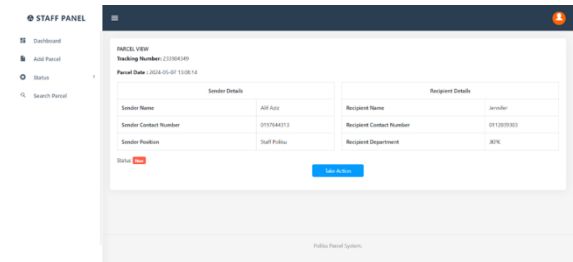


Figure 4.11: Detail View of the Parcel Information

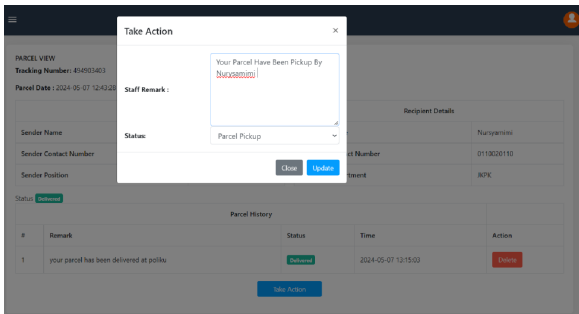


Figure 4.12: Staff member remark parcel recipient collection confirmation

Parcel Pickup Process: When a user intends to pick up a parcel, the staff member can update the status to "parcel pickup" and add a confirmation remark to ensure secure and verified collection as illustrated in Figure 4.12.

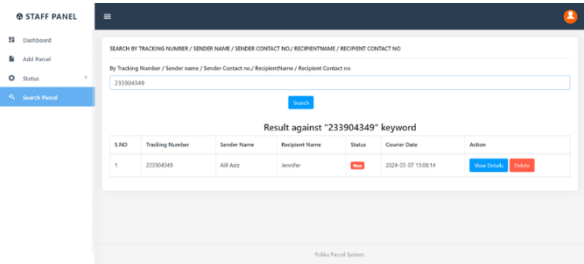


Figure 4.13: Staff Search Parcel

Tracking and History: Users can check detailed parcel information, including sender and recipient details, and tracking history, ensuring transparency and efficient tracking of the parcel journey as displayed in Figure 4.13.

4.3 Admin Dashboard

The Admin Dashboard provides comprehensive tools for overseeing parcel management. Key components and their functionalities include Login Forms, Metrics Tracking, Staff Management, Parcel Details Access, Content Management, and Enquiry Section.

Login Forms: Admin login forms, as shown in Figure 4.14, require registered email addresses and passwords for access. Admin who forget their passwords can reset them via the "Forgot your password?" link, ensuring secure recovery. The login page also includes a "Homepage" link for easy navigation back to the main site.

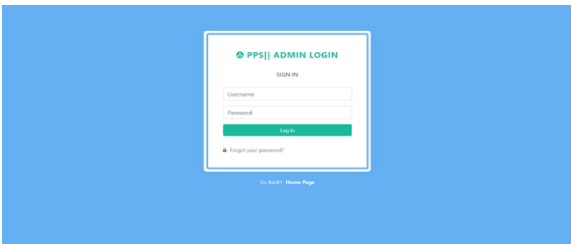


Figure 4.14: Admin Login Form

Metrics Tracking: The dashboard tracks key metrics, including the total number of new parcels, delivered parcels, pickups, staff members, and user inquiries, offering administrators valuable insights to optimize operations provides in Figure 4.15.

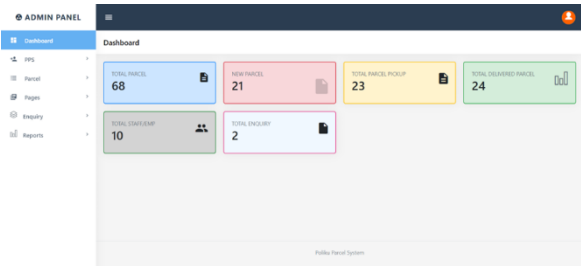


Figure 4.15: Admin Metrics Tracking

Staff Management: Administrators can register new staff, edit existing staff details, deactivate or delete staff accounts, ensuring accurate staff records and efficient communication. Figures 4.16 and 4.17 illustrate these operations, with Figure 4.16 focusing on specific staff management tasks and Figure 4.17 providing an overview of the entire staff management process.

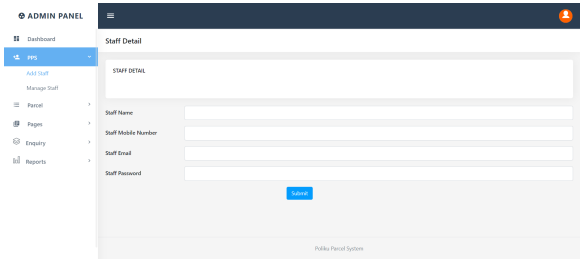


Figure 4.16: Staff Management Operations

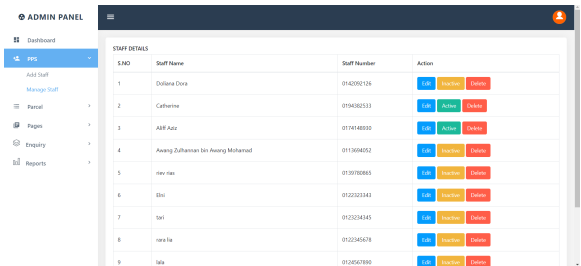


Figure 4.17: Staff Management Operations Overview

Parcel Details Access: Administrators have access to crucial parcel-related details, enabling them to monitor new parcels, deliveries, and scheduled pickups effectively. Figures 4.18, 4.19, and 4.20 illustrate these processes: Figure 4.18 shows the status of new parcels, Figure 4.19 depicts the status of delivered parcels, and Figure 4.20 focuses on the status of parcels scheduled for pickup.

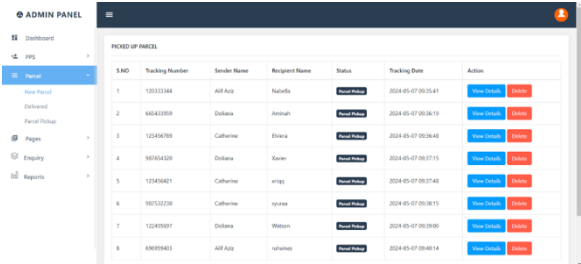


Figure 4.18: Admin Check Status: New Parcel

S.NO	Tracking Number	Sender Name	Recipient Name	Status	Tracking Date	Action
1	123456789	Ali Ali	Nabila	Parcel Delivered	2024-05-07 08:54:41	View Details Delete
2	987654321	Dilana	Amal	Parcel Delivered	2024-05-07 08:56:19	View Details Delete
3	123456789	Catherine	Elena	Parcel Delivered	2024-05-07 08:56:40	View Details Delete
4	987654321	Dilana	Saeed	Parcel Delivered	2024-05-07 08:57:15	View Details Delete
5	123456789	Catherine	Amal	Parcel Delivered	2024-05-07 08:57:40	View Details Delete
6	987654321	Catherine	Elena	Parcel Delivered	2024-05-07 08:58:15	View Details Delete
7	123456789	Dilana	Waleed	Parcel Delivered	2024-05-07 08:58:40	View Details Delete
8	987654321	Ali Ali	Nabila	Parcel Delivered	2024-05-07 08:58:14	View Details Delete

Figure 4.19: Admin Check Status: Delivered Parcel

S.NO	Tracking Number	Sender Name	Recipient Name	Status	Tracking Date	Action
1	123456789	Ali Ali	Nabila	Parcel Pickup	2024-05-07 08:58:14	View Details Delete
2	987654321	Dilana	Amal	Parcel Pickup	2024-05-07 08:58:40	View Details Delete
3	123456789	Catherine	Elena	Parcel Pickup	2024-05-07 08:59:15	View Details Delete
4	987654321	Dilana	Saeed	Parcel Pickup	2024-05-07 08:59:40	View Details Delete
5	123456789	Catherine	Amal	Parcel Pickup	2024-05-07 09:00:15	View Details Delete
6	987654321	Catherine	Elena	Parcel Pickup	2024-05-07 09:00:40	View Details Delete
7	123456789	Dilana	Waleed	Parcel Pickup	2024-05-07 09:01:15	View Details Delete
8	987654321	Ali Ali	Nabila	Parcel Pickup	2024-05-07 09:01:40	View Details Delete

Figure 4.20: Admin Check Status: Parcel Pickup

Content Management: Administrators can update the delete function action, the "About Us" and "Contact Us" pages, ensuring that all public-facing content is accurate and up to date. Figures 4.21, 4.22, and 4.23 provide a visual representation of these administrative functions: Figure 4.21 shows the delete functionality for admin parcel actions, while Figures 4.22 and 4.23 illustrate the processes involved in managing the "About Us" and "Contact Us" pages, respectively.

#	Remark	Status	Time	Action
1	your parcel has been delivered at pickup	Delivered	2024-05-07 08:57:19	Delete
2	your parcel has been pickup by nabila	Parcel Pickup	2024-05-07 08:57:08	Delete

Figure 4.21: Admin Parcel Actions - Delete Functionality

#	Page Title	Page Description	Status	Time	Action
1	About Us	With the help of this system, you can easily manage your page content. Track the status and location of your parcels in real-time. Receive notifications upon parcel delivery. Efficiently manage your pickup and drop-off. Our system is designed to enhance convenience, transparency, and security in parcel management, benefiting both students and staff members of Palestine University.	Active	2024-05-07 08:57:19	Delete

Figure 4.22: Admin Content Management-About Us

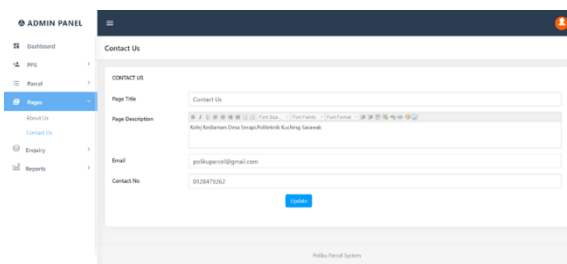


Figure 4.23: Admin Content Management-Contact Us

Enquiry Section: Administrators can access and review user messages in the Enquiry section, categorized into "Unread" and "Read" inquiries, ensuring timely and efficient responses to user concerns. Figure 4.24 illustrates the layout of the Enquiry Section, while Figure 4.25 provides a detailed view of the Enquiry interface, highlighting how messages are managed and reviewed by the administrators to maintain effective communication with users.

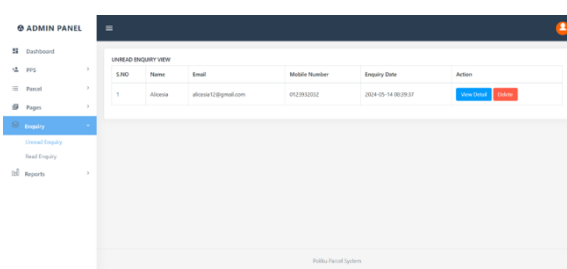


Figure 4.24: Enquiry Section

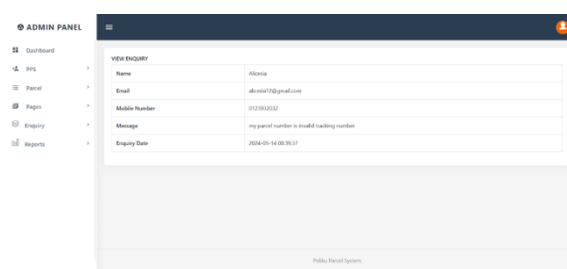


Figure 4.25: Enquiry View

The Poliku Parcel System at Politeknik Kuching Sarawak (Poliku) has greatly enhanced how parcels are managed on campus, making the process more efficient and transparent. This system, designed with users in mind, offers several notable improvements. For instance, its easy-to-navigate interface allows users to track their parcels by simply entering tracking numbers on the main page, which speeds up the process and boosts user satisfaction. Additionally, the system's Total Parcel Calculation Dashboard simplifies staff tasks by maintaining accurate records and reducing errors with real-time updates on parcel statuses. Enhanced security features, such as improved verification for parcel pickups, have also helped reduce theft risks and ensure that only authorized individuals receive their parcels (REVANTH, S., 2021).. Furthermore, the admin dashboard provides detailed metrics and management tools that help administrators efficiently handle parcel operations, update content, and respond to inquiries, thus improving overall communication and user engagement (EGBE, A., 2022).

The Poliku Parcel System has tackled the main challenges of managing parcels at Politeknik Kuching Sarawak (Poliku) through its thoughtfully designed and feature-rich platform. A few key aspects contribute to its success. The system's development was guided by Agile principles, which meant it could be continuously refined based on user feedback. This iterative approach led to a highly efficient and user-friendly platform that adapts to users' needs over time (Othman, N. A. et al., 2021). Security is another strong point, with features like secure logins, password resets, and verification processes for parcel pickups enhancing both safety and system integrity. These measures ensure that only authorized individuals can access the system and handle parcels securely (THETU, E. L., 2021). Additionally, the system has improved transparency by providing detailed tracking histories and

comprehensive parcel information, which keeps users well-informed about their shipments. The inclusion of a contact form and inquiry section also ensures smooth communication between users and administrators, enabling quick resolution of issues (Pennekamp, J., 2023). Moreover, by automating tasks such as calculations and status updates, the system has lightened the manual workload for staff, allowing them to focus on more critical responsibilities and boosting overall efficiency (Yeoh, S. Y., 2023). Overall, the Poliku Parcel System has made parcel management at Poliku more secure, transparent, and user-friendly. Ongoing feedback and development will continue to enhance its effectiveness and user satisfaction.

The introduction of the Poliku Parcel System has greatly enhanced both the efficiency of handling parcels and overall user satisfaction. Notable improvements include shorter wait times for parcel pickups, better tracking through real-time notifications, and a more intuitive interface that has simplified administrative tasks (Ivanets, I., 2022). These benefits highlight the system's potential impact on broader campus logistics and administrative functions. By streamlining parcel management, Poliku is better positioned to allocate resources efficiently and boost operational effectiveness. Additionally, similar systems could be valuable in other educational or corporate environments, offering improved logistical processes and user experiences (Lagorio, A., 2022). However, the system does rely on a stable internet connection for its real-time features and requires regular updates to stay functional, which could affect its reliability and increase reliance on digital infrastructure.

5.0 Conclusion

This study aimed to create and implement a highly effective parcel management system called the Poliku Parcel System at Politeknik Kuching Sarawak (Poliku). Since its introduction, the system has markedly enhanced parcel handling efficiency and user satisfaction. Notable improvements include shorter wait times for parcel pickups, better tracking with real-time notifications, and a more intuitive interface that has streamlined administrative tasks. These advancements have broader implications for managing campus logistics and administrative operations. By refining parcel management processes, Poliku has been able to allocate resources more efficiently and boost overall operational effectiveness. Additionally, similar systems could be beneficial in other educational institutions or corporate environments, enhancing logistical workflows and user experiences. However, the system's reliance on stable internet connections for real-time updates and the need for regular updates pose limitations that could affect its reliability and users' dependence on digital infrastructure. Future research might explore using predictive analytics for forecasting parcel volumes in educational settings and integrating the Poliku Parcel System with wider campus management systems. Studying user adoption trends and preferences could also help further refine the system's design and functionality. Overall, the development and rollout of the Poliku Parcel System represent a significant step forward in campus logistics, providing practical solutions that improve operational efficiency and user satisfaction, and paving the way for future innovations in educational logistics.

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REKABENTUK DAN PEMBANGUNAN PENJANA HIDRO MUDAH ALIH MINI (MP-HYGEN)

Misida Binti Senon ^{1*}
Mohamad Bin Tarmizy Ahmad ¹,
Kamarul Ariffin Bin Abd. Rashid²

^{1,2,3} Jabatan Kejuruteraan Elektrik, Politeknik Seberang Perai, Pulau Pinang, Malaysia

*email : misida@psp.edu.my, tamizy@psp.edu.my, qmrzan@gmail.com

Abstrak:

Penjana hidro mudah alih mini (MP-HyGen) merupakan sebuah penjana hidro berskala kecil yang direka untuk memanfaatkan tenaga air yang mengalir seperti air sungai atau air terjun untuk menjana elektrik dalam skala kecil. MP-HyGen menawarkan sumber tenaga boleh diperbaharui yang sesuai untuk digunakan di lokasi terpencil, di mana infrastruktur bekalan elektrik tidak tersedia. Fasa pembangunan MP-HyGen adalah berdasarkan model rekabentuk ADDIE iaitu analisa, rekabentuk, pembangunan, pelaksanaan dan penilaian. Pembangunan MP-HyGen memfokuskan kepada rekaan komponen utama iaitu turbin dan rekabentuk keseluruhan dengan konsep mudah alih. Apabila MP-HyGen ini diletakkan di dalam sumber air yang mengalir, tenaga kinetik air yang bergerak ditukarkan kepada tenaga mekanikal oleh turbin dan kemudiannya ditukarkan kepada tenaga elektrik oleh generator, akhirnya menghasilkan tenaga elektrik yang boleh digunakan untuk mengecas bateri telefon bimbit atau menghidupkan lampu. Berdasarkan beberapa ujian yang dijalankan MP-HyGen berjaya menghasilkan tenaga elektrik sekitar 7-9V. Kesimpulannya MP-HyGen sesuai digunakan untuk keperluan kuasa sementara seperti aktiviti rekreasi di kawasan terpencil kerana ia mudah di bawa dan dipasang dan tidak memberi kesan terhadap pencemaran alam sekitar. MP-HyGen juga sesuai dijadikan model pembelajaran bagi mata pelajaran Sains Tingkatan 4 di bawah Topic Tenaga dan Kuasa.

Kata kunci: MP-HyGen, penjana hidro mudah alih, turbin.

1.0 Pengenalan

Aktiviti luar seperti perkhemahan, penyelidikan, pendakian gunung, pelancongan di kawasan pendalaman kadangkala mengambil masa beberapa hari. Dalam situasi kecemasan, sumber kuasa tambahan diperlukan untuk mengecas bateri peralatan pencahayaan, peralatan komunikasi, dan peralatan elektronik lain. Power bank sebagai sumber kuasa tambahan mempunyai kapasiti terhad dan tidak mencukupi untuk memenuhi keperluan kuasa dalam tempoh masa yang panjang. Oleh itu, sistem penjana kuasa mudah alih diperlukan untuk menghasilkan elektrik menggunakan sumber semula jadi seperti air mengalir, solar atau angin.

Pembangunan penjana kuasa hidro mudah alih merupakan salah satu inovasi yang berpotensi menggalakkan penggunaan sumber asli dengan lebih cekap. Ini kerana ia boleh dibangunkan oleh masyarakat tempatan dan memanfaatkan tenaga air di kawasan berdekatan seperti sungai dan saluran pengairan [1]. Kadar Aliran air akan mempengaruhi kelajuan turbin, aliran air yang lebih besar dapat menghasilkan lebih banyak tenaga, tetapi bergantung kepada reka bentuk turbin [2]. Apabila terdapat variasi dalam kelajuan turbin, voltan yang dihasilkan oleh penjana juga akan berubah. Oleh itu, diperlukan peralatan kawalan untuk memastikan voltan yang dihasilkan adalah stabil dan sesuai untuk digunakan oleh peralatan elektrik [3]. Turbin memanfaatkan tenaga air dengan menukarkan tenaga keupayaan air, yang dihasilkan oleh perbezaan ketinggian atau tekanan air, kepada tenaga kinetik. Tenaga kinetik ini kemudian ditukar menjadi tenaga mekanikal melalui putaran bilah turbin. Tenaga mekanikal tersebut seterusnya dipindahkan ke penjana elektrik, yang menukarkannya menjadi tenaga elektrik [4].

2.0 Tinjauan Literatur

Penerangan Ulasan Kajian Lepas

Beberapa kajian berkaitan penjana mudah alih telah dijalankan. Sudhakar dan Saxena menjalankan penyelidikan ke atas penjana mudah alih menggunakan tenaga angin berkelajuan rendah [5]. Saikumar et al membangunkan penjana angin mudah alih yang digunakan untuk mengecas peralatan elektronik [6]. Singh melaksanakan penjana angin untuk menjana elektrik dalam sistem pengecasan bateri kenderaan beroda dua 12V [7].

Tenaga hidroelektrik sering dianggap sebagai sumber tenaga yang paling berpatutan kerana ia merupakan sumber tenaga yang mesra alam dan mempunyai kecekapan penukaran yang baik di antara semua sumber tenaga yang dikenali [8]. Rekabentuk turbin hidro mudah alih biasanya bergantung pada keperluan spesifik seperti kadar aliran air, ketinggian jatuh air (*head*), dan kecekapan yang diinginkan. Reka bentuk turbin dan bilah dengan pelbagai corak menentukan kuasa turbin hidro mini untuk menghasilkan tenaga daripada kadar aliran air yang berbeza dan menghasilkan lebih banyak tenaga elektrik. Bilah turbin spiral adalah reka bentuk baru yang membolehkan pemindahan tenaga kinetik daripada aliran air dengan lebih cekap [9].

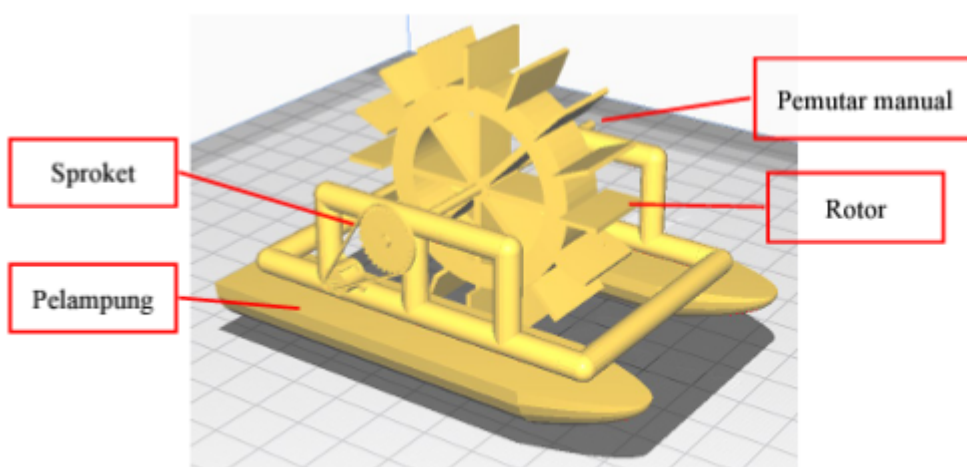
Dalam kajian ini, sistem penjanaan kuasa mudah alih mini direka untuk mengecas bateri peralatan elektronik. Prototaip direka dengan saiz yang kecil dan mudah alih, jadi ia sesuai untuk aktiviti perkelahan atau aktiviti luar yang memerlukan sumber kuasa semasa berada jauh di kawasan pendalaman.

3.0 Metodologi

Perancangan yang sistematik dan teliti diambil kira dalam proses merekabentuk MP-HyGen, supaya produk yang dihasilkan dapat berfungsi dengan baik. Model ADDIE digunakan dalam proses mereka bentuk dan membina MP-HyGen. ADDIE adalah singkatan bagi *Analysis* (analisis), *Design* (reka bentuk), *Development* (pembangunan), *Implementation* (pelaksanaan), dan *Evaluation* (penilaian) [10].

Tujuan kajian ini adalah untuk membangunkan penjana hidro mudah alih mini (MP-HyGen) yang dapat memenuhi keperluan tenaga elektrik semasa aktiviti luar. Sistem penjana kuasa mudah alih terdiri daripada turbin, generator kecil, sproket, pelampung dan pengecas bateri. Analisa dilakukan terhadap motor stepper bagi melihat kesesuaian untuk digunakan sebagai generator. Analisa rekabentuk turbin juga dijalankan untuk memilih konsep rekabentuk yang ringan, mudah alih dan berfungsi dengan baik.

Peringkat pertama merekabentuk lakaran sistem penjana kuasa mudah alih (MP-HyGen) perisian opensCAD. Peringkat kedua adalah merekabentuk komponen-komponen utama seperti rotor, pelampung, sproket, dan pemutar manual.



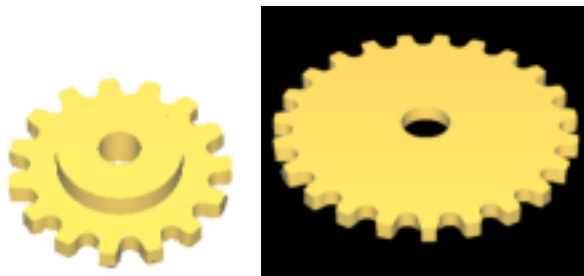
Rajah 1: Membuat lakaran MP-HyGen menggunakan perisian opensCAD

Proses seterusnya membuat bilah rotor yang akan memutar motor stepper, diperbuat daripada kepingan paip pvc 4 inci, dengan cara memanaskan paip di atas api supaya rata. Lakaran dibuat di atas permukaan paip pvc yang telah rata dan kemudian dipotong mengikut ukuran yang telah dibuat.



Rajah 2: Merekabentuk bilah rotor

Rajah di bawah menunjukkan proses merekabentuk sproket. Lakaran dibuat menggunakan perisian opensCAD dan rekabentuk sproket dihasilkan menggunakan pencetak 3D.



Rajah 3: Membuat sproket menggunakan perisian opensCAD



Rajah 4: Menghasilkan sproket menggunakan pencetak 3D

Proses selanjutnya adalah membuat lakaran dan merekabentuk pemutar manual bagi tujuan membuat pengujian putaran secara manual. Akhir sekali merekabentuk pelampung dan rangka penjana kuasa mudah alih (MP-HyGen) menggunakan paip pvc, bagi membolehkan alat terapung di atas air.



Rajah 5: Membuat lakaran pemutar manual



Rajah 6: Merekabentuk pelampung



Rajah 7: Gambar MP-HyGen yang telah siap dipasang

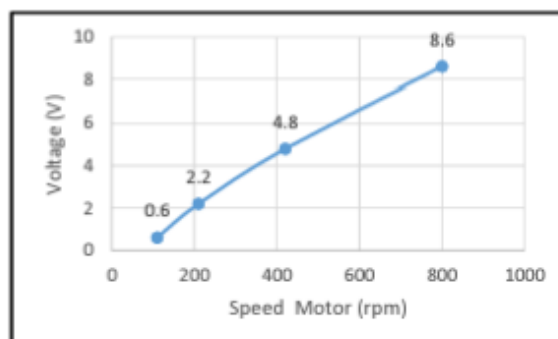
Penilaian dibuat setelah rekabentuk rotor siap dibina. Proses penilaian ini dibuat berdasarkan ke atas prestasi voltan yang dihasilkan berdasarkan kelajuan putaran.

4.0 Perbincangan dan Kesimpulan

Rajah 8 menunjukkan keputusan ujian penjana hidro mudah alih mini (MP-HyGen). Generator DC menghasilkan voltan antara 0.6V – 8.6V apabila diputar dengan kelajuan 110 - 800 rpm. Semakin tinggi kelajuan putaran penjana, semakin tinggi voltan yang dihasilkan. Nilai voltan yang dihasilkan memenuhi spesifikasi untuk mengecas semula bateri peralatan elektronik seperti telefon pintar. Bateri telefon pintar mempunyai voltan nominal 3.7 V dan biasanya dicas dengan pengecas 5V.

Jadual 1: Voltan yang dihasilkan dengan peningkatan kelajuan

Kelajuan Rotor (rpm)	Voltan (V)
110	0.6
210	2.2
350	4.8
800	8.6



Rajah 8: Voltan yang dihasilkan berkadar terus dengan kelajuan putaran penjana

Penjana hidro mudah alih mini (MP-HyGen) dapat memenuhi keperluan tenaga elektrik semasa aktiviti luar. Dengan adanya sumber kuasa mudah alih, cukup untuk membekalkan kuasa untuk peralatan penting serta mengecas peralatan-peralatan elektronik, komunikasi dan kecemasan. Penjana hidro mudah alih yang ini bukan

sahaja memanfaatkan sumber sedia ada, malahan dapat meningkatkan kesedaran mengenai penjagaan sumber alam bagi memastikan punca air terpelihara dan memberi impak kepada alam yang minima. Selain daripada itu, prototaip MP HyGen juga sesuai dijadikan model pembelajaran bagi mata pelajaran Sains Tingkatan 4 di bawah topik Tenaga dan Kuasa.

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CO-PLANAR TRUNCATED CORNER PATCH ANTENNA WITH FISHBONE SHAPED SLOT STRUCTURE AT THE PATCH FOR GSM 1.8 GHZ AND WLAN 5.2 GHZ APPLICATIONS

Kamarul Ariffin Abd. Rashid¹, Mohamad Tarmizy Ahmad², Misida Senon³, H. Nornikman⁴

¹Jabatan Kejuruteraan Elektrik, Politeknik Seberang Perai, Pulau Pinang, Malaysia

²Universiti Teknikal Malaysia Melaka, Malaysia

*email : gmrzan@gmail.com , tamizy@psp.edu.my , misida@psp.edu.my , nornikman@utem.edu.my

Abstract:

This work proposed the co-planar truncated rectangular antenna with fishbone-shaped slot structure at the patch for GSM 1.8 GHz and WLAN 5.2 GHz applications. This work provides in six different develop, including a stage from Design A to Design F. Firstly, a basic rectangular patch antenna is done for Design A while the second stage is rectangular patch with cut-out truncated shaped at the below part for Design B. Then, it followed by the added co-planar effect for Design C, added fishbone slot structure for Design D, mirror effect of truncated patch for Design E and lastly cut-off triangular truncated corner at the patch. The performance of proposed antenna of Design D at resonant frequencies of 1.8 GHz and 5.2 GHz with – 25.207 dB and – 16.625 dB.

Keyword: co-planar truncated rectangular antenna, fishbone slot structure, GSM, WLAN

1.0 Introduction

Microstrip patch antennas are the right nominees for numerous wireless applications in the market. Nevertheless, these devices are facing several restrictions, such as they have low impedance bandwidth and single resonant frequency effect in their initial form. To cater these problems, previous researchers had stated several methods to recover these restrictions.

Co-planar waveguide (CPW) is one of the techniques to improve the bandwidth. Besides, it also potentially has a capability to reduce antenna efficiency and gain, increase end fire radiation, increase cross-polarisation levels, and limit the applicable frequency range [1]. Khan's [2] paper stated that his CPW structure affected the ultra-wideband region between 3 GHz and 9 GHz to his antenna design. Fishbone slot is another technique to create dual or tri band resonant frequency, such as a study by Kang [3]. Several papers depicted other studies on the CPW antenna [4]-[9].

In Kang's [3] study, the antenna operated at two different application of S-DMB range (2.630 GHz–2.655 GHz) and WLAN application (5.125 GHz–5.325 GHz). Another study by Liu [8] applied the fishbone-shaped slot array on his antenna. Truncated corner is another technique to reduce the size, increase the return loss of the antenna while control the location of the wanted resonant frequency, such as a paper by Mishra [10].

In this work, a co-planar truncated corner patch antenna with fishbone-shaped slot structure was designed with several step developments from the basic antenna to proposed complete fabricated antenna.

2.0 Antenna Design

Figure 1 represents the co-planar truncated corner patch antenna with fishbone-shaped slot structure development stage that contains six different designs from Design A (basic antenna) to Design F (proposed complete antenna). The design started with the basic antenna design of Design A. This antenna had a ground plane at the rear part. Then, followed by Design B antenna that was cut-out in truncated shape at the bottom part that would affect the resonant frequency. For Design C antenna, the co-planar structure was fabricated as such to give a wideband range to the antenna. Then, followed by Design D and Design E that included the fishbone-shaped slot structure into the antenna. The last part is a larger cut-out of triangular truncated corner to control the location of the resonant frequency of the antenna.

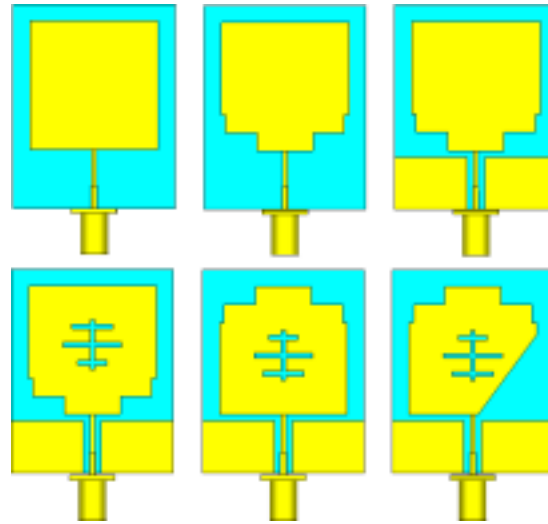


Figure 1. Co-planar truncated corner patch antenna with fishbone-shaped slot structure development stage; (a) Design A, (b) Design B, (c) Design C, (d) Design D, (e) Design E, and (f) Design F

3.0 RESULT

This segment displays the return loss, radiation pattern, surface current, and gain of co-planar truncated corner patch antenna with fishbone-shaped slot structure. Figure 2 and Table 1 show the performance comparison of the proposed antenna. Design A antenna generated three different locations of resonant frequency at 2.4 GHz, 4.7 GHz and 5.29 GHz, respectively. The first resonant frequencies were resulted from the patch antenna itself with – 39.451 dB of return loss and 1.020 dB of gain while the other two did not give the significant effect performance to the antenna. This is because the first and second resonant had a negative gain.

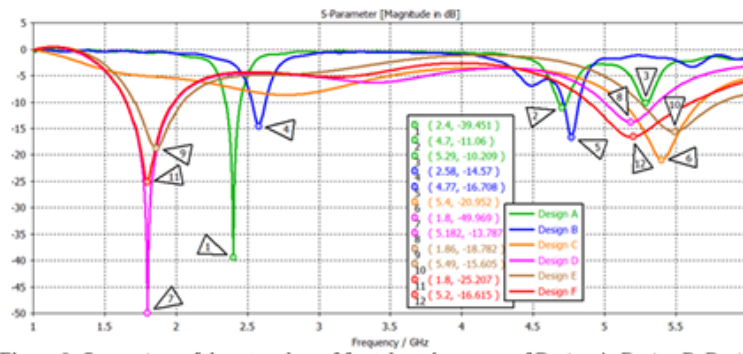


Figure 2. Comparison of the return loss of fractal patch antenna of Design A, Design B, Design C, Design D, Design E and Design F

Table 1. Comparison of the return loss of fractal patch antenna of Design A, Design B, Design C, and Design D

Design	Resonant frequency (GHz)	Return loss (dB)	Gain (dB)
A	2.4	- 39.451	1.020
	4.7	- 11.060	- 2.243
	5.29	- 10.209	- 1.539
B	2.58	- 14.570	1.082
	4.77	- 16.708	0.771
C	5.4	- 20.952	5.310
D	1.8	- 49.969	1.537
	5.182	- 13.787	5.224
E	1.86	-18.782	1.494
	5.49	- 15.605	5.231
F	1.8	- 25.207	1.441
	5.2	- 16.625	5.983

For Design B antenna, it showed that the truncated shape at the patch shifted the first resonant frequency to 2.58 GHz with resonant frequency of -14.57 dB. For the second resonant frequency, it showed that the improvement of return loss from -11.06 dB to -16.708 dB. In design C antenna that consisted of co-planar technique, the antenna achieved the wideband range shape performance but did not achieve the required -10 dB at the first resonant frequency. It only showed the good performance at the second resonant frequency at 5.4 GHz with a return loss of -20.952 dB. It showed that the co-planar technique extremely increased the antenna gain to 5.310 dB.

The fishbone-shaped slot structure in Design D is shown to give back the first resonant frequency at 1.8 GHz. The second resonant frequency at this stage was shifted from 5.4 GHz to 5.182 dB. Then, the mirror effect of the truncated patch in Design E antenna shifted the first resonance frequency to 1.86 GHz while the second resonant frequency at 5.49 GHz with -18.782 dB and -15.606 dB, respectively. For the last part of Design F antenna, it showed that the controlled mechanism structure of the cut-off triangular truncated patch shifted the first resonant frequency from 1.86 GHz to 1.8 GHz again with resonant frequency of -25.207 dB. It also shifted the second frequency from 5.49 GHz to 5.186 GHz with resonant frequency of -16.625 dB with the highest gain of 5.983 dB for all designs.

Figure 3 shows the surface current of Design D fractal patch antenna at 1.8 GHz and 5.186 GHz. It showed that the main contribution part of the current flow is at the feedline of the antenna and radiated to the patch part. Figure 4 shows the radiation pattern of Design F fractal patch antenna at different resonant frequencies of 1.8 GHz and 5.186 GHz.

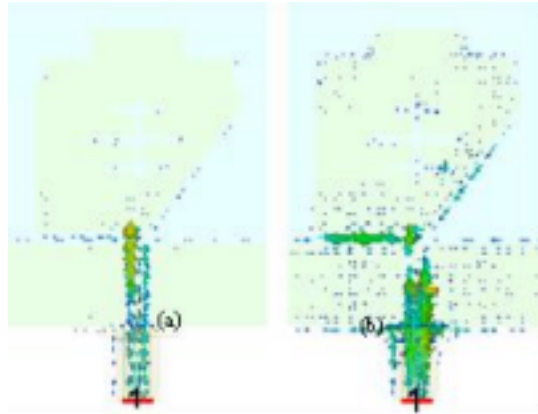


Figure 3. Surface current of fractal patch antenna of Design F at (a) 1.8 GHz, and (b) 5.186 GHz

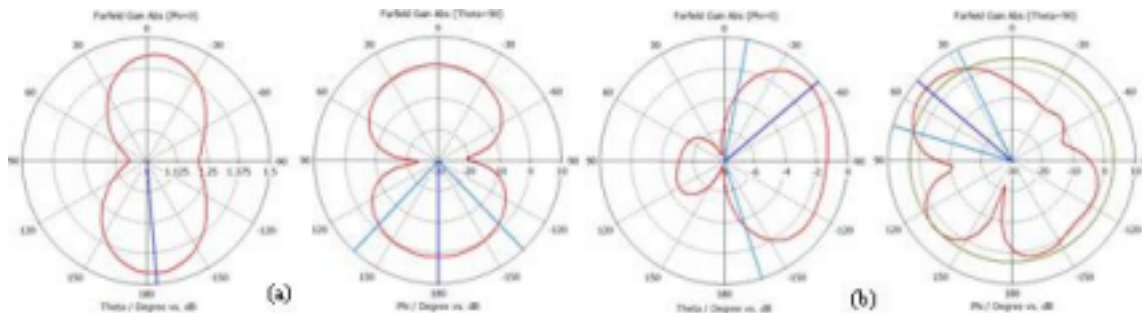


Figure 4. Radiation pattern of fractal patch antenna of Design F at different resonant frequencies of 1.8 GHz and 5.186 GHz

4.0 Conclusion

In conclusion, the simulation work proved that the combination of all techniques, such as the fishbone-shaped slot, truncated shape and co-planar resulted in several improved performances of the proposed antenna. This antenna had successfully proven for GSM 1.8 GHz and WLAN 5.2 GHz applications with higher gain at second resonant frequency of 5.983 dB.

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KEPUASAN MAJIKAN TERHADAP KEMAHIRAN PENGETAHUAN GRADUAN POLITEKNIK SEBERANG PERAI : KAJIAN DI INDUSTRI

Kamarul Ariffin Abd. Rashid¹, Mohamad Tarmizy Ahmad², Misida Senon³,

¹ Jabatan Kejuruteraan Elektrik, Politeknik Seberang Perai, Pulau Pinang, Malaysia

*email : qmrzan@gmail.com , tamizy@psp.edu.my , misida@psp.edu.my

Abstrak: Modal insan yang ingin dibangunkan adalah kemahiran keboleherjaan termasuklah berfikir secara kritis dan kreatif, berkemahiran menyelesaikan masalah, berkeupayaan mencipta peluang-peluang baharu, mempunyai ketahanan serta kebolehan untuk berhadapan dengan persekitaran dunia global yang sering berubah-ubah. Dalam Pelan Pembangunan Pendidikan Malaysia 2013 - 2025 (Kementerian Pendidikan Tinggi, 2017) menegaskan peranan pendidikan sangat penting dalam usaha membangunkan modal insan yang mempunyai jati diri yang kukuh, berketerampilan, berkeperibadian mulia, berpengetahuan dan berkemahiran tinggi bagi mengisi keperluan negara maju menjelang 2020 (Kementerian Pendidikan Tinggi, 2017). Keupayaan para pelajar yang dihasilkan dalam memberi penekanan kemahiran pengetahuan kepada majikan dan penerimaan baik para majikan terhadap tenaga kerja yang dihasilkan adalah petanda baik bagi program yang dilaksanakan di Politeknik Seberang Perai. Kajian ini berbentuk deskriptif yang menentukan kemahiran pengetahuan dalam memenuhi kepuasan industri bagi graduan Politeknik Seberang Perai (PSP). Kaedah kuantitatif terhadap 710 orang majikan daripada industri sebagai sampel kajian telah digunakan melalui borang soal selidik dan di sokong dengan dapatan dari kaedah kualitatif. Dapatan kajian menunjukkan bahawa tahap kemahiran pengetahuan dalam memenuhi kepuasan industri bagi graduan PSP berada pada tahap yang tinggi. Bagi elemen bidang tugas mencatatkan Skor min yang tertinggi adalah (min=4.21) diikuti oleh tahap pengetahuan graduan PSP berkaitan mengaplikasi teknologi (Min = 4.22). Manakala Min yang terendah adalah bagi pengetahuan pengurusan tentang organisasi (Min = 4.14). Hal ini bermaksud kemahiran pengetahuan diperlukan bagi memenuhi kehendak industri bagi graduan Politeknik Seberang Perai.

Kata kunci: kemahiran pengetahuan, kepuasan majikan, graduan

1.0 PENGENALAN

Pelaburan dalam modal insan sangat kritikal dalam membentuk sebuah negara maju, khususnya di Malaysia (Ramlee, 2013). Di samping itu, Malaysia perlu meningkatkan modal sosial dan kapasiti masyarakat. Walau bagaimanapun, untuk memajukan Malaysia ke barisan hadapan dari aspek pengetahuan, pelaburan modal insan adalah kritikal. Perkembangan revolusi perindustrian keempat Kerajaan Malaysia turut tidak ketinggalan terlibat sama di dalam industri 4.0 adalah Transformasi Nasional 2050 (TN50). TN50 merangka satu sasaran jangka masa 30 tahun di mana satu usaha untuk membentuk masa depan Malaysia bagi tempoh 2020 hingga 2050. Pembentukan TN50 merupakan susulan Dasar Ekonomi Baru (1971-1990) dan wawasan 2020 (1991-2020). Tujuan TN50 adalah menyasar menjadi antara negara teratas di dunia dalam aspek ekonomi, kesejahteraan rakyat dan inovasi. Bagi mencapai hasrat TN50, pelbagai usaha dan strategik yang dirangka oleh kerajaan melalui dialog, wacana, penyelidikan dan seminar. Usaha dan strategik ini diperlukan bagi mendapatkan maklum balas daripada pelbagai pihak dalam masyarakat Malaysia.

Bagi mencapai hasrat Transformasi Nasional 2050 (TN50), pengetahuan dilihat sebagai aset dan rujukan penting bagi memandu ke arah perancangan, pelaksanaan dan pemantauan. Justeru, pengurusan pengetahuan dan maklumat adalah elemen yang perlu dititikberatkan oleh kerajaan bagi memandu pengetahuan dan maklumat digunakan secara optimum. Komponen pengurusan pengetahuan iaitu proses, manusia dan teknologi adalah pelengkap bagi menjayakan matlamat pengurusan pengetahuan berkesan dalam pelaksanaan TN50. Penciptaan, pengumpulan dan perkongsian pengetahuan adalah kitaran pengurusan pengetahuan yang lengkap melengkapi bagi memastikan pengurusan pengetahuan yang efektif. TN50 juga memerlukan masyarakat yang mempunyai kemahiran teknikal dan vokasional bagi memenuhi keperluan negara pada menjelang tahun 2050. Justeru, Sistem Pendidikan dan Latihan Teknikal dan Vokasional (TVET) merupakan sistem pendidikan yang boleh membantu menjayakan hasrat kerajaan melahirkan graduan yang boleh memenuhi keperluan industri 4.0 dan TN50.

Politeknik Malaysia perlu memainkan peranan bagi menghasilkan graduan yang berilmu dan berkemahiran tinggi bagi menangani perubahan ekosistem pengajian tinggi negara (Fazlina, 2007). Oleh itu, untuk menjadi institusi pilihan dalam pendidikan teknik dan vokasional, pihak pengurusan politeknik haruslah berusaha untuk menjadikan politeknik sebagai satu institusi yang ulung dan seterusnya graduan yang dihasilkan memenuhi kehendak industri serta juga pasaran kerja pada masa kini. Graduan yang diingini oleh industri pada masa kini ialah tenaga kerja yang mempunyai kemahiran teknikal dan kemahiran pengetahuan. Justeru, kajian ini bertujuan untuk menilai kemahiran pengetahuan pelajar politeknik Malaysia menurut kaca mata industri.

2.0 PENYATAAN MASALAH

Kajian Pengesanan Graduan menunjukkan pengangguran disebabkan oleh kurangnya kemahiran yang diperlukan bagi menjamin kebolehpasaran pekerjaan (Esa et al., 2015). Esa et al. (2014) juga mendapati bahawa kebanyakan pelajar kejuruteraan mempunyai kemahiran teknikal yang baik, namun kemahiran pengetahuan mereka tidak berada di tahap yang sama. Ini adalah kerana mereka mempunyai kekurangan dari segi komunikasi, keyakinan diri, dan penyesuaian diri di tempat kerja.

Para pengkaji berpendapat ketidaksepadanan pengetahuan dan kemahiran yang berlaku dalam kalangan graduan adalah jurang di antara kriteria yang diperlukan oleh industri dengan pendidikan yang dilalui para graduan (Bilal & Ummah, 2016; Wesley et al., 2017). Berdasarkan kajian Bilal dan Ummah (2016), terdapat kelompangan dari segi pengetahuan teoritikal dan praktikal dalam kalangan pelajar di sebuah universiti semasa mereka menjalani latihan industri. Dapatan kajian Hanapi dan Kamis (2017) pula menunjukkan ketidaksepadanan kemahiran teknikal dan kemahiran kebolehpasaran menjadi antara penyebab berlakunya pengangguran dalam kalangan graduan.

Kajian-kajian lepas pula sukar untuk menunjukkan satu persetujuan yang nyata tentang kemahiran yang manakah yang menyumbang kepada kebolehpasaran (Suleman, 2016). Walaupun terdapat majikan yang menjadikan kemahiran interpersonal, komunikasi dan bekerjasama dalam pasukan sebagai pilihan mereka, namun terdapat juga majikan yang memberi keutamaan kepada kebolehan teknologi maklumat. Bagi Kwok et al. (2014) pula, kemahiran generik dan kemahiran bukan generik memainkan peranan yang sama penting dalam menentukan kebolehpasaran graduan. Justeru, terdapat keperluan untuk mengenal pasti tahap pengetahuan bagi graduan politeknik.

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3.0 OBJEKTIF KAJIAN

Tujuan kajian ini adalah untuk mengenal pasti tahap kemahiran pengetahuan dalam kalangan para graduan Politeknik Seberang Perai. Oleh itu, tujuan khusus kajian ini adalah untuk mengenal pasti tahap kemahiran pengetahuan graduan Politeknik Seberang Perai berdasarkan graduan.

4.0 SKOP KAJIAN

Skop kajian ini melibatkan pelajar yang telah menamatkan pengajian di Politeknik Seberang Perai yang terdiri daripada lulusan Diploma. Kumpulan sasaran yang terlibat merupakan semua pelajar sepenuh masa yang merangkumi empat jabatan iaitu Jabatan Kejuruteraan Elektrik, Jabatan Kejuruteraan Mekanikal, Jabatan Perancangan dan Jabatan Teknologi Maklumat dan Komunikasi.

5.0 METODOLOGI KAJIAN

Kajian yang berbentuk tinjauan ini menggunakan soal selidik secara atas talian. Instrumen kajian ialah soal selidik dalam Sistem Kajian Pengesanan Graduan TVET (SKPG TVET) Kementerian Pendidikan Tinggi. Tempoh kajian adalah selama sebulan sebelum dan selepas tarikh konvokesyen yang telah ditetapkan oleh institusi pada tahun 2021. Populasi Kajian Pengesanan Graduan Politeknik Tahun 2021 bagi Politeknik Seberang Perai adalah semua graduan yang lulus pada tahun 2021 bagi lulusan Diploma. Para graduan dikehendaki mengisi soal selidik tersebut secara atas talian di laman sesawang <https://graduan.mohe.gov.my/SKPG24/Default.aspx>. Maklumat yang diperoleh akan dikumpulkan dan dianalisis setelah sistem secara atas talian ditutup. Data akan diperoleh daripada Unit Pengurusan Data, Bahagian Perancangan Penyelidikan dan Penyelarasan Dasar, Kementerian Pendidikan Tinggi dan Unit Kebolehpasaran Graduan, Bahagian Kolaborasi Industri dan Komuniti, Jabatan Pendidikan Politeknik dan Kolej Komuniti dalam format perisian SPSS. Oleh yang demikian, penganalisaan data akan dibuat menggunakan perisian tersebut.

6.0 DAPATAN KAJIAN

Dapatan analisis kajian diperoleh berdasarkan pemboleh ubah utama iaitu kemahiran pengetahuan bagi memenuhi kebolehpasaran pekerjaan graduan Politeknik Seberang Perai. Data yang diperoleh dianalisis menggunakan statistik deskriptif. Analisis deskriptif boleh dilakukan sama ada kajian itu menggunakan kaedah kuantitatif atau kualitatif. Analisis kuantitatif dalam kajian ini melibatkan 468 responden berdasarkan populasi berstrata graduan yang bekerja berjumlah 313 (66.88%), graduan melanjutkan pengajian berjumlah 100 (21.37%), graduan yang menunggu penempatan berjumlah 11 (2.35%) dan yang belum bekerja berjumlah 44 (9.4%) bagi tahun 2021. Data yang diperoleh telah dianalisis menggunakan statistik deskriptif melalui perisian SPSS (versi 22).

Jadual 1 menunjukkan skor min dan sisihan piawai pengetahuan graduan PSP berdasarkan persepsi majikan. Pada keseluruhannya, para majikan bersetuju bahawa tahap persepsi graduan PSP adalah tinggi (Min = 4.21). Min tertinggi adalah bagi tahap pengetahuan graduan PSP adalah berkaitan dengan pengetahuan berkaitan dengan bidang tugas (Min = 4.28) diikuti oleh tahap pengetahuan graduan PSP berkaitan mengaplikasi teknologi (Min = 4.22). Manakala Min yang terendah adalah bagi pengetahuan pengurusan tentang organisasi (Min = 4.14).

Jadual 1: Skor Min Pengetahuan Graduan

Item	Kemahiran	Min	S.P
I	Pengetahuan teknikal berdasarkan keperluan kerja <i>Technical knowledge based on job requirement</i>	4.19	0.491
II	Pengetahuan mengaplikasi teknologi <i>Knowledge on technology application</i>	4.22	0.484
III	Pengetahuan pengurusan tentang organisasi <i>Knowledge on information management</i>	4.14	0.506
IV	Pengetahuan berkaitan dengan bidang tugas <i>Knowledge on job scope</i>	4.28	0.511
JUMLAH		4.21	0.304

7.0 PERBINCANGAN

Pelbagai definisi pengetahuan diutarakan oleh sarjana dalam bidang perkongsian pengetahuan. Pengetahuan ditakrif sebagai gabungan pengalaman, nilai, pembelajaran, kemahiran maklumat dan pemahaman individu (Rajalakshmi & Banu, 2012; Babalola, 2016). Pengetahuan juga didefinisi sebagai pengalaman dan pemahaman individu yang diterjemah ke dalam bentuk yang bermakna dan diguna oleh individu untuk menjalankan tugas. Menurut Nonaka (2010) pengetahuan yang baharu dicipta boleh diucap, dirumus, ditulis, dilukis dan dikumpul oleh individu. Pengetahuan ini boleh disimpan dalam pelbagai format seperti dokumen, gambar dan video. Pengetahuan dibahagi kepada dua iaitu pengetahuan tersirat dan tersurat. Pengetahuan tersirat merupakan pengetahuan peribadi berasaskan pengalaman individu dan melibatkan faktor seperti naluri, nilai peribadi dan kepercayaan Rosenberg et al.,

(2012). Sebagai contoh di Institusi Pengajian Tinggi, pengetahuan tersirat yang dicipta oleh ahli akademik dan tertanam dalam minda mereka adalah merupakan gudang modal intelek.

Sebanyak empat (4) item soalan telah digunakan untuk mengukur pembolehubah ini seperti pengetahuan teknikal berdasarkan keperluan kerja, pengetahuan mengaplikasikan teknologi, pengetahuan pengurusan tentang organisasi, dan pengetahuan berkaitan bidang tugas. Dapatan kajian menunjukkan skor min purata bagi konstruk ini adalah 4.20 iaitu berada pada tahap tinggi. Dapatan ini juga selari dengan dapatan temubual dengan majikan yang dikaji.

Kedua-dua dapatan ini adalah selari dengan pendapat Cremin Colin (2010) yang telah menyatakan salah satu aspek penting yang perlu dimiliki bagi seorang graduan yang berdaya saing dan memenuhi keperluan pasaran pekerjaan adalah pengetahuan. Begitu juga dengan Andrew & Russel (2011) turut berpendapat graduan perlu mempunyai pengetahuan dan kemahiran bagi memastikan mereka mempunyai keupayaan menjalankan tugas di tempat kerja. Rumusannya, PSP telah berjaya menghasilkan graduan yang mempunyai pengetahuan yang mencukupi untuk membolehkan mereka mengaplikasikan pengetahuan yang dimiliki dalam persekitaran kerja mereka dan seterusnya memenuhi kehendak majikan.

8.0 KESIMPULAN

Kajian ini telah menunjukkan graduan yang dihasilkan Politeknik Seberang Perai secara keseluruhannya diterima dan menepati kehendak pasaran berdasarkan persepsi majikan yang memberi respon positif terhadap pengetahuan. Kajian ini juga membuktikan politeknik selaku peneraju kepada pendidikan teknikal dan vokasional di Malaysia yang bukan sahaja menghasilkan graduan berkualiti tetapi juga bersifat holistik, bercirikan pengetahuan dan seimbang. Ia menjadi aset utama negara untuk menjana dan memangkin ekonomi negara yang lebih mampan serta berdaya saing.

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KAJIAN KEBERKESANAN PENGGUNAAN APLIKASI ANDROID e-RELASIS DI POLITEKNIK MALAYSIA: ANALISIS BAGI KURSUS MPU RELASIS

Kamarul Ariffin Abd. Rashid¹, Mohamad Fahmy Ibrahim², Nurfaizla Ahmad³

¹ Jabatan Kejuruteraan Elektrik, Politeknik Seberang Perai, Pulau Pinang, Malaysia

²Jabatan Perdagangan, Politeknik Sultan Salahuddin Abdul Aziz Shah, Shah Alam, Selangor ³Jabatan Pengajian Am, Politeknik Nilai, Negeri Sembilan

*email : qmrzan@gmail.com, ibfahmy14@gmail.com, nurfaizla672@gmail.com

Abstrak:

e-RELASIS merupakan bahan bantuan mengajar (BBM) bagi tujuan membantu meningkatkan kefahaman pelajar dalam memahami kursus Mata Pelajaran Umum (MPU) RELASIS yang meliputi MPU24691, MPU24791, MPU24891 dan MPU24991. Fokus pembangunan e-RELASIS adalah untuk pelajar-pelajar di Politeknik Malaysia yang mengambil kursus MPU RELASIS di Jabatan Sukan dan Ko-Kurikulum. Dua aspek penting yang diterapkan di dalam e-RELASIS ialah pengetahuan konseptual (Conceptual Knowledge) iaitu pengetahuan teori dan pengalaman melalui pengalaman (Experiential Learning) iaitu pembelajaran melalui pengalaman. Fasa pembangunan produk ini adalah berdasarkan model rekabentuk ADDIE iaitu 'analysis', 'design', 'development', 'implementation' dan 'evaluation'. Kaedah deskriptif kuantitatif yang meliputi pengujian, pemerhatian dan soal selidik terhadap pensyarah dan Pegawai Penyelaras RELASIS. Kaedah deskriptif kuantitatif yang meliputi pengujian, pemerhatian dan soal selidik terhadap 78 tenaga pengajar yang mengajar kursus Brigid RELASIS di 24 Politeknik Malaysia berkaitan antara muka, kandungan Aplikasi e-RELASIS serta pendekatan PdP yang paling efektif untuk tujuan proses pengajaran dan pembelajaran, dipilih sebagai sampel kajian dalam pengumpulan data kebolehgunaan atau kelayakan aplikasi e-RELASIS. Dapatan hasil kajian dapat disimpulkan bahawa aspek kebolehgunaan aplikasi Android e-RELASIS ini berada pada tahap yang tinggi. Hal ini dapat dilihat melalui jumlah skor min antara 4.30 hingga 4.45, ini menunjukkan bahawa aspek yang dinilai berada pada tahap yang tinggi. Dengan ini dapat disimpulkan bahawa e-RELASIS sesuai digunakan sebagai ABM dalam proses pengajaran dan pembelajaran (PdP) Brigid RELASIS serta memudahkan pensyarah dalam melaksanakan proses PdP serta membantu pelajar memahami serta meningkatkan pengetahuan pelajar. e-RELASIS ini mudah dikendalikan, rekabentuk yang menarik dan mudah akses.

Kata Kunci : Bahan Bantu Mengajar, e-RELASIS, MPU RELASIS 1

1.0 PENGENALAN

Pengurusan pengajaran dan pembelajaran (PdP) yang dinamik dan sistematik dalam sesebuah institusi pendidikan dilihat mampu menjadi pendorong dalam mengembangkan pengetahuan baru serta pencetus idea yang lebih kreatif dan inovatif. Pelajar digalakkan melibatkan diri secara aktif dalam setiap sesi pembelajaran mereka. Penggunaan bahan bantu mengajar (BBM) yang kreatif dan inovatif dilihat mampu untuk menarik minat pelajar untuk terlibat dalam sesi PdP. Ia merupakan aspek penting yang perlu diaplikasi dalam sesi PdP selain boleh merangsang para pelajar belajar secara aktif. Menurut Mohd Yasin et al. (2013) penggunaan BBM adalah satu kaedah untuk meningkatkan pencapaian dan kejayaan pelajar, kerana tanpa BBM menjadikan proses PdP kurang kualiti dan efektif menyebabkan pencapaian akademik akan menurun. Mengikut Azman et al. (2014) pula, penggunaan BBM dapat membantu guru-guru teknikal menerangkan sesuatu perkara dan konsep isi kandungan pembelajaran dengan lebih tepat berbanding penerangan secara lisan.

Kursus MPU RELASIS merupakan kursus kokurikulum ber kredit yang memperkenalkan pelajar kepada fungsi dan peranan Jabatan Sukarelawan Malaysia (RELA). Aplikasi ini juga akan menjadi panduan utama kepada

pelajar – pelajar Briged RELASIS dalam mempelajari kursus RELASIS secara interaktif. Tujuan kajian ini dijalankan adalah untuk menguji tahap keberkesanan aplikasi e-RELASIS sebagai bahan bantuan mengajar (BBM). Penggunaan aplikasi adalah merupakan satu langkah proaktif untuk memasukkan elemen teknologi yang kreatif dalam pelaksanaan PdP. Menurut Zakaria (2014) isu yang ditimbulkan adalah sejauh mana pensyarah-pensyarah berusaha mengambil inisiatif untuk bertindak proaktif dalam menghasilkan inovasi dalam pengajaran dan pembelajaran sebagaimana yang ditekankan dalam Pelan Pembangunan Pendidikan Malaysia 2013-2025.

Penggunaan aplikasi yang bersifat interaktif ini dapat membantu interaksi pensyarah dan pelajar serta dapat membantu pelajar untuk menerima pembelajaran dengan lebih mudah. Menurut Zahiah & Abdul Razaq, (2010) kaedah E-pembelajaran dilaksanakan bertujuan untuk membolehkan proses pembelajaran dilaksanakan tanpa mengira jarak dan masa serta bilangan ahli kelas.

Aplikasi ini merupakan inovasi PdP implementasi daripada beberapa topik dalam kursus Briged RELASIS yang merangkumi objektif kursus Asas RELA, Kursus Pasukan Tindakan Krisis (CRT), Kursus Pengurusan dan Kepimpinan dan Kursus Pengurusan dan Pengendalian Senjata Api. Menurut Rosnani dan Nor Mashila (2017), terdapat beberapa permasalahan yang sering dihadapi dalam kalangan pendidik ialah kurang penggunaan ICT dalam pengajaran dan pembelajaran yang dikatakan terikat dengan tradisi lama, kurangnya motivasi dalaman pengajar, kekangan masa, bilik kuliah kurang sesuai dan kegagalan pengajar bersaing dalam perkembangan teknologi masa kini. Aplikasi e-RELASIS yang dibangunkan dengan menggunakan platform Teknologi Aplikasi Android yang memuatkan Nota, Video dan Kuiz diharap dapat memudahkan pelajar memahami dengan mendalam kursus MPU RELASIS dan memastikan pelajar terlibat lebih aktif dalam proses PdP di dalam kelas atau secara maya.

Pelajar perlu diberikan peluang dan ruang untuk melibatkan diri secara terus di dalam sesi pembelajaran berbanding hanya menerima input daripada pensyarah semata-mata. Rajah 1 dan Rajah 2 menunjukkan gambar bagi e-RELASIS dan susunatur komponen yang dibangunkan.



Rajah 1: e-RELASIS Rajah 2: Komponen e-RELASIS

2.0 PENYATAAN MASALAH

Proses PdP dalam dalam kursus Briged RELASIS adalah melibatkan perlaksanaan pembelajaran secara teori dan praktikal. Kedua-dua bahagian pembelajaran ini memainkan 4 peranan penting kepada pelajar untuk memastikan mereka benar-benar faham dengan topik yang disampaikan oleh pensyarah. Menurut Long (1977), sistem PdP tradisional yang hanya mementingkan penggunaan kapur, komunikasi sehalu dan buku-buku teks tidak menjamin keberkesanan proses PdP pelajar apatah lagi mencabar keupayaan berfikir dan kebolehan daya imaginasi pelajar.

Punca-punca kesukaran pelajar dalam menguasai konsep dan prinsip RELASIS adalah disebabkan oleh pelajar-pelajar yang mengambil kursus MPU RELASIS di Politeknik Malaysia ini terdiri daripada pelajar yang mempunyai intelek berbeza, BBM yang terhad dan tidak mesra pengguna serta pelajar cepat bosan dengan cara pembelajaran yang sama.

Menurut Hasan (1993), dalam sebuah bilik darjah, setiap individu mempunyai psikologi dan kebolehan intelek yang berbeza di antara satu sama lain. Menurut Engku Shahrulrizal (2003), kebanyakan pensyarah hanya menggunakan papan tulis kerana BBM yang disediakan agak terhad dan tidak mesra pengguna.

Justeru bagi mengatasi masalah yang dinyatakan oleh penulis di atas, sebuah aplikasi e-RELASIS dibangunkan bagi membantu pelajar memahami MPU RELASIS melibatkan pembelajaran yang lebih dinamik, lebih interaktif dan menarik minat pelajar di dalam sesi pengajaran dan pembelajaran. Penggunaan BBM dalam proses PdP adalah berkesan untuk meningkatkan kefahaman pelajar dari pelbagai aspek. Melalui penggunaan BBM pelbagai aktiviti pengayaan dapat dilakukan. Menurut Ong (2003), pelajar lebih cenderung mengingat sesuatu perkara melalui rangsangan sentuhan dan penglihatan.

3.0 Objektif Kajian

- 3.1 Membangunkan aplikasi e-RELASIS untuk kegunaan tenaga pengajar dan pelajar.
- 3.2 Mengenalpasti tahap kepuasan tenaga pengajar terhadap penggunaan aplikasi e RELASIS.
- 3.3 Mengenalpasti tahap pemahaman PdP Kursus MPU RELASIS terhadap penggunaan aplikasi e-RELASIS.

4.0 Ciri-ciri Inovasi

4.1 Menambahbaik pembelajaran pelajar

Penggunaan aplikasi mampu untuk menambahbaik PdP kerana ianya lebih fleksibel dan bersifat interaktif. Kepelbagaian bahan PdP seperti nota, video, latihan pengukuhan dapat membantu pelajar meningkatkan tahap pemahaman kursus MPU RELASIS.

4.2 Meningkatkan kebolehcapaian

Penggunaan aplikasi dapat meningkatkan kebolehcapaian bahan PdP berbanding kaedah konvensional. Bahan PdP boleh dicapai menggunakan telefon bimbit di mana sahaja pelajar berada.

4.3 Meningkatkan penglibatan tenaga pengajar dan pelajar

Aplikasi ini dibangunkan dengan memberi keutamaan terhadap ciri mesra pengguna. Ini bagi memudahkan tenaga pengajar dan pelajar untuk mendapatkan bahan PdP Kursus MPU RELASIS yang mana ciri ini tidak ditawarkan oleh PdP tradisional. Segalanya maklumat kini berada di hujung jari.

4.4 Memupuk budaya inovasi

Tujuan pembangunan aplikasi e-RELASIS ini antaranya adalah untuk memupuk budaya pembelajaran yang lebih berinovasi dalam kalangan tenaga pengajar dan pelajar. Evolusi terhadap pelaksanaan PdP ini dilihat mampu untuk memacu perubahan ke arah yang lebih efektif dan dinamik. Inovasi dilihat berupaya untuk memanipulasi teknologi bagi mengenalpasti alat dan kaedah baru dalam pembelajaran.

5.0 Metodologi Kajian

5.1 Pembangunan Aplikasi e-RELASIS

Perancangan yang sistematik dan teliti perlu diambil kira dalam proses merekabentuk aplikasi, supaya produk yang dihasilkan berkualiti dan bermutu. Model ADDIE digunakan dalam proses mereka bentuk dan membina e-RELASIS. ADDIE adalah singkatan bagi Analysis (analisis), Design (reka bentuk), Development (pembangunan), Implementation (pelaksanaan), dan Evaluation (penilaian) (Gordon dan Zemke, 2000). Model ini juga merupakan antara model reka bentuk instruksi yang sering menjadi asas kepada model-model reka bentuk

instruksi yang lain (Harun, Aris & Tasir, 2001).



Rajah 3: Model Rekabentuk ADDIE

Model ADDIE ini dipilih untuk membangunkan aplikasi pembelajaran kerana reka bentuk model yang menekankan pengulangan dilakukan bagi setiap fasa. Setiap fasa pula saling berkait antara satu sama lain. Sekiranya fasa tersebut tidak dapat dilaksanakan dengan baik proses tersebut boleh diulang sehingga ia dapat disiapkan dengan lengkap. Aliran kerja dalam pembangunan aplikasi mudah alih sepertimana dalam rajah 4 yang ditunjukkan di bawah.



Rajah 4: Pelaksanaan Aplikasi e-RELASIS

Proses pertama yang perlu dijalankan dalam mereka bentuk modul pengajaran mengikut fasa ADDIE adalah analisis. Fasa Analisis merupakan asas untuk fasa-fasa seterusnya dalam reka bentuk sesuatu pengajaran. Pada peringkat ini, beberapa analisis dijalankan dan antara yang terpenting adalah permasalahan yang berkaitan dengan mengenal pasti masalah dan cara penyelesaiannya. Tujuan proses ini adalah untuk memastikan reka bentuk pengajaran yang akan dihasilkan menepati dan memenuhi keperluan pelajar yang sebenar. Masalah yang berkaitan boleh dikenal pasti melalui pelbagai kaedah atau teknik misalnya temu bual, pemerhatian, tinjauan, soal selidik dan sebagainya (Baharuddin et al, 2001). Untuk mengenal pasti masalah-masalah yang berkaitan, beberapa analisis dilakukan terhadap beberapa aspek, antaranya analisis persekitaran pembelajaran, analisis terhadap ciri ciri pelajar, tahap pendidikan atau pengetahuan sedia ada, masalah dalam pembelajaran dan mengenal pasti matlamat pengajaran dan sebagainya.

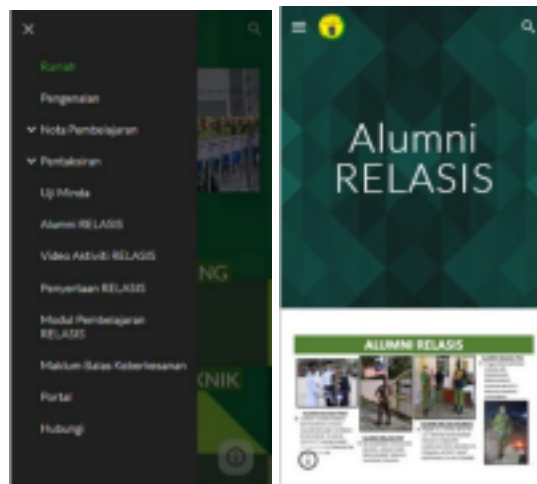
Manakala fasa berikutnya reka bentuk dan pembangunan pengkaji melakarkan beberapa perkara berkaitan reka bentuk aplikasi iaitu carta alir berkaitan turutan aktiviti, antaramuka setiap paparan dalam aplikasi, papan cerita berdasarkan carta alir yang dibina. Setelah lakaran selesai dilakukan maka proses pembangunan aplikasi bermula dengan menggunakan alat pengarang yang utama iaitu aplikasi android Aspek ini perlu ditekankan dalam fasa

ini kerana akan menghasilkan satu bahan pembelajaran yang positif.

Bagi fasa pelaksanaan pula, fasa ini adalah fasa melaksanakan dan menguji (rintis) prototaip yang telah dibina bagi memastikan objektif pembinaan, penggunaan dan kebolehfungsian aplikasi ini boleh dicapai. Jika terdapat kekurangan, kelemahan dan kesilapan maka pengkaji akan membuat penambahbaikan terhadap aspek tersebut. Setelah dibuat penambahbaikan, maka fasa akhir penilaian, pengkaji melakukan proses pengujian terhadap pengguna sasaran aplikasi ini untuk menilai kebolehgunaannya dibangunkan. Dengan pembangunan aplikasi ini, ia berpotensi meningkatkan prestasi dan kualiti perisian yang dibangunkan serta berupaya menjadikan proses pembangunan lebih sistematik dan berkeyakinan.

5.2 Rekabentuk Aplikasi e-RELASIS

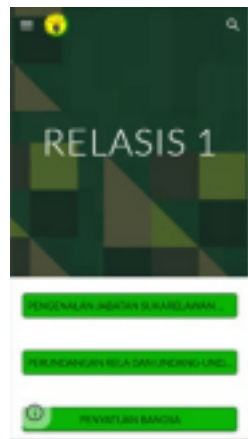
Aplikasi android adalah merupakan teknologi perisian yang dijalankan pada platform Android. Platform Android dibina untuk peranti mudah alih, aplikasi Android direka untuk telefon pintar atau tablet PC yang berjalan pada system pengoperasian Android. Aplikasi Android ditulis dengan menggunakan bahasa pengaturcaraan Java dan menggunakan perpustakaan teras Java. Sebagai contoh persembahan nota, video, uji minda (latihan), komunikasi sosial dan interaksi dan banyak lagi. Aplikasi android membuka ruang yang luas dalam meningkatkan penglibatan pelajar samada di dalam mahupun di luar kelas iaitu secara dalam talian atau melalui aplikasi teknologi mudah alih tanpa mengira masa dan tepat. Pembelajaran dalam talian juga memberi peluang kepada pelajar yang malu bersemuka secara langsung boleh berinteraksi secara maya.



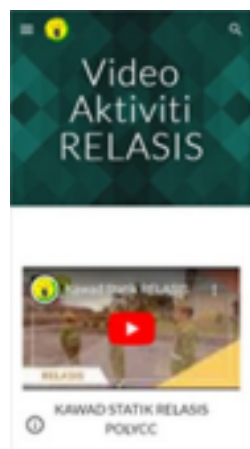
Rajah 5: Antaramuka e-RELASIS **Rajah 6:** Alumni RELASIS PolyCC



Rajah 7: Nota Ringkas



Rajah 8: Video Pembelajaran



Rajah 9: Uji Minda

6.0 Impak Inovasi

6.1 Penilaian Kebolehgunaan Aplikasi Android e-RELASIS

Kajian ini dilakukan ke atas pelajar bertujuan untuk menilai kebolehgunaan aplikasi Android e-RELASIS. Responden kajian ini terdiri daripada 78 orang Tenaga Pengajar yang mengajar Kursus MPU RELASIS di Politeknik Malaysia. Pemilihan responden kajian ini berdasarkan sukarela dan mempunyai ciri-ciri persamaan iaitu memiliki telefon pintar dan komputer riba juga yang sedang mengajar Kursus MPU RELASIS di Politeknik Malaysia.

Pengkaji menggunakan set soal selidik yang telah dianalisis menggunakan perisian Statistical Package for The Social Science (SPSS) versi 18.0 untuk menilai kebolehgunaan aplikasi Android e-RELASIS. Soal selidik kajian ini diubah suai dengan menggunakan Skala Likert lima mata iaitu:

- 1 = Sangat tidak setuju
- 2 = Tidak setuju
- 3 = Kurang setuju
- 4 = Setuju
- 5 = Sangat setuju

Responden diminta untuk menandakan salah satu nombor untuk menunjukkan persetujuan mereka terhadap pernyataan item yang berkaitan dengan aspek-aspek penilaian. Data yang diperolehi dianalisis melalui statistik diskriptif dengan menggunakan ringkasan dari keseluruhan data. Ia juga berupaya memberi maklumat secara

langsung dan mudah. Skala Interpretasi Skor Min adalah seperti berikut:

Jadual 1: Skala Interpretasi Min

Nilai Min	Tahap Interpretasi Min
0.00 – 1.66	Tahap Rendah
1.67 – 3.33	Tahap Sederhana
3.34 – 5.00	Tahap Tinggi

6.2 Dapatan Dan Perbincangan

Jadual 2: Analisis Dapatan Soal Selidik

Aspek Kajian	Nilai Min	Interpretasi
Muka Aplikasi e-RELASIS	4.45	Tahap Tinggi
ngan Aplikasi e-RELASIS	4.30	Tahap Tinggi
Pendekatan PdP yang paling efektif.	4.34	Tahap Tinggi

Berdasarkan jadual analisis dapatan soal selidik di atas, dapat disimpulkan bahawa aspek kebolehgunaan aplikasi Android e-RELASIS ini berada pada tahap yang tinggi. Hal ini dapat dilihat melalui jumlah skor min antara 4.30 hingga 4.45, ini menunjukkan bahawa aspek yang dinilai berada pada tahap yang tinggi. Kesemua aspek ini telah berjaya diterapkan di dalam aplikasi Android e-RELASIS dan dapat dikatakan telah melepasi tahap standard pawaian pembangunan sesebuah sistem pembelajaran.

6.3 Capaian

Sebelum penggunaan e-RELASIS

- Pelajar perlu menunggu sehingga tenaga pengajar mengedar atau memberi bahan PdP (nota) kepada pelajar.
- Pelajar perlu fotokopi bahan PdP yang diberikan oleh tenaga pensyarah.

Selepas penggunaan e-RELASIS

- Pelajar tidak perlu lagi menunggu untuk memperolehi bahan PdP kerana pelajar boleh mencapai bahan tersebut dengan menggunakan telefon bimbit.
- Pelajar tidak lagi perlu untuk fotokopi bahan PdP tersebut.

6.5 Mesra pengguna

Sebelum penggunaan e-RELASIS

- Kekangan penggunaan BBM yang konvensional seperti kertas adalah ia cepat rosak, hilang dan bercampur aduk dengan bahan PdP kursus yang lain.

Selepas penggunaan e-RELASIS

- Menjimatkan masa dan lebih efektif kerana boleh mencapai bahan PdP pada bila-bila masa dan tempat.
- Ini kerana, bahan PdP sentiasa berada bersama pelajar dan memudahkan pelajar untuk mengulang kaji pelajaran.

6.6 Kesimpulan

Kajian ini dijalankan adalah bertujuan untuk melihat kemampuan dan kebolegunaan aplikasi e-RELASIS yang dibangunkan sebagai alat bantuan PdP Kursus MPU RELASIS konsep dan prinsip asas RELA. Berdasarkan perbincangan analisis dapatan kajian yang telah dilaksanakan, menunjukkan bahawa majoriti responden adalah bersetuju bahawa antaramuka aplikasi e-RELASIS bersifat mesra pengguna dan sesuai sebagai alat bantuan mengajar (BBM) dan mampu meningkatkan pemahaman pelajar serta menggalakkan pelajar terlibat secara aktif dalam proses PdP.

Keupayaan menyerap teknologi sebagai pembawa perubahan perlu dilihat sebagai suatu perkara yang positif dan cuba mengaplikasikan unsur-unsur positifnya ke dalam bidang pendidikan yang sememangnya sentiasa berkembang dan berubah mengikut peredaran masa. Pembelajaran melalui aplikasi multimedia merupakan wadah terbaru dalam dunia pendidikan. Ianya memberikan satu dimensi baru kepada pendidikan yang berteraskan internet dan web.

Pada keseluruhannya, pembangunan aplikasi multimedia merupakan pembaharuan dan alternatif kepada pengajaran dan pembelajaran tradisional yang telah sedia ada dalam menerangkan sesuatu subjek mengenai konsep-konsep yang berkaitan. Proses PdP pada masa kini menggunakan pelbagai teori serta pendekatan yang diperlukan dalam menjadikannya lebih menarik, antara lain telah dikembangkan dalam pembangunan aplikasi multimedia. Selain pengaplikasian penggunaan aplikasi multimedia diharapkan ianya dapat meningkatkan kefahaman serta minat pelajar dalam mewujudkan suasana pembelajaran yang kondusif kepada pelajar.

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ENHANCING EMPLOYABILITY SKILLS WITH E-PORTFOLIO ASSESSMENT IN TOURISM INTERNSHIPS

Noor Ibtisam Abdul Karim^{1,2*}, Mohd Hazwan Mohd Puad¹, Sharifah Intan Sharina Syed Abdullah¹

¹ Faculty of Educational Studies, Universiti Putra Malaysia, Serdang, Malaysia

² Faculty of Hotel and Tourism Management, Universiti Teknologi MARA Cawangan Melaka, Alor Gajah, Melaka

*Corresponding Author: gs67495@student.upm.edu.my

Abstract:

The emergence of the digital economy has impacted the employability skills required in the hospitality and tourism industry. The lack of employability skills among tourism students poses a significant challenge in developing their careers in the industry. In today's digitally focused landscape of the industry, technological advancements need to be adapted in assessing learning activities including internships for tourism students. This paper is an early-stage study on the notion of employability skills, the concept of e-portfolio evaluations in education, and the need to improve employability skills in tourism internship assessment using an e-portfolio. E-portfolio-based assessments reflect on interns' target strengths and limitations, encouraging self-awareness and self-directed learning as interns have opportunities to record the progress of internship work and experiences. In summary, this paper concludes and recommends that to prepare the future skilled tourism workforce, tourism educators can use the e-portfolio to assess the students' internship work that will further enhance their employability skills.

Keywords: employability skills; e-portfolio; higher education; tourism internship; tourism education

1.0 Introduction

Employability skills are crucial for achieving success in the tourist sector, and there is an increasing acknowledgment of their significance among educators, employers, and students. (Wesley et al., 2017). However, employers frequently observe deficiencies in skills among potential hires or existing employees, indicating a requirement for a more thorough comprehension of the skills shortage. (Hurrell, 2015). In fact, one of the unemployment problems identified among young graduates is caused by their lack of employability skills (Puad, 2018). Many tourism students are in the early stages of their careers, which may cause limited exposure to real-world work situations. As a result, they may lack the practical experience necessary to develop and exhibit soft skills. The requisite employability skills for tourism students encompass a wide range of abilities, including organizational, teamwork, communication, and problem-solving skills that are applicable in numerous career scenarios within the tourism industry (Hinton et al., 2017).

However, Teng et al. (2019) in their study have identified a noticeable deficiency in these skills among tourism students in Malaysia. The matter has garnered considerable attention within the nation, particularly about higher education. In addition, the COVID-19 pandemic has highlighted the importance of redirecting the emphasis in tourism education from traditional operational aspects to the cultivation of technology awareness, knowledge, and the development of soft skills (Daniels et al., 2022; Joshi & Gupta, 2021). Based on this issue, it shows that the sector has experienced significant transformations, necessitating students to be ready to adjust to these changes and meet the industry's growing requirements. The scenario provides a clear indication that there is a pressing concern regarding the future risk of young individuals in tourism employment without the necessary skills demanded by the industry.

In relation to the above notion, internships offer students the necessary skills and knowledge to excel in the industry, such as interpersonal communication, leadership, teamwork, and creativity which are widely

acknowledged as key elements for employability in the sector (Hinton et al., 2017; Sisson & Adams, 2013). Internships are crucial in the field of tourism since they offer students important hands-on experience and enhance their prospects of securing employment. Based on a survey performed in Australia and Hong Kong, students consistently ranked internships as more valuable than specialized courses when it comes to securing their initial employment in the hotel and tourism industry (Lam & Ching, 2007). Besides, a study conducted by Seraphin et al. (2021) claimed that by applying the Triple Helix Model, which emphasizes collaboration between academia, industry, and government, can help facilitate more internship opportunities and practical training in tourism education. The strategic collaboration between these partners can be seen as the most significant factor in ensuring the graduates' employability skills are measured and developed through various quality learning activities, especially during practical training.

In light of the aforementioned scenario, the evaluation of the internship program for students studying tourism becomes a matter of importance to ensure the successful acquisition of such skills by the students. The use of physical or printed portfolios for evaluating performance in tourism internships has been the subject of ongoing discussion in recent years. Researchers contend that printed portfolios have become obsolete in the digital era. According to Hall and Page (2014), the tourism sector undergoes continuous changes, with digital and technical innovations playing a crucial role in influencing its daily operations and business practices, thus impacting the tourism curriculum to take essential actions for improvement. Buhalis and Costa (2006) highlight the significance and advantages of utilizing digital tools and platforms in tourism management courses for teaching and evaluating students' learning results. These literature sources suggest that printed portfolios may no longer be relevant in the field of tourism education.

Alternatively, e-portfolios have been acknowledged as a significant instrument for evaluation in many educational settings, specifically in augmenting students' employability proficiencies. An electronic portfolio is a highly efficient approach for students to demonstrate the learning paths or abilities they acquire by actively pursuing certain objectives or competencies in various academic areas (Andriotis, 2017). In addition, e-portfolios have the qualities of flexibility and adaptability, allowing for easy updates and integration into professional networking platforms. This makes them valuable as a tool for job searching or self-promotion (Mobarhan & Rahman, 2014). It was supported in the study conducted by Hinton et al. (2017) which demonstrates that students concur that e-portfolios are beneficial for organization, can be utilized in assignments, and useful for job search activities. This is an advantage of utilizing e-portfolios where employers may assess the abilities, expertise, and accomplishments of potential tourist employees that align with their companies' objectives.

2.0 Methodology

The progress or advancement of the conceptual paper commenced by examining relevant literature, thereafter, establishing connections between the utilization of portfolios and the enhancement of employability skills in the field of tourist education. During the analytical phase, pertinent articles were acquired from search engines such as Taylor & Francis, Science Direct, Sage Publications, and Emerald Publishing. The text utilized various key terms, including 'e-portfolio as assessment in tourism internship', 'benefit of e-portfolio as learning tools', and 'the usage of e-portfolios to enhance employability skills'. Out of the initial pool of 96 articles, only 29 were retained after the screening process. These 29 articles were then supplemented with relevant government and industry reports. Out of all the articles selected, 48% were focused on the use of e-portfolio as an assessment, while the remaining articles were about the broader use of e-portfolios.

3.0 Literature Review

E-Portfolio as a Tool for Assessment in Higher Education

E-portfolio assessment has gained attention in various fields of education (Makokotlela, 2020). It has been found that e-portfolios allow students to monitor and assess their knowledge and understanding continuously and consistently (Kabilan, 2016). For instance, Bekri (2015) conducted research that identified indicators for the utilization of e-portfolios as a tool in virtual learning for the Malaysian Skills Certification (MSC), a TVET program in Malaysia. The study identified four key elements for the use of e-portfolios: exhibition, learning management, assessment, and personal space with a total of 22 indicators were identified to assess the competency

of MSC students. Hence, it is important for tourism institutions and academia to identify the suitable elements and indicators of e-portfolio (Bekri, 2015) to achieve learning outcomes, particularly tourism internships.

Besides, students have a positive outlook on using e-portfolios for learning assessment, as they believe that e-portfolios enhance enthusiasm and involvement in the learning process (Muin et al., 2021). Moreover, Hinton et al. (2017) reported that the majority of higher education students in Durham College agreed that the use of e-portfolio helped them learned about and self-assess their employability skills. Yastibas and Yastibas (2015) identified ten distinct characteristics of e-portfolios. In their examination of the literature, they ascribed implementing an e-portfolio system to characteristics such as being authentic, controlled, communicative, dynamic, personalized, integrative, multi-purposed, multi-sourced, motivational, and reflective. E-portfolios have also been employed in higher education settings, such as Sookmyung Women's University in South Korea, where they are used for learning reflection, professional development, and assessment (Syzykova et al., 2021). Undoubtedly, e-portfolio has numerous advantages when employed as an assessment tool in higher education. Further, this study provides a concise overview of the existing literature on the utilization of e-portfolios as instruments for evaluating students' learning in different settings.

Table 1: E-portfolio as assessment tools in higher education

Authors and study context	Type of learners	E-portfolio required components	Types of assessments or skills
Wali et al. (2018) - Universiti Teknologi MARA (UiTM), Malaysia	Educational Management and Leadership, Teaching English as a Second Language (TESL) and Visual Arts study fields in the Faculty of Education	• user profile • article writing • skills-reflection • self-reflection • project progress	Formative assessment – communication, teamwork, problem solving
Ghalib et al. (2014) - International Islamic University of Malaysia (IIUM), Malaysia	Arabic language students, Department of Arabic Language and Literature	• user profile • journal • artifacts • networking • language tools	Formative assessment and a self-advertisement tool
Namaziandost et al. (2020) - English Language Institutes in Ahvaz, Iran	English as Foreign Language (EFL) learners	• written compositions • guided writings • diaries • letters to friends • story writing and reflection papers • transcripts of video or audio reports	Communication, organizational skills
Sarwandi et al. (2022) - Indonesian Aviation Polytechnic Curug, Indonesia	Cadets of the Aircraft Engineering	• submission of assignments • assessment material for lecturers and educational institution • class discussions	Critical thinking, problem-solving skills

Table 1 summarizes several literatures about using e-portfolios as assessment tools in various education settings. Different types of learners, various teaching and learning features, and employability skills competency assessments have utilized them. This evidently shows that using e-portfolios as tools in conducting assessments in higher education helps achieve the intention of enhancing those skills.

E-Portfolio as an Alternative Assessment in Tourism Internship

In hospitality and tourism, integrating authentic assessment tasks in work-integrated learning (WIL) in internships is important (Nyanjom et al., 2020). This method entails integrating practical assignments and projects into the internship experience, which can be recorded and displayed in electronic portfolios. E-portfolios provide a flexible teaching instrument that enables students to evaluate their academic achievements, get constructive criticism, and fulfill projects to demonstrate their abilities to prospective employers (Baturay & Daloğlu, 2010). Research conducted by Hinton et al. (2017) found that students who have utilized e-portfolios reported significant improvements in their interpersonal abilities, communication skills, and personal skills. The implementation of this comprehensive approach is expected to yield advantages for both the supply and demand sides of the tourism labor market. The educational institution is equipping its students with the necessary skills and qualifications to be readily employable, while companies are finding it effortless to locate suitable candidates.

Since tourism is highly emphasized in developing functional skills for graduates, it is believed that e-portfolios can be a suitable tool for teaching and learning activities, including assessment. This digital-based tool's flexible feature allows learners and educators to conduct and organize the knowledge-acquiring process creatively. Tourism students undertaking internships can use the e-portfolio to record their daily routines, describe their tasks given by employers, create e-resumes, creatively show skills development, and self-reflect on what has been learned and experienced throughout the internships. Ghalib et al. (2014) claimed that a functional e-portfolio is crucial for the teaching and learning processes, serving as a formative evaluation tool from the start of the academic semester, thus providing an extra layer of learning for students.

Today, many higher education institutions in Malaysia apply a diverse set of technological tools and resources to store, create, and share information. The Malaysia Education Blueprint 2015-2025 (Higher Education) outlines ten (10) Shifts, and one of those is 'Globalized Online Learning' that contributes to good quality content, enhances the quality of teaching and learning, lowers the cost of delivery, and bring Malaysian expertise to the global community. In line with this aspiration, tourism education should take advantage of the robust cyberinfrastructure to adopt technology-driven innovations in conducting internship assessments. This will contribute to the objective of equipping students with crucial employability skills, enabling them to become highly skilled professionals in the tourism industry.

4.0 Conclusion

In conjunction with the benefits of using e-portfolios, it can be a helpful assessment tool in improving the employability skills of tourism students when they undergo internships. Self-reflection, interpersonal skills, communication skills, digital skills, and organizational skills can be enhanced using e-portfolio assessment. Students who participate in e-portfolio-based assessments can reflect on their target strengths and limitations, encouraging self-awareness and self-directed learning as they have opportunities to record the progress of internship work and experiences. Therefore, an e-portfolio has the potential to provide students with a dynamic tool for reflecting on their learning, receiving feedback, and showcasing their talents and achievements to potential employers. E-portfolios can thoroughly and authentically assess students' knowledge, abilities, and competencies during tourism internships. There will likely be future research conducted to investigate how e-portfolios might be utilized for the purpose of developing important skills, assessing them, and enhancing tourism employability.

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ENHANCING ACCESS AND MANAGEMENT OF TEACHING MATERIALS OF ADVANCED MANUFACTURING PROCESS COURSE THROUGH A SMARTPHONE APPLICATION: A STEP TOWARDS SUSTAINABLE EDUCATION IN A MADANI SOCIETY

M. Hamdi Khosran¹
Mohd Bukhari Md. Jahi²
Mohamad Hafiz Saleh³

¹Mechanical Engineering department, Politeknik Merlimau Melaka (PMM), Malaysia,
(Email: hamdi@pmm.edu.my)

²Mechanical Engineering department, Politeknik Sultan Azlan Shah (PSAS), Malaysia,
(Email: mohd_bukhari@psas.edu.my)

³ Mechanical Engineering department, Politeknik Melaka (PMK), Malaysia,
(Email: m.hafiz.saleh@polimelaka.edu.my)

Abstract: - In the rapidly evolving digital era, technology plays a crucial role in enhancing the quality of education. This study focuses on the development and evaluation of the AMP Box, a smartphone application designed to systematically store and manage teaching materials while providing easy access to all students enrolled in the Advanced Manufacturing Process course across Malaysian Polytechnics. The application aims to consolidate all teaching materials into a single platform, facilitating both accessibility and organization for educators and students, and promoting sustainable education within a Madani society. The study employed several methodological processes, including application development, testing, user feedback collection from lecturers and students, and an effectiveness evaluation through surveys. The survey results revealed that 90% of respondents found the application easy to navigate, and 100% agreed that it significantly improved their learning and teaching experiences. Additionally, 90% of respondents were satisfied with the content provided, and none reported any technical issues. Furthermore, 80% of respondents agreed that the application is user-friendly, and 100% found the assignment submission feature particularly helpful. Notably, 90% of respondents would recommend the application to other students or lecturers. These findings suggest that the AMP Box not only resolves issues related to the disorganized storage of teaching materials but also enhances student engagement and streamlines the learning process. Students reported improved accessibility to course materials, while lecturers found the application beneficial in managing resources more efficiently. In conclusion, the development of the AMP Box is a significant step forward in advancing digital education and supporting the Madani society's development. The application provides an interactive learning experience for students and offers convenience for lecturers in systematically managing their teaching materials. Future improvements could involve expanding the use of this application across other educational institutions to further support sustainable education.

Keywords – Smartphone application; Advanced Manufacturing Process course; sustainable education

Introduction

In the rapidly evolving digital era, technology has become an integral part of various sectors, including education. The increasing adoption of digital tools and resources has the potential to significantly enhance the quality and accessibility of education. This study focuses on the development and evaluation of a smartphone application designed to systematically store and manage teaching materials, providing easy access to all students enrolled in the Advanced Manufacturing Process course across Malaysian Polytechnics.

Traditional methods of managing teaching materials often involve cumbersome processes and are prone to disorganization, leading to inefficiencies for both educators and students. The proposed smartphone application

aims to address these issues by offering a centralized platform where all teaching materials can be easily stored, accessed, and managed. This approach aligns with the principles of sustainable education, which emphasize efficiency, accessibility, and the optimal use of resources.

The integration of such a digital solution is expected to streamline the educational process, making it more efficient and engaging for students. By leveraging technology, educators can focus more on the quality of their instruction rather than the logistics of material management. Furthermore, students can benefit from having instant access to the necessary resources, which can enhance their learning experience and overall academic performance.

This study employs a mixed-methods approach, incorporating both quantitative and qualitative data collection methods. The application development process includes iterative testing and refinement based on feedback from both lecturers and students. Surveys and performance evaluations are conducted to assess the effectiveness of the application in improving the management and accessibility of teaching materials.

The findings from this study will provide valuable insights into the benefits and challenges of implementing such a technological solution in educational institutions. Ultimately, this research aims to contribute to the broader goal of advancing digital education and supporting the development of a *Madani* society through sustainable educational practices.

Literature Review

The integration of technology in education has been widely studied and acknowledged for its potential to enhance teaching and learning processes. According to Hwang and Tsai (2011), digital tools can provide interactive and engaging learning experiences that cater to different learning styles and needs. Technology enables personalized learning, allowing students to progress at their own pace and access resources tailored to their individual requirements (Bates & Poole, 2003).

Smartphone Applications in Education

Smartphone applications have gained popularity as effective educational tools due to their portability, accessibility, and user-friendly interfaces. Research by Sung, Chang, and Liu (2016) indicates that mobile apps can facilitate various educational activities, including content delivery, collaborative learning, and assessment. These applications can bridge the gap between formal and informal learning environments, providing continuous access to educational resources (Kearney, Schuck, Burden, & Aubusson, 2012).

Effective Management of Teaching Materials

Effective management of teaching materials is crucial for the smooth operation of educational activities. Traditional methods of organizing and distributing materials often involve significant manual effort and are prone to inefficiencies (Gautam, 2015). Digital solutions, such as cloud-based storage and management systems, offer streamlined alternatives that enhance organizational efficiency and accessibility (Alghamdi, 2013). These systems allow educators to store, share, and retrieve teaching materials with ease, thereby improving their ability to deliver quality education.

Sustainable Education

Sustainable education emphasizes the need for efficient and responsible use of resources to ensure long-term educational success (Sterling, 2001). Incorporating technology into educational practices aligns with the goals of sustainable education by promoting resource efficiency, reducing physical material usage, and enhancing accessibility for all students (Hopkins & McKeown, 2002). By adopting digital tools, educational institutions can contribute to environmental sustainability while improving educational outcomes.

Student Engagement

Student engagement is a critical factor in academic success. Digital applications have been shown to increase student engagement by providing interactive and immersive learning experiences (Wang & Holcombe, 2010). According to a study by Chen, Lambert, and Guidry (2010), students who use educational apps tend to be more motivated and participate more actively in their learning. This increased engagement can lead to better understanding and retention of course materials.

Challenges of Implementing Digital Applications

Despite the numerous benefits, the implementation of digital applications in education comes with challenges. Issues such as the digital divide, varying levels of digital literacy among students and educators, and the need for ongoing technical support must be addressed (Van Dijk, 2006). Additionally, ensuring data privacy and security is essential when adopting digital solutions (Cavoukian, 2011). It is important for educational institutions to consider these factors and develop strategies to mitigate potential risks.

App Builders for Educational Applications

In developing the AMP BOX application, various app builders were evaluated for their functionality, cost-effectiveness, and ease of use. The following literature review explores Thunkable, Kodular, and MIT App Inventor, highlighting their strengths and limitations in the context of educational app development.

Thunkable

Thunkable is a popular app development platform that allows users to create apps without prior coding knowledge. It supports both Android and iOS app development, making it versatile. Thunkable offers a drag-and-drop interface, simplifying the app-building process. However, while Thunkable is user-friendly and powerful, it is not entirely free. Although users can build and test apps for free, publishing apps on the Google Play Store or the Apple App Store requires a subscription fee. This cost can be a significant barrier for educational institutions or individual educators with limited budgets (Thunkable, 2024).

Kodular

Kodular, formerly known as Makeroid, is another app development platform that allows users to create apps without coding. It provides a free platform for building and publishing Android apps. Kodular includes a wide range of components and extensions, making it highly customizable. However, while Kodular itself is free, certain features, such as storing images and other media files, may require a subscription. This can limit the functionality of the app if users do not wish to incur additional costs. Despite this, Kodular remains a strong choice for those looking for a free and flexible app development environment (Kodular, 2024).

MIT App Inventor

MIT App Inventor is a completely free web-based app development platform designed primarily for educational purposes. It offers a simple drag-and-drop interface, making it accessible to beginners and educators. MIT App Inventor supports only Android app development and has some limitations, such as a cap on the size of images and overall app complexity. However, its strong educational focus and active community support make it a valuable tool for developing learning apps. Additionally, MIT App Inventor allows for integration with external resources, which can help overcome some of its inherent limitations (MIT App Inventor, 2024).

Conclusion

In conclusion, each app builder—Thunkable, Kodular, and MIT App Inventor—offers unique advantages and challenges. Thunkable is versatile and user-friendly but requires a subscription for publishing. Kodular is highly customizable and free but may involve costs for certain features. MIT App Inventor is entirely free and excellent for educational purposes but has limitations regarding app complexity and media storage. For the development of the AMP BOX application, MIT App Inventor was ultimately chosen for its cost-effectiveness and educational focus despite some limitations that were creatively circumvented to enhance app functionality. Thus, MIT App Inventor was chosen as the application builder for this study.

Methodology

Research Design

This study employs a mixed-methods approach, combining both quantitative and qualitative data collection techniques to develop and evaluate the effectiveness of a smartphone application designed for managing teaching materials. The mixed-methods approach allows for a comprehensive understanding of the application's impact on both educators and students.

Participants

The study involves participants from several Malaysian Polytechnics, specifically focusing on those enrolled in the Advanced Manufacturing Process course. The participants include:

Students: Approximately 100 students will use the application to access teaching materials.

Lecturers: Around 5 lecturers will use the application for managing and distributing teaching materials.

Application Development

The development of the AMP Box application followed a structured methodology to ensure its effectiveness and functionality. The process involved several key stages, each contributing to the final product's success. The methodology is depicted in the flowchart shown in **Figure 1** and described in detail by several stages below:

Stage 1: Planning

The primary goal of this project is to define the project scope and establish clear objectives for the AMP Box application. The first activity involves identifying the problems and challenges currently faced in the teaching and learning process of the Advanced Manufacturing Process course. The second activity is to set clear objectives for the AMP Box application, with a focus on improving accessibility, organization, and interaction within the course.

Stage 2: Research and Analysis

In Stage 2, the objective is to conduct a thorough analysis of existing solutions and gather user requirements. This involves reviewing literature on similar educational applications, specifically focusing on Thunkable, Kodular, and MIT App Inventor, to understand their features and functionalities. Additionally, feedback will be collected from both students and lecturers to gain insights into their needs and preferences. Finally, the strengths and weaknesses of the current tools used for managing teaching materials will be analysed to identify areas for improvement in the AMP Box application.

Stage 3: Design

In Stage 3, the objective is to develop a comprehensive blueprint for the AMP Box application. This stage involves designing the user interface (UI) with a strong emphasis on ease of use and accessibility to ensure a seamless user experience. Wireframes and mock-ups will be created for various screens, including the welcome page, home page, synopsis, course learning outcomes (CLOs), syllabus, notes, videos, assignment submission, and communication features. Additionally, the application architecture will be carefully planned, outlining the flow of information and interactions between different components to ensure efficient and effective functionality.

Stage 4: Development

In Stage 4, the objective is to build the AMP Box application using MIT App Inventor. This stage involves developing the application according to the established design specifications, ensuring that all planned features are implemented effectively. Key functionalities will include access to course materials, assignment submission, and communication tools. Additionally, the application will be optimized to support Android devices, with special attention given to addressing any constraints related to image and video uploads to ensure smooth performance.

Stage 5: Testing

In Stage 5, the objective is to ensure that the AMP Box application functions correctly and meets user needs. This will involve conducting thorough testing using both the MIT App Inventor emulator and actual Android devices to evaluate the application's performance. All features, including navigation, access to materials, assignment submission, and communication tools, will be rigorously tested. Feedback will be gathered from a small group of users to identify any issues or areas for improvement, ensuring the application is refined and optimized before its final release.

Stage 6: Evaluation and Feedback

In Stage 6, the objective is to assess the effectiveness of the AMP Box application and make any necessary improvements. The application will be distributed to a larger group of students and lecturers to gather broader feedback. The impact of the application on teaching and learning processes will be evaluated, with particular emphasis on accessibility, organization, and interaction. Detailed user feedback will be collected through questionnaires and surveys, which will be used to identify areas for further refinement and enhancement of the application.

Stage 7: Refinement

In Stage 7, the objective is to enhance the AMP Box application based on the feedback received from users. This stage involves addressing any issues identified during testing and evaluation, ensuring that the application functions smoothly. Additional features or improvements suggested by users will be implemented to further refine the application. Finally, the application will be tested to ensure stability and optimal performance under various conditions, preparing it for wider use.

Stage 8: Deployment

In Stage 8, the objective is to release the final version of the AMP Box application. This stage involves publishing the application on suitable platforms, making it accessible for download by both students and lecturers. To ensure smooth adoption, detailed installation instructions and support materials will be provided. Additionally, the application's performance and user feedback will be closely monitored post-deployment to address any emerging issues and ensure continuous improvement.

As a conclusion, the development of the AMP Box application followed a meticulous and user-focused methodology. Each stage, from planning to deployment, was designed to ensure the final product met the needs of students and lecturers in the Advanced Manufacturing Process course, enhancing the overall educational experience.

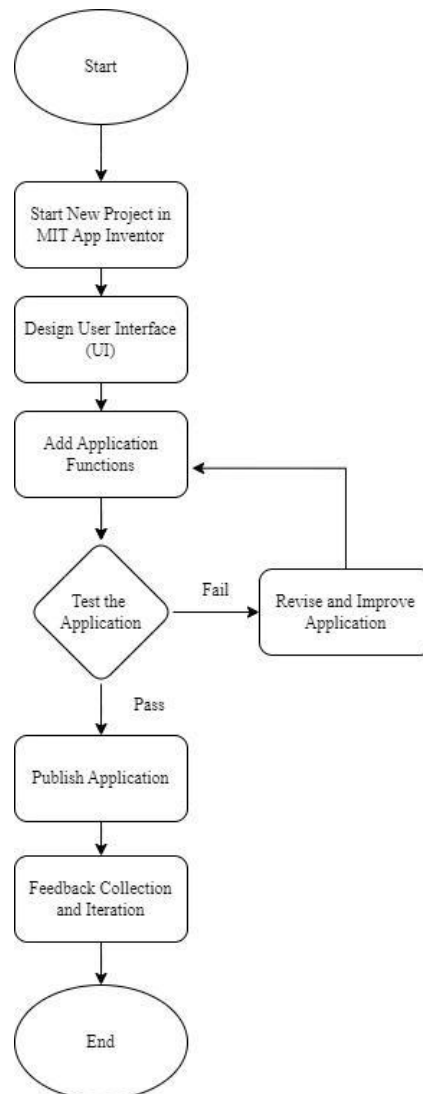


Figure 1: Methodology Flow Chart for Developing AMP Box Application

Data Collection

Data collection involves the following methods:

Surveys:

Pre-implementation Survey: Administered to both students and lecturers to gather baseline data on current methods of managing and accessing teaching materials and their initial perceptions of digital tools.

Post-implementation Survey: Conducted after a semester of using the application to assess changes in accessibility, engagement, and overall satisfaction with the application.

Interviews:

Semi-structured Interviews: Conducted with a subset of lecturers and students to gain deeper insights into their experiences using the application, challenges faced, and suggestions for improvement.

Usage Analytics:

Collecting data on application usage, such as frequency of access, types of materials accessed, and time spent on the application, to quantitatively measure engagement and usage patterns.

Data Analysis

Data analysis will be conducted using both quantitative and qualitative methods:

Quantitative Analysis:

Descriptive statistics will be used to summarize survey responses and usage analytics.

Inferential statistics (e.g., paired t-tests) will be employed to compare pre- and post-implementation survey results, assessing the impact of the application on accessibility and engagement.

Qualitative Analysis:

Thematic analysis will be performed on interview transcripts to identify common themes and insights related to the user experience and perceived benefits or drawbacks of the application.

Ethical Considerations:

Ethical approval will be obtained from the relevant institutional review boards. Informed consent will be secured from all participants, ensuring that they are aware of the study's purpose, procedures, and their right to withdraw at any time without penalty. Data confidentiality and anonymity will be maintained throughout the study.

Implementation and Evaluation

The application will be implemented at the beginning of the semester. Continuous monitoring and support will be provided to address any technical issues. Evaluation will be based on the collected data, focusing on the following aspects:

Effectiveness:

Measured by improvements in accessibility and engagement reported by students and lecturers.

User Satisfaction:

Assessed through survey responses and interview feedback.

Usability:

Evaluated through usability testing and ongoing user feedback.

Data Finding and discussion

Application Development

The first step in developing the app is to determine the screens required to meet the application's needs. In this app, the necessary screens include the welcoming page, synopsis, video, notes, and others. The software provides two views for the app developer: the designer display and the blocks display.

The designer display is used to design the screens and user interface (UI). The types of UI elements are selected based on the app's purpose. As shown in the **Figure 2** below, the chosen UI elements primarily consist of buttons. This choice makes the app more user-friendly and straightforward. Once the UI elements are selected, they are customized in terms of size, colour, font type, and other settings.

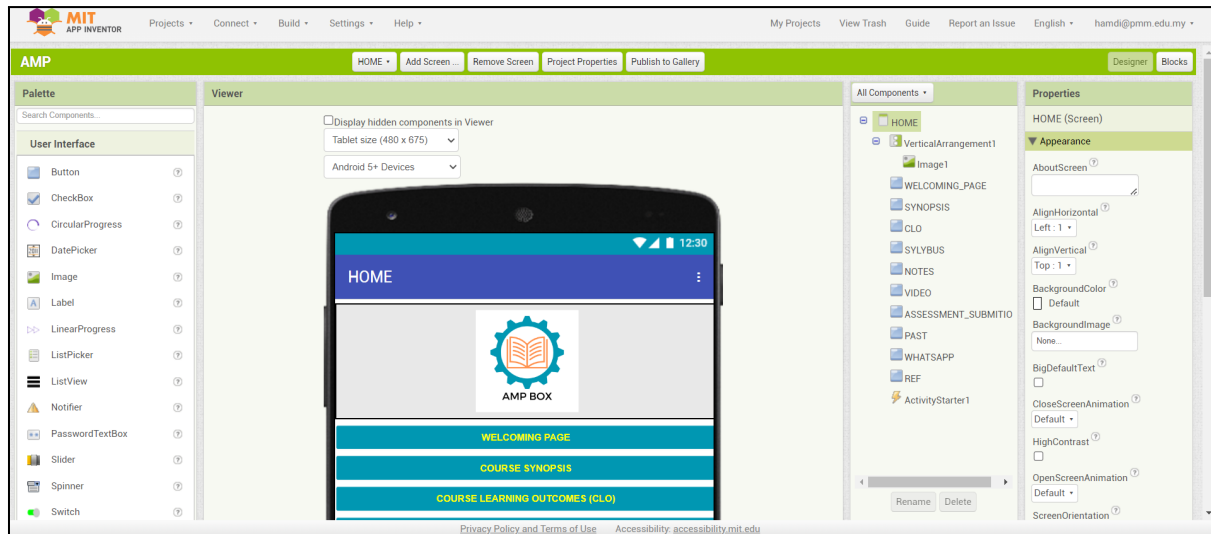


Figure 2: MIT App Inventor designer display

The second display is the block's display, where block-based instructions are used. This is similar to coding, as it provides commands for the app being developed. The blocks, as illustrated in the **Figure 3** below, are built based on the app's requirements. The diagram demonstrates the blocks used for the *Home* screen, where the previously created buttons are linked to the corresponding screens.

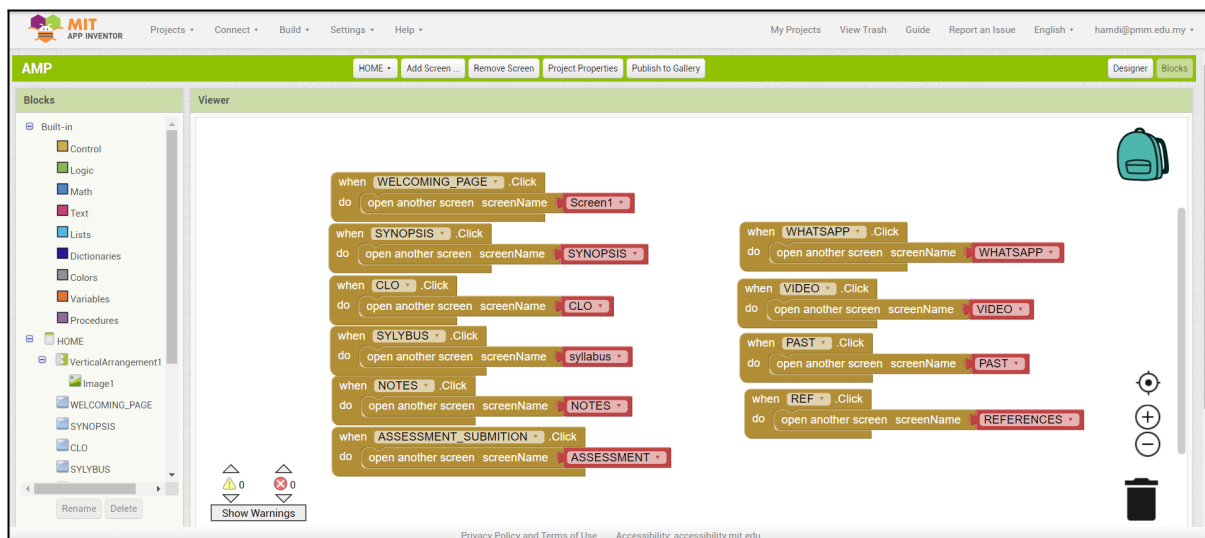


Figure 3: MIT App Inventor block display

The same process must be applied to every screen involved in the application. Once all the screens are completed and the app developer is satisfied, the next step is to simulate the application. There are three methods available for this process: AI Companion, an emulator, and a USB connection. In this app development, AI Companion was chosen for its simplicity and widespread use. A screen will appear, as shown in the **Figure 4** below. The app developer needs to scan the provided QR code using a smartphone. The app will then appear on the phone, provided that the MIT App Inventor application is already installed. This allows the developer to see whether the app functions as intended. If it does not, improvements must be made. This process continues until the developer is fully satisfied.

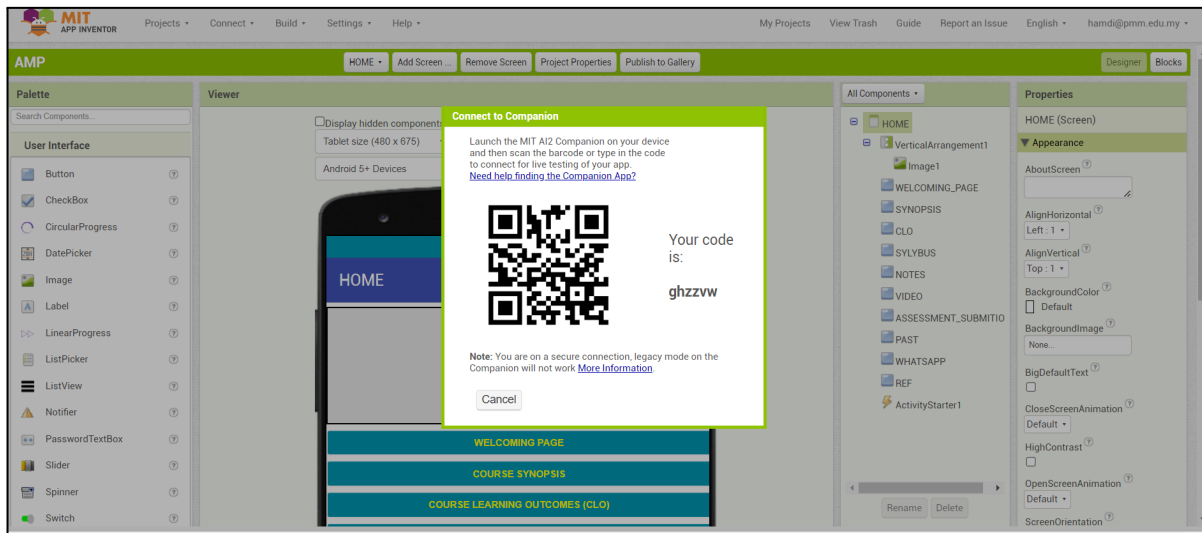


Figure 4: QR code for AI Companion

Once the developer is content with the application, the final step is to produce the app. This is done by publishing the APK file, which users can then install on their phones. To install the app, users need to click on the APK file link and follow the provided instructions. Upon completion, the AMP BOX app icon will appear on the user's phone screen, as shown in the **Figure 5**, indicating that the app has been successfully installed and is ready to use.



Figure 5: Apps icon

The user can then be taken to the welcoming page, as illustrated in the **Figure 6** below. From there, the user can click the home button to access the main screen, where they can navigate to other screens, such as notes, videos, and more as shown in **Figure 7**.

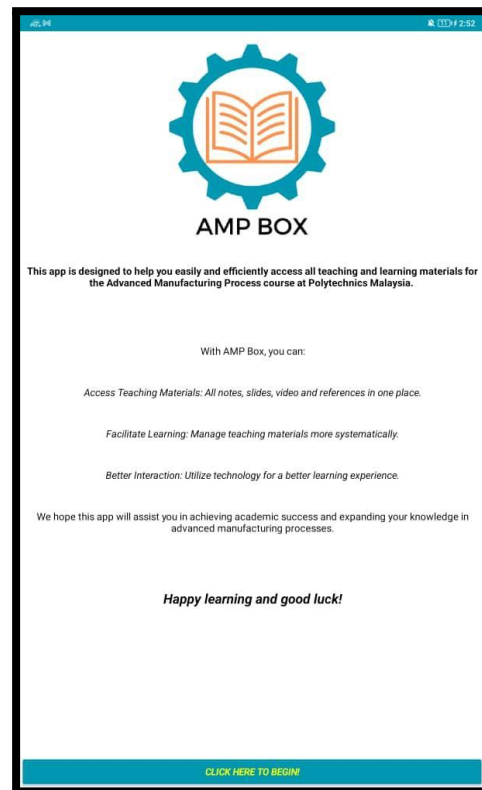


Figure 6: Welcoming page

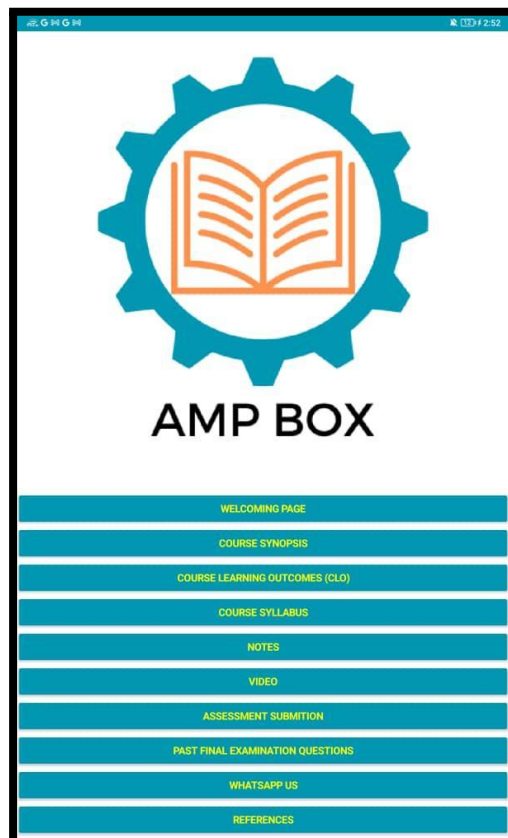


Figure 7: Home screen as a main page

Survey findings

The user demographics for this study consist of 60% students enrolled in the Advanced Manufacturing Process course, 10% lecturers teaching the course, and the remaining 30% are individuals not directly related to the course. The inclusion of non-related participants aimed to gather unbiased opinions and assess the app's usability and user-friendliness beyond its intended audience. This helps determine whether the app can be effectively used by others who are not directly associated with the course.

A total of 70% of respondents are from Politeknik Merlimau, Melaka, 20% from Politeknik Melaka, and 10% from Politeknik Sultan Azlan Shah, Perak. The data reveals that 90% of respondents find the app easy to navigate. Additionally, 90% of respondents believe that the app is effective in providing access to course materials. Notably, 100% of respondents agree that the app has significantly improved their learning and teaching experience.

Further analysis shows that 90% of respondents are satisfied with the content provided within the app, and none have reported any technical issues during usage. Moreover, 80% of respondents agree that the app is user-friendly, and 100% find the assignment submission feature particularly helpful. Lastly, 90% of respondents indicated that they would recommend this app to other students and lecturers.

In conclusion, the AMP Box app is highly effective in enhancing accessibility and engagement with course materials. Both students and lecturers expressed a high level of satisfaction with the app, indicating its potential to be a valuable tool in the educational landscape.

Conclusion

This study aimed to evaluate the effectiveness and usability of the AMP Box application in enhancing teaching and learning experiences within the context of the Advanced Manufacturing Process course. The findings indicate that the AMP Box app successfully addresses key challenges related to accessibility, content management, and user engagement. A significant majority of users, including both students and lecturers, reported high levels of satisfaction with the app's functionality and content, reinforcing its value as a tool for educational enhancement.

The study also highlights the app's user-friendliness, as evidenced by the positive feedback from respondents who were not directly involved in the course. This broader usability suggests that AMP Box has the potential to be a versatile tool, applicable across various educational contexts.

In terms of impact, the app has not only improved access to course materials but has also facilitated a more interactive and efficient learning environment. The absence of technical issues further underscores the robustness of the app, while the unanimous approval of the assignment submission feature points to its practical benefits.

Overall, the AMP Box application represents a significant advancement in leveraging digital tools to support education. By providing an organized, accessible, and user-friendly platform, it has the potential to enhance the educational experiences of both students and lecturers. Future iterations of the app could explore additional features to further expand its utility and adaptability across different educational settings.

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INTEGRATING TECHNOLOGY FOR ENHANCED STUDENT LEARNING IN THE DIGITAL AGE

Jauriah Md Azali¹, Farrah Syuhaida Ismail², Abdul Halim Mohamed³

^{1,2} Educational Studies Department, Teacher Education Institute, Perlis Campus, Malaysia,

³ Sultan Qaboos University, Oman

*Corresponding author: juita35@gmail.com, jauriah.mdazali@ipgm.edu.my

ABSTRACT A successful transition to digital learning environments in classrooms, districts, and states hinges not solely on the presence of technology, but on how effectively technology facilitates teaching and learning processes. This research aims to investigate the obstacles encountered by thirty (30) novice teachers in the Borneo district (specifically Ranau and Kota Kinabalu), Malaysia, as they endeavor to integrate and employ digital instructional strategies to elevate and revolutionize student learning experiences, aligning these practices with educational research. Utilizing focus group interviews and surveys, the researcher assessed the novice teachers' proficiency, utilization, and integration of technology. Several challenges impeding teachers in enhancing teaching and learning were identified, including issues related to infrastructure and internet connectivity within schools. Additionally, the study identifies various roles that technology plays in advancing teaching and learning, while also exploring the benefits of these strategies for both educators and students.

Keywords: ICT tools, technology integration, digital instructional strategies, novice teacher

INTRODUCTION

Suchita (2023) and Voogt (2019) explored various methodologies aimed at empowering novice teachers to enhance their proficiency in integrating technology within classroom settings. Additionally, O'Halloran (2018) highlighted the efficacy of interactive tools in facilitating the instruction of fundamental mathematical concepts. Teachers can hone their ability to effectively address student reasoning through the utilization of video resources, as suggested by Voogt (2019) and supported by O'Halloran (2018). This assertion finds further support in recent studies by Smith et al. (2023), Johnson (2022) and Aberg (2016) which emphasize the role of multimedia resources in enhancing teacher student interaction and promoting critical thinking skills. Huda's (2018) argument that reflective teaching encompasses comprehensive initiatives, spanning curriculum design to pedagogical research, thereby advocating for its implementation, is further corroborated by insights from a study conducted by Lee and Chen (2021). Moreover, the pivotal role played by teachers, leveraging their professional identities, in the process of self-assessment is underscored by recent research findings by Wang and Liu (2023). In the context of education, it primarily refers to the various resources and devices (software) available on the machine. As a result, technology such as ICT (Information Technology and Communication) is not a panacea for solving all educational problems. Nevertheless, ICT has definitely become a valuable resource that helps us to put together different learning communities in new and different ways. (Taylor, 2004). Research has shown that the use of ICT can support new educational approaches and make teaching strategies, such as simulation or interactive learning, more feasible (Roblyer, Edwards & Havriluk, 2004). However, findings showed that teachers in Kota Kinabalu face challenges that are mostly related to the internet services, speed and ICT facilities (Bagang, T.P., 2022). Moreover, the lesson time which is fixed and equal all over the country, also makes pressure for teachers in using ICT to prepare student exam oriented and lack of ICT integration. Consequently, these problems further exacerbated the difficulties among the communities in using and assessing online services and transactions. In addition, educators commonly agree that ICT has the potential to improve student learning outcomes and effectiveness if used properly (Good & Lavigne, 2017; Wang, 2001). Hermawan, A., Achmad, W., & Yulianah, Y. (2022) and Earle (2002) stressed that incorporation has a sense of completeness through which all the essential elements of the system seamlessly merge to form the whole. For education, simply handing over a series of websites or CD-ROM programs to students is definitely not ICT integration. In a properly crafted ICT integrated lesson, ICT and other

crucial educational components such as content and pedagogy are folded into one entity. As a result, the quality of the lesson would somehow diminish, if the ICT ingredient tied up from the ICT-integrated lesson (Williams, 2003).

The teacher training system is currently coping with a wave of educational reforms, which aim to help the system adapt to the spirit of the times and to the standards expected of graduates of a teacher training program. Furthermore, ICT literacy enhances classroom teaching and learning via dynamic, interactive and engaging content that can promote experimentation, innovation and best practices. UNESCO'S strategic objectives in education note that ICT is the key to bring about an innovative impact on the quality of education through various contents and teaching methods.

Furthermore, In Malaysia the ICT master plan outlined many programs to facilitate the integration of ICT in education and training programs (MOE,2012) to prepare a technologically literate and thinking workforce that will enable Malaysians to function as keen and competitive global players of the 21st century.

Malaysian governments at all levels make efforts:

- § To equip classrooms with computers, connectivity to networks and access to the internet.
- § Almost all educational institutions are equipped with computer labs and access to the net.
- § Teachers are to go for basic information courses and also provide intensive and continuous ICT training for all teachers.

Therefore, the research aims to examine the challenges faced by thirty (30) novice teachers in Borneo district (Ranau and Kota Kinabalu), Malaysia; on how they integrate and use digital instructional strategies to enhance and transform student learning, and align that use with learning research. Thus, the researcher conducted focus group interviews and surveyed novice teachers' skills, use, and integration with technology as well. There are few challenges that hinder the teachers to enhance teaching and learning such as infrastructures and internet connection in schools

Pedagogical Competencies

Based on the spirit of National Education Philosophy, the essence of Teacher Education Philosophy stated below will determine the course of direction and source of inspiration for teachers to follow, with the aim to excel teaching and learning and to enhance the image of teacher professionalism.

“Teacher with noble characters, progressive and scientific outlook will be prepared to uphold the national aspirations as well as to enhance the national inherited culture to ensure individual development and to preserve a united, democratic, progressive and discipline society”

According to the above-mentioned Teacher Education Philosophy, the main objective of teacher education is to train and produce teachers with a noble character, a progressive and scientific vision, and a commitment to uphold the national aspirations and heritage of culture. Teachers who are qualified as skilled professionals are expected to succeed in their teaching careers and improve the reputation of the teaching profession. In tandem with the training of students for the new digital age, teachers are seen as key players in the use of ICT in their everyday classrooms. Previous studies indicated that ICT integration is a complex phenomenon and technology or computer use among teachers is a complicated process. Over the years following the implementation of various technology initiatives in the Malaysian education system, Ismail, Zakaria and Aziz (2007) reported that the level of technology integration of teachers was still low. Teacher training is therefore a necessary prerequisite for the assimilation of the conceptual changes related to teaching and the integration of ICT in schools (Kay,2006).

Moreover, defining the pedagogical competencies that a novice teacher needs to possess is not a simple task, since the competencies involved are complex in nature. Luckily, many organizations have published documents that can provide good references. For example, the National Educational Technology Standards (NETS) published by the Information Society for Educational Technology (ISTE, 2017). Given the advances in technology and the access to the Internet in and out of school, ISTE tried to update its standards to reflect these developments and transition from technology-based teaching to technology-based learning, teamwork, leadership and empowerment (Smith, 2017). During the 2016–2017 academic year, ISTE solicited input from more than 2,000 educators and

administrators and used this data to redesign the standards around seven themes: Learner, Leader, Citizen, Collaborator, Designer, Facilitator, and Analyst. These 2017 ISTE Standards for Educators incorporate many of the previous standards, while also adding a focus on collaboration, advocacy, digital literacy, media literacy, computational thinking, privacy and student data, student empowerment, data based decision making, feedback, and teaching colleagues.

METHODOLOGY

The questionnaires survey items administered to measure teachers' integration stages, attitudes, skill, knowledge, and frequencies applying ICT during three to five years teaching. The open-ended questions regarding opinion and suggestion for novice teachers are also included in the questionnaires. The survey questionnaire divided into 4 sections of questions to identify novice teachers:

- a) Competencies, ICT skills, and knowledge
- b) Frequencies of ICT integration
- c) Attitudes on ICT integration
- d) Suggestion ICT integration by respondents (open ended questions)

The semi structured interview guide for six (6) participants regarding strategies and approaches in technology integration in the curriculum.

The main research objectives formulated for the study are:

- (i) To examine how novice teachers integrate and use digital education approaches to improve and transform student learning.
- (ii) To identify the need that encounter novice teachers in ICT Integration in teaching and learning activities.

In addition to the challenges posed by the digital age and Information and Communication Technology (ICT), such as those elucidated by Johnson (2016) regarding technology use on social media platforms like Facebook, LinkedIn, and messaging apps, as well as the behavioural dynamics within student-teacher relationships highlighted by Campbell (2009; Johnson, 2016), recent research has focused on enhancing teaching practices to maintain technical and ethical integrity within this context.

A critical aspect of addressing these challenges involves rethinking how knowledge is managed in light of its dispersed nature across various information carriers. This approach considers the diverse array of platforms and mediums through which knowledge is disseminated, underscoring the importance of adapting teaching methodologies accordingly. This proactive effort is integral to ensuring the future success of teaching practices, particularly in navigating the evolving landscape of education and resolving tensions between institutional demands and organizational needs.

McMillan (2018) advocated for project-based learning as a strategy to foster critical thinking skills among students. Notably, recent studies have exemplified the efficacy of collaborative, project-based learning initiatives in developing specific competencies, such as YouTube production skills. For instance, a study involving two faculty members and two students engaged in an independent project aimed at enhancing their proficiency in YouTube content creation demonstrated the potential of collaborative learning environments to cultivate technical expertise while promoting interdisciplinary collaboration and creative expression.

These findings underscore the importance of embracing innovative pedagogical approaches to address the multifaceted challenges posed by the digital age (JM. Azali, 2022). By leveraging collaborative learning strategies and adapting to the dispersed nature of knowledge dissemination, educators can effectively equip students with the skills and competencies needed to thrive in an increasingly interconnected and technology-driven world.

The charts used to illustrate the data collected from the survey with thirty (30) responses to answer the questionnaires. Figure 1 depicts the demographics of the participants from District of Ranau and Kota Kinabalu, Sabah. 21.4% are male and 78.6% are female teachers. 26.3% graduated from IPTA (university) and 73.7% from IPGs (Figure 2).

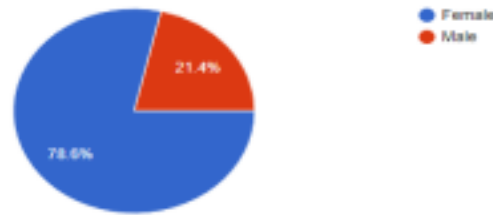


Figure 1: Pie chart of participants' gender

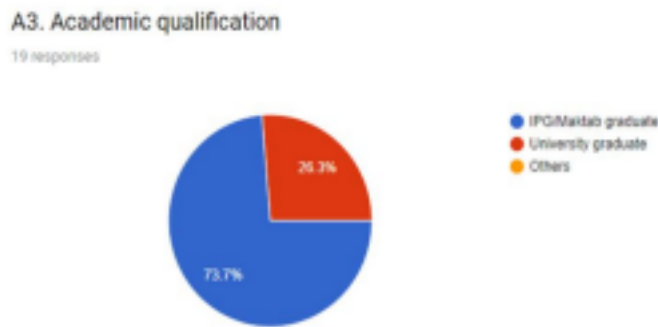


Figure 2: Pie chart of percentage of respondents according to their institution.

Based on the data collected from the survey statistical graphs are illustrated to show intelligible results.

What are the level of computer skills and knowledge for primary school novice teachers in teaching and learning process?

To answer this the survey administered through few items of novice teachers asked to rate their ICT skills on the following scale;

(1) have no skill , (2) have little skill, (3) have some skill, (4) have moderate skill (5) have a great deal of skill.

How frequent is ICT integration in Teaching and learning process?

Novice teachers were asked to rate of their frequencies of ICT integration and support from school administrator during their teaching period on the following scale;

1. Never , (2) Seldom, (3), Occasionally, (4) Often, (5) Always

Table 1: Level of integration in Teaching and learning

Initial level	Never	Seldom	Occasionally	Often	Always
New level	Low frequency of use		Average frequency of use		High frequency of use

What are the attitudes on ICT Integration?

Novice teachers were asked to rate their attitudes on the following scale: (1) Never feel like this, (2) Seldom like this, (3) Occasionally feel like this, (4) Often feel like this, (5) Almost always feel like this

The open-ended question section

Your opinion and suggestion:

- Does the school encourage autonomy and teamwork to enhance ICT used among teaching staff?
- Do training programs are provided for teachers to increase their awareness about the value of ICT learning?
- In your opinion, why do you think ICT integration in the class is unsuccessful? • Your suggestion on ICT integration in the classroom.

RESULT AND DISCUSSION

The descriptive study for the items being analysed.

ICT skills and knowledge

There are 14 items for novice teachers' competencies, as for item no.1-6 regarding knowledge of identifying computer components and word processing (typing). Item no.7 -14 regarding skills on the internet and constructing teaching and learning material. The summary of the result finding from the questionnaires depicted in the graph as percentage and scale (1-5).

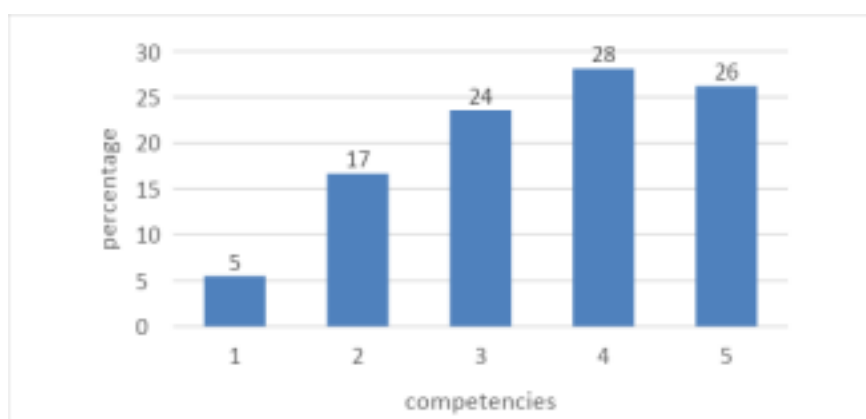


Figure 3: Novice teachers 'competencies ICT skills and knowledge

Figure 3 depicted competencies of respondents in technology (ICT) integration in their pedagogical practice. Most of the respondents have moderate to great knowledge of technology. The respondents mostly at scales 4-5. Fifty-four percent (54%) of the respondents are competent in using technology such as ICT tools.

Frequencies of ICT Integration

There are 15 items for novice teachers' frequencies of ICT integration in the Teaching and Learning process. Most of the novice teachers integrate ICT as tools for teaching rather than student learning. As the result from the questionnaires shown in Figure 4:

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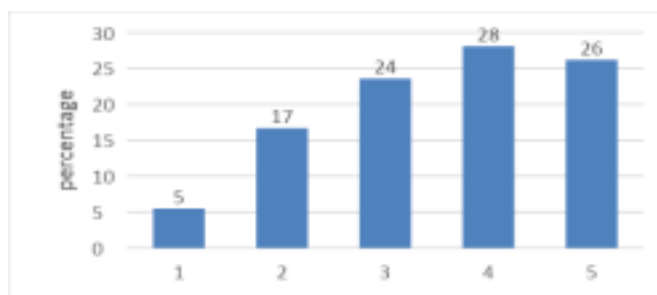


Figure 4: Novice teachers' frequencies of integrating ICT

The respondents mostly at scales 4-5. Fifty-four percent (54%) of the respondents are frequent user of technology and integrated in the classrooms. From the dimension of novice teachers' attitude on ICT integration, the novice teachers are in a positive attitude towards ICT integration. The result as depicted in Figure 5 summarizes the survey finding.

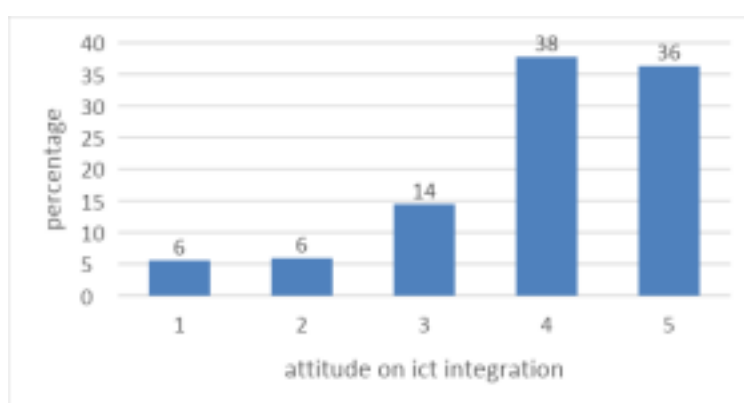


Figure 5: Novice teachers' attitude on ICT integration

The respondents mostly at scales 4 and 5. Seventy-four percent (74%) of the respondents have a positive attitude towards technology integration in the classrooms. From the dimension of novice teachers teacher attitude on ICT.

The findings from the open-ended questions:

Interview results

From the interview that was carried out, there are two categories generated from the semi structured interview guide.

Table 2 : Interview questions

Categories	Questions (Interview guide)
General teaching	<i>What do you see as one or two of your greatest strengths as a teacher</i>
	<i>What areas are you trying to improve or change?</i>
	<i>What are the barriers you face in using new technology in the classroom?</i>
Learning tools /materials	<i>How do you develop lesson plans?</i>
	<i>What resources would help you develop lesson plans using online or digital resources?</i>
	<i>What is the role of the teacher and the learner?</i>
	<i>What technology being use?</i>

Based on ISTE (2017) the researcher developed as depicted in Table 3.

Table 3: Indicator for changes of teaching strategies

Participants /class lesson	Role Of The Teacher	Role Of The Learner	Technology Use	Indicator for changes in teaching strategies
1. (Science)- Year 5, 6	Transmitter, Facilitator	collaborator, researcher	student presentation, information source, collaboration (group work)	student led activities and presentation
0. (Islamic study) Year 3-6	Guide, Listener	presenter, collaborator	teacher presentation, collaborations, administrative purpose	student led activities and presentation
0. (English: Language Art) -Year 2-3	presenter, creator, listener	knowledge constructor, collaborator	productivity and administrative purpose, communication, administrative purpose	student led activities and presentation
0. (Bahasa Malaysia) Year 4, 5,6	Designer, Facilitator collaborator	digital citizen, researcher, collaborator	online, frogvle, GC, information research, administrative purpose	student led activities and presentation
0. (Pre- school: Story telling)	Designer, Leader, Learner	Citizen, thinker, listener	Preparing lesson plans, Teacher presentation, cooperation, administrative purpose	teacher presentation or demonstration telling about how to protect nature (weekly theme)
0. (English speaking/ communication) Year 4, Year 5	Leader (Presenter), Citizen	knowledge constructor, collaborator	Teacher presentation, group work ,	student led activities and presentation

Furthermore, the emergence of such challenges in the digital age or the Information and Communication Technology (Johnson, 2016) including the use of technology among social media users such as Facebook, LinkedIn and even messenger, as well as behavioural challenges between student teacher relationships (Campbell, 2009; Johnson, 2016). In order to help the level of teaching practice within technical and ethical integrity in the digital age, the specific enhancement of the manner in which knowledge is handled by the dispersed nature of knowledge has to do entirely with the diverse set of information carriers. This effort took into account the future key success of teaching practice in resolving the challenge between institution and organization. McMillan (2018) stated that project-based learning could enhance the thinking of students. It has mentioned that two faculties and two students had become collaborators through an independent study aimed at developing their *YouTube* production skills.

In spite of the factors that encourage teachers' use of ICT in classrooms, several studies have conducted empirical research on factors (barriers) that discourage the use of ICT by teachers. Mat Adam, N., Raja Maamor Shah, R. N. F. A., & Adnan, M. (2022) reviewed that many challenges discourage teachers' use of computer technology in classrooms. Infrastructure facilities and internet access need to be improved to ensure that online learning can be optimally utilized by teachers and students. Various programs and workshops need to be designed and implemented to increase the knowledge, skills and confidence of teachers and students in applying online learning.

CONCLUSION

Due to the importance of ICT in the education world nowadays, it has become inevitable to include ICT training in Teacher training institutions. Research has however indicated that the ICT training of the novice teachers is not helping much in the integration of ICT in education mainly because teachers are not teach how to integrate ICT in their teaching instead, they are taught computer literacy. Thus, the curriculum of teacher training was reviewed and ICT being integrated in few courses. Furthermore, there is no doubt that ICT integration in classroom practice is a complex and multifaceted issue. Novice teachers should be able not only to use ICT in order to support their traditional instruction but also to reorganize their instruction using ICT. Effective programmes aiming at teachers' ICT preparation and support should be flexible, continuous and subject focused rather than uniform or identical for all. ICT paradigms for every subject in the curriculum need to be implemented effectively. Thus, Professional and novice teachers' development programmes should also focus on coupling changes in teachers' pedagogical cultures and philosophies for teaching and learning with their training on how to use appropriate ICT tools with their students. Teachers' ICT integration culture and capability is built up over time from experience, reflection and

review. Further research is necessary to address the issues above in order to redirect current policies and strategies employed for ICT integration in classroom practice.

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APLIKASI PENGGUNAAN MEDIA SOSIAL DAN CABARANNYA DALAM MEMBENTUK SAHSIAH QURANI

Najmiah binti Omar¹, Rosmalizawati binti Abdul Rashid², Fatimah Zaharah binti Ismail³, Isma Rosila binti Ismail⁴, Zuraidah Juliana binti Mohamad Yusoff⁵, Rahimah binti Embong⁶

¹ Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

² Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

³ Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

⁴ Jabatan Bahasa dan Komunikasi, Pusat Pendidikan asas dan Lanjutan, Universiti Malaysia Terengganu, Malaysia.

⁵ Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

⁶ Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

*najmiah@unisza.edu.my

Abstrak:

Penggunaan media sosial telah menjadi sebahagian penting dalam kehidupan pelajar di Institusi Pengajian Tinggi (IPT). Artikel ini mengkaji aplikasi penggunaan media sosial dan cabarannya dalam membentuk sahsiah Qurani di kalangan pelajar IPT. Kajian ini menggunakan data dari Jadual 14, yang menunjukkan frekuensi dan peratusan penggunaan pelbagai aplikasi media sosial. WhatsApp muncul sebagai aplikasi yang paling banyak digunakan dengan frekuensi 408 (99.5%), diikuti oleh Instagram (85.6%) dan Telegram (79.3%). Aplikasi lain yang juga popular termasuk TikTok (75.6%) dan YouTube (74.1%). Sebaliknya, aplikasi seperti OmiTV (1.0%), Snapshot (4.6%), dan WeChat (5.9%) menunjukkan penggunaan yang rendah. Walaupun media sosial menyediakan pelbagai manfaat seperti kemudahan komunikasi dan akses kepada sumber pendidikan, ia juga membawa cabaran besar dalam pembentukan sahsiah Qurani. Konten tidak bermoral, pembaziran masa, tekanan sosial, dan penyebaran maklumat palsu adalah antara isu yang dihadapi. Pelajar perlu dididik tentang penggunaan media sosial yang beretika dan berlandaskan nilai-nilai Islam. Strategi seperti pendidikan berterusan, kawalan sendiri, dan penggunaan media sosial sebagai platform dakwah boleh membantu mengatasi cabaran ini. Dapatan kajian menunjukkan bahawa penggunaan aplikasi yang tinggi seperti WhatsApp, Instagram, dan Telegram, yang menawarkan ciri-ciri komunikasi segera dan interaksi sosial, perlu diimbangi dengan pendekatan yang bijak dan berdisiplin untuk memastikan ia selari dengan pembentukan sahsiah Qurani. Kesimpulannya, walaupun media sosial adalah alat yang berguna, penggunaannya harus dipantau dan dibimbing untuk membina generasi muda yang berakhlak mulia dan berpegang teguh kepada ajaran Islam.

Kata kunci: Media sosial, Sahsiah Qurani, Pelajar IPT, WhatsApp, Cabaran etika.

1.0 Pengenalan

Penggunaan media sosial telah menjadi fenomena global yang mempengaruhi pelbagai aspek kehidupan, termasuk pendidikan, komunikasi, dan sosialisasi. Bagi masyarakat Muslim, terutamanya pelajar di Institusi Pengajian Tinggi (IPT), media sosial memainkan peranan penting dalam kehidupan harian. Walau bagaimanapun, terdapat cabaran dalam memastikan penggunaan media sosial selari dengan pembentukan sahsiah Qurani, yang menekankan nilai-nilai moral dan etika berlandaskan ajaran Al-Quran.

Sahsiah Qurani merujuk kepada pembentukan akhlak dan moral yang berlandaskan nilai-nilai yang diajarkan dalam Al-Quran. Nilai-nilai ini termasuk kejujuran, kesederhanaan, tanggungjawab, hormat-menghormati, dan menjaga maruah diri. Pelajar yang dibentuk dengan sahsiah Qurani diharapkan dapat menjadi individu yang berakhlak mulia, bertanggungjawab, dan berpegang teguh kepada prinsip-prinsip Islam dalam setiap aspek kehidupan mereka. Namun, pengaruh negatif dari media sosial seperti penyebaran konten tidak bermoral, pembaziran masa, tekanan sosial, dan penyebaran maklumat palsu boleh mengganggu proses pembentukan sahsiah ini.

Kajian ini bertujuan untuk menganalisis aplikasi penggunaan media sosial di kalangan pelajar IPT serta mengenal pasti cabaran-cabaran utama yang dihadapi dalam usaha membentuk sahsiah Qurani. Dengan memahami tren penggunaan media sosial dan kesannya, strategi yang lebih efektif dapat dirumuskan untuk mengatasi cabaran-cabaran tersebut dan memastikan media sosial digunakan secara positif dan bermanfaat selari dengan ajaran Islam.

2.0 Tinjauan Literatur

Penggunaan media sosial telah berkembang pesat dalam dekad terakhir, menjadi komponen integral dalam kehidupan seharian individu, terutama di kalangan pelajar Institusi Pengajian Tinggi (IPT). Pelbagai kajian telah meneliti bagaimana media sosial mempengaruhi pelbagai aspek kehidupan, termasuk pembentukan sahsiah, atau karakter moral, berdasarkan prinsip-prinsip Islam yang diambil dari Al-Quran.

Penggunaan media sosial membawa cabaran yang besar dalam pembentukan sahsiah Qurani di kalangan pelajar. Sahsiah Qurani merujuk kepada pembentukan akhlak dan moral yang berlandaskan nilai-nilai yang diajarkan dalam Al-Quran, seperti kejujuran, kesederhanaan, tanggungjawab, hormat-menghormati, dan menjaga maruah diri (Yusof, 2021). Pembentukan sahsiah ini penting bagi memastikan pelajar bukan sahaja cemerlang dalam akademik tetapi juga mempunyai akhlak yang mulia dan berpegang teguh kepada prinsip-prinsip Islam dalam setiap aspek kehidupan mereka.

Pengaruh negatif daripada media sosial, seperti penyebaran konten tidak bermoral, pembaziran masa, tekanan sosial, dan maklumat palsu, boleh mengganggu proses pembentukan sahsiah ini. Konten yang tidak sesuai dan tidak bermoral yang mudah diakses melalui media sosial boleh mempengaruhi pemikiran dan tingkah laku pelajar, sementara penggunaan yang berlebihan boleh mengakibatkan pembaziran masa dan pengabaian tanggungjawab akademik dan ibadah (Rahman & Ibrahim, 2022). Tekanan untuk menyesuaikan diri dengan imej dan gaya hidup yang dipaparkan di media sosial juga boleh menimbulkan masalah kesihatan mental, seperti perasaan rendah diri dan tekanan sosial (Nor & Aziz, 2020).

Sorotan literatur menunjukkan bahawa walaupun media sosial menawarkan pelbagai manfaat, ia juga membawa cabaran signifikan dalam pembentukan sahsiah Qurani. Untuk mengatasi cabaran ini, pendekatan yang menyeluruh diperlukan, termasuk pendidikan berterusan, kawalan sendiri, dan sokongan dari keluarga dan komuniti. Dengan pendekatan yang betul, media sosial boleh menjadi alat yang berguna dalam membina generasi muda yang berakhlak mulia dan berpegang teguh kepada ajaran Islam.

Walaupun media sosial menawarkan pelbagai manfaat, ia juga membawa cabaran yang signifikan dalam pembentukan sahsiah Qurani. Pelajar perlu bijak dan berdisiplin dalam menggunakan media sosial, dengan sokongan dari pendidikan agama dan pengawasan yang berterusan. Dengan pendekatan yang betul, media sosial boleh menjadi alat yang berguna dalam membina generasi muda yang berakhlak mulia dan berpegang teguh kepada ajaran Islam.

2.1 Manfaat Media Sosial

Media sosial memberikan beberapa manfaat kepada pengguna dalam kehidupan sehari-hari. Walaupun terdapat cabaran, media sosial juga menawarkan pelbagai manfaat, terutama dalam konteks pembentukan sahsiah Qurani.

2.1.1. Kemudahan Komunikasi dan Pembelajaran

Media sosial, seperti yang ditunjukkan dalam kajian oleh Ahmad et al. (2023), menawarkan kemudahan komunikasi segera dan penyebaran maklumat yang pantas. Ini memberi pelajar alat yang efektif untuk berinteraksi dengan rakan, keluarga, dan pensyarah. Platform seperti YouTube dan Telegram digunakan untuk mengakses ceramah agama dan kelas dalam talian, membantu dalam pembelajaran berterusan dan pengayaan pengetahuan agama. Walau bagaimanapun, Yusof (2021) menegaskan bahawa manfaat ini harus diimbangi dengan penggunaan beretika yang selaras dengan nilai-nilai Qurani.

2.1.2. Pembentukan Sahsiah Qurani

Media sosial boleh digunakan sebagai alat yang efektif untuk menyebarkan dakwah, meningkatkan kesedaran agama, dan mempromosikan nilai-nilai Islam dalam kalangan pelajar. Kajian oleh Ali dan Ibrahim (2022) menunjukkan bahawa penggunaan platform seperti YouTube dan Instagram telah membantu meningkatkan pemahaman pelajar terhadap ajaran Islam, serta membentuk sikap dan perilaku yang lebih positif dan selaras dengan nilai-nilai Qurani. Selain itu, media sosial juga menyediakan akses kepada pelbagai sumber pendidikan agama yang interaktif dan mudah diakses, yang boleh memperkaya pembelajaran dan penghayatan agama.

2.1.3 Platform untuk Interaksi Positif dan Pembelajaran Kolektif

Media sosial dapat berfungsi sebagai platform untuk interaksi positif antara pelajar dan komuniti yang lebih luas, di mana mereka boleh berkongsi pengetahuan dan pengalaman mengenai Islam. Melalui kumpulan diskusi dalam talian, pelajar dapat terlibat dalam perbincangan yang membina tentang ajaran Islam, serta mendapatkan bimbingan dari para ustaz dan ilmunan agama. Menurut kajian oleh Hassan dan Rahman (2023), penyertaan aktif dalam kumpulan-kumpulan ini telah terbukti dapat meningkatkan pemahaman pelajar terhadap nilai-nilai Islam dan mendorong mereka untuk mengamalkan akhlak yang baik dalam kehidupan sehari-hari.

2.1.4 Akses kepada Sumber Pendidikan Islam yang Berkualiti

Media sosial menyediakan akses yang luas kepada pelbagai sumber pendidikan Islam yang berkualiti, seperti kuliah, ceramah, dan seminar dalam talian yang disampaikan oleh ulama terkemuka. Dengan mengikuti tokoh-tokoh agama yang dihormati, pelajar dapat memperkaya pengetahuan mereka tentang ajaran Qurani. Menurut Ismail dan Abdullah (2023), kehadiran sumber-sumber ini di media sosial telah membantu pelajar mengembangkan pemahaman yang lebih mendalam tentang Islam dan mempraktikkan nilai-nilai Qurani dengan lebih konsisten.

3.0 Metodologi

Kajian ini berbentuk kuantitatif yang dilaksanakan ke atas 410 orang responden yang terdiri daripada pelajar IPTA dan IPTS yang berada di Semenanjung Malaysia. Soal selidik diedarkan melalui google form.

Kajian ini bertujuan untuk menganalisis aplikasi penggunaan media sosial di kalangan pelajar IPT serta mengenal pasti cabaran-cabaran utama yang dihadapi dalam usaha membentuk sahsiah Qurani. Dengan memahami tren penggunaan media sosial dan kesannya, strategi yang lebih efektif dapat dirumuskan untuk mengatasi cabaran-cabaran tersebut. Ini termasuk pendidikan berterusan mengenai penggunaan media sosial yang beretika, kawalan sendiri dalam penggunaan, dan memanfaatkan media sosial sebagai platform untuk berdakwah dan menyebarkan mesej kebaikan (Hassan et al., 2019). Dengan pendekatan yang bijak dan berdisiplin, media sosial boleh digunakan secara positif dan bermanfaat, selari dengan ajaran Islam.

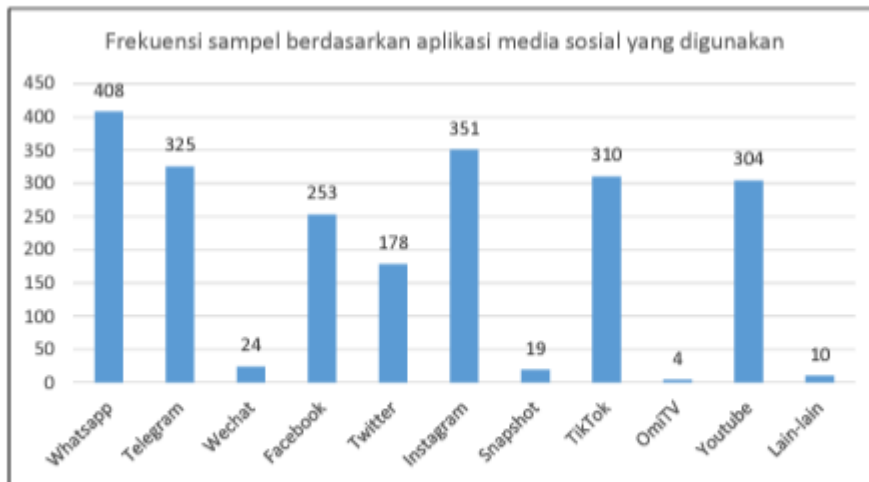
1. Jadual dan Rajah Aplikasi Media Sosial yang Digunakan

Jadual 1: Frekuensi dan Peratusan Sampel Berdasarkan Aplikasi Media Sosial yang Digunakan

Aplikasi media sosial yang digunakan	Frekuensi	Peratusan
Whatsapp	408	99.5
Telegram	325	79.3
Wechat	24	5.9
Facebook	253	61.7
Twitter	178	43.4
Instagram	351	85.6
Snapshot	19	4.6
TikTok	310	75.6
OmiTV	4	1.0
Youtube	304	74.1
Lain-lain*	10	2.4

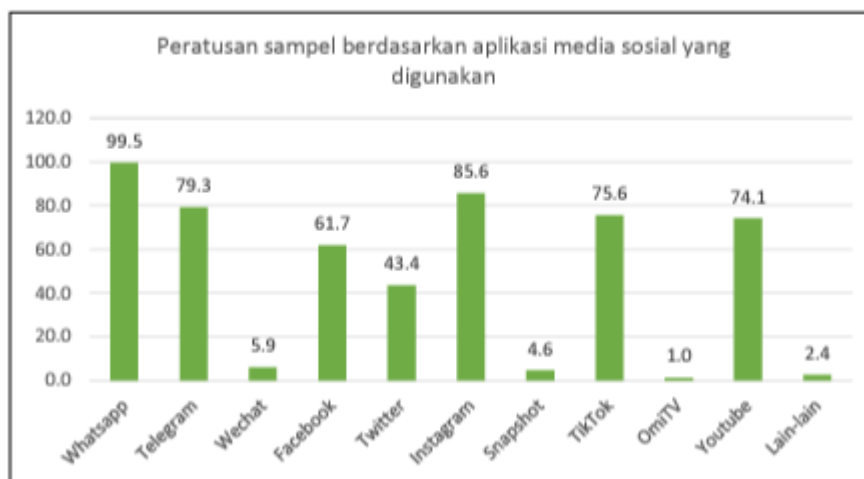
*Lain-lain: Webtoon, Reddit, Litmatch, Tinder, Twitch, Omegle

Data dari Jadual 1 menunjukkan bahawa pelajar Institusi Pengajian Tinggi (IPT) sangat bergantung kepada media sosial dengan WhatsApp menjadi aplikasi yang paling banyak digunakan (99.5%), diikuti oleh Instagram (85.6%) dan Telegram (79.3%). TikTok dan YouTube juga menunjukkan penggunaan yang tinggi masing-masing dengan 75.6% dan 74.1%. Walaupun data ini menunjukkan populariti dan keperluan penggunaan media sosial dalam kalangan pelajar IPT, ia juga menimbulkan persoalan tentang bagaimana aplikasi aplikasi ini mempengaruhi pembentukan sahsiah Qurani di kalangan pelajar.



Rajah 1 : Frekuensi Sampel Berdasarkan Aplikasi Media Sosial yang Digunakan

Data dari Rajah 1 di atas menunjukkan sebanyak 408 orang responden memilih whatsapp dalam penggunaan media sosial. Seterusnya sebanyak 351 orang responden memilih Instagram yang merupakan tempat kedua. Tempat ketiga terbanyak ialah telegram iaitu sebanyak 325 orang. Manakala tempat keempat ialah Tiktok. Tempat kelima tertinggi ialah Youtube.



Rajah 2 : Peratusan Sampel Berdasarkan Aplikasi Media Sosial yang Digunakan

Dalam era digital yang serba canggih ini, media sosial telah menjadi salah satu elemen yang tidak dapat dipisahkan dari kehidupan seharian, khususnya di kalangan pelajar Institusi Pengajian Tinggi (IPT). Pelbagai platform media sosial seperti WhatsApp, Instagram, Telegram, TikTok, dan YouTube menawarkan kemudahan komunikasi yang segera, penyebaran maklumat yang pantas, serta pelbagai hiburan dan interaksi sosial. Data

menunjukkan bahawa aplikasi seperti WhatsApp digunakan oleh 99.5% pelajar, manakala Instagram dan Telegram masing-masing digunakan oleh 85.6% dan 79.3% pelajar. Media sosial memberikan pelbagai manfaat seperti memudahkan kerja kumpulan, mengakses bahan pembelajaran, dan membina jaringan sosial yang luas. Namun, penggunaan media sosial yang tidak terkawal dan tidak beretika boleh membawa kepada pelbagai cabaran dalam pembentukan sahsiah Qurani.

4.0 Aplikasi Penggunaan Media Sosial

1. **Komunikasi dan Jaringan Sosial:** Media sosial seperti WhatsApp, Facebook, dan Instagram membolehkan pelajar berhubung dengan rakan, keluarga, dan masyarakat secara mudah dan segera. Ia juga memberi peluang untuk berkongsi ilmu, maklumat, dan pengalaman yang bermanfaat.
2. **Platform Pendidikan:** Aplikasi seperti YouTube dan Telegram sering digunakan sebagai platform untuk mengakses ceramah agama, kelas dalam talian, dan sumber pendidikan Islam yang lain. Ini membolehkan pelajar memperluas pengetahuan mereka mengenai ajaran Islam.
3. **Pembinaan Identiti Diri:** Media sosial memberi ruang kepada pelajar untuk mengekspresikan diri, membina identiti, dan menyebarkan nilai-nilai Islam. Pelajar boleh menggunakan platform ini untuk berdakwah dan menyebarkan mesej kebaikan.

4.1 Cabaran dalam Membentuk Sahsiah Qurani

Dalam membentuk keperibadian yang mempunyai nilai-nilai Sahsiah Qurani, terdapat beberapa cabaran yang terpaksa dihadapi oleh pengguna media sosial. Antaranya adalah seperti berikut:

4.1.1. Pengaruh Negatif, Konten Tidak Bermoral dan Pembaziran Masa:

Media sosial sering kali menyajikan konten yang tidak sesuai dengan nilai-nilai Islam, seperti bahan lucah, perbualan yang tidak sopan, dan gaya hidup hedonistik. Ini boleh memberi kesan negatif kepada sahsiah pelajar jika tidak dikawal dengan baik. Media sosial sering kali menjadi platform bagi penyebaran kandungan yang tidak sejajar dengan nilai-nilai Islam, seperti bahan lucah, perbualan yang tidak sopan, dan gaya hidup hedonistik. Kandungan seperti ini, jika tidak dikawal dengan baik, boleh memberikan kesan negatif terhadap pembentukan sahsiah pelajar. Kajian oleh Ahmad dan Zain (2023) menunjukkan bahawa pendedahan berterusan kepada kandungan negatif ini boleh merosakkan akhlak dan nilai-nilai moral dalam kalangan pelajar, mengakibatkan penurunan dalam pencapaian akademik dan peningkatan tingkah laku yang tidak diingini. Oleh itu, penting untuk ada kawalan yang lebih ketat terhadap penggunaan media sosial bagi memastikan ia tidak menjadi alat yang merosakkan sahsiah dan identiti pelajar Muslim.

Walaupun media sosial menyediakan pelbagai manfaat, Rahman dan Ibrahim (2022) menyoroti bahawa konten tidak bermoral dan gaya hidup hedonistik yang sering dipaparkan boleh mempengaruhi pemikiran dan tingkah laku pelajar secara negatif. Ini boleh melemahkan usaha dalam membentuk sahsiah Qurani. Selain itu, pembaziran masa adalah masalah utama, di mana pelajar mungkin menghabiskan masa berjam-jam dalam talian tanpa tujuan yang jelas, mengabaikan tanggungjawab akademik dan ibadah. Nor dan Aziz (2020) menekankan bahawa penggunaan media sosial yang berlebihan boleh menyebabkan ketagihan dan mengurangkan produktiviti pelajar. Penggunaan media sosial yang berlebihan boleh mengakibatkan pembaziran masa yang berharga. Pelajar mungkin menghabiskan masa berjam-jam dalam talian tanpa tujuan yang jelas, mengabaikan tanggungjawab akademik dan ibadah.

4.1.2 Tekanan Sosial dan Kesihatan Mental:

Kehidupan yang dipaparkan di media sosial sering kali digambarkan secara ideal, yang boleh menyebabkan perasaan rendah diri, tekanan sosial, dan masalah kesihatan mental di kalangan pelajar. Tekanan sosial yang timbul daripada keinginan untuk menyesuaikan diri dengan imej dan gaya hidup yang dipaparkan di media sosial boleh menyebabkan masalah kesihatan mental seperti perasaan rendah diri dan tekanan sosial. Nor dan Aziz (2020) mendapati bahawa pelajar yang sering terdedah kepada imej-imej yang tidak realistik ini boleh mengalami tekanan emosi yang serius, yang mengganggu kesejahteraan mental mereka dan proses pembentukan sahsiah yang seimbang.

4.1.3. Penyebaran Maklumat Palsu:

Media sosial juga menjadi platform untuk penyebaran maklumat palsu dan fitnah. Ini boleh mencetuskan kekeliruan dan salah faham, bertentangan dengan prinsip-prinsip Islam yang menekankan kebenaran dan kejujuran. Salah satu cabaran utama dalam penggunaan media sosial adalah penyebaran maklumat palsu atau *fake news* yang boleh membawa kesan buruk kepada masyarakat, termasuk dalam konteks pembentukan sahsiah Qurani. Maklumat palsu sering kali disebarluaskan secara meluas tanpa sebarang pengesahan, menyebabkan kekeliruan dan salah faham di kalangan pengguna. Dalam konteks agama, penyebaran hadis palsu atau tafsiran yang salah terhadap ajaran Islam boleh merosakkan pemahaman dan mengakibatkan amalan yang tidak sesuai dengan ajaran Qurani. Kajian oleh Ahmad dan Noor (2023) menunjukkan bahawa pendedahan berterusan kepada maklumat palsu ini boleh mengikis nilai-nilai moral dan menimbulkan ketidakpercayaan terhadap sumber-sumber yang sahih. Oleh itu, pendidikan literasi media yang berkesan amat penting untuk membina kemampuan pelajar dalam mengenal pasti dan menolak maklumat palsu, serta mempromosikan amalan pengesahan maklumat sebelum menyebarkannya.

5.0 Strategi Menghadapi Cabaran

Terdapat beberapa strategi yang boleh digunapakai dalam menghadapi cabaran terdapat penggunaan media sosial. Antaranya ialah seperti berikut:

1.Pendidikan dan Kesedaran: Pelajar perlu dididik mengenai penggunaan media sosial yang bijak dan beretika. Pendidikan agama yang berterusan dapat membantu membentuk pemahaman yang kukuh tentang nilai-nilai Qurani dan cara mengamalkannya dalam kehidupan seharian. Pendidikan berterusan mengenai penggunaan media sosial yang beretika adalah kunci untuk mengatasi cabaran ini. Yusof (2021) mencadangkan bahawa pelajar harus dididik tentang kawalan sendiri dan cara menggunakan media sosial secara bertanggungjawab. Pendidikan agama yang menyeluruh boleh membantu pelajar memahami dan mengamalkan nilai-nilai Qurani dalam kehidupan seharian mereka, termasuk dalam penggunaan media sosial.

2.Kawalan Kendiri: Mengamalkan kawalan sendiri dalam penggunaan media sosial adalah penting. Pelajar harus menetapkan had masa dan memilih konten yang bermanfaat dan berfaedah sahaja. Rahman dan Ibrahim (2022) mencadangkan bahawa kawalan sendiri adalah penting dalam memastikan penggunaan media sosial tidak menjejaskan sahsiah pelajar. Pelajar harus diajar untuk menetapkan had masa dan memilih konten yang bermanfaat sahaja. Selain itu, peranan ibu bapa, pendidik, dan komuniti adalah penting dalam memberikan bimbingan dan sokongan, memastikan penggunaan media sosial yang bijak dan beretika.

3.Pengawasan dan Sokongan: Peranan ibu bapa, pensyarah, dan masyarakat dalam mengawasi dan memberikan sokongan kepada pelajar sangat penting. Mereka harus membimbing pelajar dalam menggunakan media sosial dengan cara yang positif dan membina. Rahman dan Ibrahim (2022) mencadangkan bahawa kawalan sendiri adalah penting dalam memastikan penggunaan media sosial tidak menjejaskan sahsiah pelajar. Pelajar harus diajar untuk menetapkan had masa dan memilih konten yang bermanfaat sahaja. Selain itu, peranan ibu bapa, pendidik, dan komuniti adalah penting dalam memberikan bimbingan dan sokongan, memastikan penggunaan media sosial yang bijak dan beretika.

4.Menggunakan Media Sosial untuk Berdakwah: Menggalakkan pelajar untuk menggunakan media sosial sebagai platform berdakwah dan menyebarkan mesej kebaikan boleh membantu membina sahsiah Qurani yang kukuh. Mereka boleh berkongsi pengetahuan agama, motivasi, dan pengalaman positif yang selari dengan ajaran Islam. Menggunakan media sosial sebagai platform dakwah boleh menjadi strategi yang efektif dalam membentuk sahsiah Qurani. Hassan et al. (2019) menyarankan agar pelajar menggunakan media sosial untuk menyebarkan mesej-mesej kebaikan dan pengetahuan agama. Ini bukan sahaja membantu dalam pembentukan sahsiah mereka sendiri, tetapi juga memberi impak positif kepada komuniti mereka.

6.0 Kesimpulan

Dalam era digital ini, penggunaan media sosial di kalangan pelajar IPT adalah tidak dapat dielakkan. Walaupun ia menawarkan pelbagai manfaat, cabaran dalam memastikan penggunaan yang selaras dengan nilai-nilai Qurani adalah nyata. Oleh itu, pendekatan yang menyeluruh, termasuk pendidikan berterusan, kawalan sendiri, dan sokongan komuniti, adalah penting untuk memastikan media sosial digunakan secara positif dan bermanfaat. Dengan pendekatan yang bijak dan berdisiplin, media sosial boleh menjadi alat yang berguna dalam membina generasi muda yang berakhlak mulia dan berpegang teguh kepada ajaran Islam.

Penggunaan media sosial telah menjadi satu aspek yang tidak dapat dielakkan dalam kehidupan pelajar di Institusi Pengajian Tinggi (IPT). Aplikasi seperti WhatsApp, Instagram, Telegram, TikTok, dan YouTube adalah antara platform yang paling popular digunakan oleh pelajar untuk komunikasi, pembelajaran, dan hiburan. Walaupun media sosial menawarkan banyak manfaat, seperti kemudahan komunikasi segera dan akses kepada sumber pendidikan, ia juga membawa cabaran besar dalam pembentukan sahsiah Qurani. Dari analisis data, pengenalan, dan sorotan literatur, jelas bahawa penggunaan media sosial yang tidak terkawal boleh menyebabkan pelbagai masalah, termasuk pengaruh negatif daripada konten tidak bermoral, pembaziran masa, tekanan sosial, dan masalah kesihatan mental. Pengaruh ini boleh mengganggu proses pembentukan sahsiah yang berlandaskan nilai-nilai Qurani, yang menekankan akhlak mulia, tanggungjawab, dan kejujuran.

Untuk mengatasi cabaran ini, pendidikan berterusan mengenai penggunaan media sosial yang beretika adalah sangat penting. Pelajar perlu dididik tentang kawalan sendiri dan memilih konten yang bermanfaat. Sokongan dan bimbingan daripada ibu bapa, pendidik, dan komuniti juga memainkan peranan penting dalam memastikan penggunaan media sosial yang bijak. Selain itu, menggunakan media sosial sebagai platform untuk berdakwah dan menyebarkan mesej kebaikan boleh membantu dalam pembentukan sahsiah Qurani yang kukuh.

Kesimpulannya, walaupun media sosial merupakan alat yang berguna dan berpotensi besar dalam kehidupan pelajar, penggunaannya perlu dipantau dan dibimbing dengan teliti. Dengan pendekatan yang bijak dan berdisiplin, media sosial boleh digunakan secara positif untuk membina generasi muda yang berakhlak mulia dan berpegang teguh kepada ajaran Islam. Hanya dengan ini, pelajar dapat memanfaatkan sepenuhnya potensi media sosial sambil memastikan pembentukan sahsiah mereka tidak terjejas.

7.0 Penghargaan

Setinggi penghargaan diucapkan kepada pihak *Center for Research Excellence & Incubation Management* CRIEM Universiti Sultan Zainal Abidin, Terengganu, Malaysia, dan Fakulti Pengajian Kontemporari Islam dalam menyokong penerbitan kertas kerja ini. Artikel kertas kerja ini merupakan hasil daripada salah satu komponen daripada projek penyelidikan FRGS/ 1/2021/SSO/UNISZA/ 02/5 RR408 yang bertajuk “Pembangunan Model Qurani Bagi Pemantapan Sahsiah Holistik Dalam Pendidikan Media Sosial”.

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ADAB BERSALAMAN SESAMA AHLI KELUARGA DALAM BUDAYA MASYARAKAT MELAYU DAN PENGHAYATANNYA DARI PERSPEKTIF SYARAK

Syh Noorul Madiah binti Syed Husin^{1*}, Tengku Fatimah Muliana binti Tengku Muda², Normadiyah Daud³, Mohd Fadzil bin Mustafa⁴ & Syed Mohd Hafiz bin Syed Omar⁵

¹ Universiti Sultan Zainal Abidin, Terengganu, Malaysia

² Universiti Sultan Zainal Abidin, Terengganu, Malaysia

³ Universiti Sultan Zainal Abidin, Terengganu, Malaysia

⁴ Universiti Sultan Zainal Abidin, Terengganu, Malaysia

⁵ Universiti Sultan Zainal Abidin, Terengganu, Malaysia

*Pengarang Koresponden: madiah@unisza.edu.my

Abstrak:

Budaya Melayu sangat menekankan penerapan nilai murni dalam kehidupan berkeluarga dengan mementingkan adab hormat-menghormati, bantu membantu dan berkasih sayang. Bersalaman merupakan antara adab yang mempunyai nilai murni yang tinggi yang dipupuk dalam kalangan masyarakat Melayu semenjak daripada kecil. Adab ini bukan sekadar melibatkan tatacara bersalaman itu sendiri, tetapi juga mencerminkan nilai hubungan kekeluargaan dan sosial yang mendalam. Dalam konteks budaya Melayu, bersalaman dianggap sebagai satu bentuk penghormatan, keakraban dan tanda kasih sayang yang boleh memupuk keharmonian dalam keluarga. Namun, sebahagian masyarakat hanya melihat adab ini dari aspek nilai murni semata-mata, tanpa mengambil cakna tentang kepatuhan syarak yang berkait dengan aktiviti bersalaman. Walaupun bersalaman merupakan satu amalan sunnah dalam Islam, namun pelaksanaannya mempunyai batasan yang tertentu dalam memastikan prinsip syarak terpelihara. Justeru, kertas kerja ini bertujuan mengkaji adab bersalaman dalam budaya Melayu khususnya sesama ahli keluarga, serta penghayatan masyarakat Melayu dari perspektif pengetahuan mereka tentang hukum bersalaman dalam kalangan ahli keluarga. Kajian yang berbentuk kuantitatif ini menggunakan borang soal selidik sebagai kaedah pengumpulan data dan menganalisisnya secara deskriptif melalui perisian Statistical Package for the Social Sciences (SPSS). Seramai 364 orang responden Melayu Muslim dari seluruh Malaysia dijadikan sampel bagi memenuhi kehendak kajian. Kajian menemukan bersalaman sememangnya merupakan budaya dan adab turun temurun dalam masyarakat Melayu. Walaupun begitu, masih terdapat sejumlah responden yang tidak dapat menghayati hukum syarak yang sebenar dalam amalan bersalaman sesama ahli keluarga.

Kata kunci: Bersalaman, adab bersalaman & batas bersalaman dalam Islam

1.0 Pengenalan

Bersalaman merupakan satu bentuk amalan sosial yang menggambarkan penghormatan dan penghargaan antara individu. Dalam konteks budaya masyarakat Melayu, amalan bersalaman dianggap sebagai adab dan nilai murni yang menjadi sebahagian daripada nilai budaya Melayu (Nor Arseha et al., 2022) dan telah diamal secara turun temurun (Ahmad Zamil et al., 2021). Amalan bersalaman bukan berlaku hanya dalam kalangan masyarakat secara umum, malah ia lebih diberi perhatian apabila melibatkan urusan pergaulan sesama ahli keluarga. Amalan bersalaman dalam kalangan ahli keluarga masyarakat Melayu sememangnya dipupuk semenjak kecil. Anak-anak akan diajar oleh ibu bapa untuk bersalaman dengan ahli keluarga di dalam rumah dan juga dalam kalangan keluarga besar ketika ziarah menziarahi. Budaya ini sangat jelas dapat dilihat dalam setiap keluarga khususnya setiap pagi di hari raya. Sudah menjadi kelaziman bagi masyarakat Melayu akan memulakan kemeriahan hari raya dengan aktiviti bersalaman sesama ahli keluarga terdekat yang berada di dalam rumah sambutan hari raya tersebut. Ia bagaikan tradisi yang akan berulang dari tahun ke tahun dalam setiap keluarga. Tanpa amalan ini, keharmonian hari raya bagaikan tidak terserlah.

Amalan bersalaman dalam kalangan masyarakat Melayu bukan hanya bertujuan untuk menjaga adab dan kesopanan, malah ia turut mempunyai kaitan dengan nilai keagamaan. Jika dilihat dari perspektif syarak, agama Islam sangat menitikberatkan adab dan etika dalam interaksi sosial, terutamanya dalam kalangan ahli keluarga. Menurut al-Husaini (1441H), antara adab yang dianjurkan dalam Islam ketika bertemu dengan saudara mara ialah saling berjabat tangan. Ia disunatkan ketika berlakunya pertemuan dan ketika menyampaikan khabar gembira dan ucapan tahniah (Zaidan, 2000). Rasulullah s.a.w. pernah menjanjikan kelebihan bersalaman dalam hadis baginda:

" تَصَافَحُوا يَذْهَبِ الْعِلُّ وَهَاتُوا تَحَابُّوا وَتَذْهَبِ الشُّحْنَاءُ "

Maksudnya: "Hendaklah kalian berjabat tangan, nescaya akan hilang sifat kedengkian, dan hendaklah kalian saling memberi hadiah, nescaya akan saling mencintai dan menghilangkan sifat permusuhan."

(Malik, 2021)

Hadis di atas menggambarkan amalan bersalaman ini bukan sekadar adat atau budaya, malah ia merupakan satu sunnah anjuran Rasulullah s.a.w. yang dapat menghilangkan kedengkian. Walaupun ia digalakkan dalam Islam sebagai satu kaedah untuk mengeratkan hubungan silaturahim sesama masyarakat muslim (Radhie, 2021) khususnya dalam kalangan ahli keluarga, namun Islam membataskan amalan tersebut apabila melibatkan jantina yang berbeza. Hal ini bermakna Islam sangat mengambil berat batas pergaulan sesama muslim yang berlainan jantina. Sekiranya sesama jantina amalan bersalaman adalah satu amalan yang disunatkan (al-Khatib al-Shirbini, 1994), tetapi apabila ia melibatkan berlainan jantina, syarak menetapkan amalan sunat tersebut hanya terbatas untuk golongan tertentu iaitu sesama mahram *muabbad* sahaja. Mereka yang mempunyai hubungan bukan mahram atau turut diistilahkan sebagai ajnabi tidak diharuskan bersalaman (Wazarat al-Awqaf, 1983). Hukum bersalaman ini banyak dibincangkan dalam kalangan para fuqaha' ketika membahaskan isu berkaitan batas pergaulan atau larangan *berikhtilat* sesama mereka berlainan jantina (Zaidan, 2000; Wazarat al-Awqaf, 1983). Perbincangan tentang mahram pula sering diulas oleh para fuqaha dalam bab perkahwinan kerana mahram adalah mereka yang diharamkan untuk dinikahi (al-Shirbini, 1994; al-Bugha et. al., 1998).

Walaupun ketetapan batas bersalaman sesama muslim telah diulas dan ditetapkan hukumnya dalam Islam, namun masyarakat muslim khususnya kaum Melayu masih keliru dengan batasan tersebut. Hal ini lebih membimbangkan apabila masyarakat Melayu sangat mengambil berat dalam keakraban kekeluargaan. Keakraban ini boleh mempengaruhi gaya pergaulan khususnya apabila melibatkan aktiviti bersalaman. Sebagai contoh, masih ramai lagi masyarakat hari ini yang menganggap sepupu adalah sama seperti adik beradik (Nor Adilah et. al., 2019) sehingga hubungan mereka melangkaui batas pergaulan yang ditetapkan syarak. Keadaan ini berbeza dengan prinsip yang dibawa oleh Islam. Keakraban dalam keluarga bukan merupakan alasan untuk pengharusan bersalaman, malah ia bergantung kepada status hubungan mereka sama ada mahram ataupun bukan mahram.

Justeru, artikel ini bertujuan untuk mengkaji adab bersalaman dalam kalangan ahli keluarga dalam budaya masyarakat Melayu dan penghayatannya dari perspektif syarak. Kajian akan menganalisis bagaimana amalan ini dihayati dari sudut pengetahuan mereka berkaitan keharusan bersalaman sesama ahli keluarga.

2.0 Tinjauan Literatur

Amalan bersalaman dalam kalangan masyarakat Melayu sememangnya telah menjadi adab sosial dan nilai murni budaya Melayu. Dalam konteks hubungan kekeluargaan, ia sangat dititik beratkan untuk dipalikasi sesama ahli keluarga tanpa mengira usia. Nordin (1999) menyatakan masyarakat Melayu sememangnya sehati dengan amalan ziarah menziarahi sama ada dalam kalangan keluarga, jiran mahupun sahabat handai. Beliau menjelaskan aktiviti bersalaman merupakan antara adat utama ketika amalan ziarah menziarahi bagi masyarakat Melayu.

Noor Aina (2011) telah menganalisis sebuah buku berkaitan budaya masyarakat Melayu yang dikarang oleh seorang yang bukan berbangsa Melayu bernama Sheppard. Buku yang bertajuk '*Malay Courtesy*' telah dianalisis secara analisis kandungan bagi tujuan memaparkan kembali amalan budi bahasa orang Melayu yang telah diamalkan sejak sekitar tahun 1950-an. Penulis menemukan penulisan buku ini sangat menyentuh tentang adab dan tingkah laku orang Melayu lama yang ada antaranya sudah tidak diamalkan oleh orang Melayu sendiri. Antara kandungan buku yang dikarang oleh Sheppard tersebut adalah berkaitan amalan bersalaman ketika berjumpa. Penjelasan yang dimuatkan dalam bab satu yang membincangkan cara bersalaman dan kata-kata hormat yang

perlu diutarakan ketika bertemu memberi gambaran bahawa amalan bersalaman ini adalah satu amalan adab mulia yang telah lama dipraktikkan oleh masyarakat Melayu dan sangat diambil berat oleh orang tua terdahulu.

Amalan bersalaman dalam ahli keluarga dipupuk oleh masyarakat Melayu semenjak di peringkat anak-anak kecil. Noor Aida dan Nasihah (2005) dalam kajian mereka berkaitan watak wanita Melayu dalam cerita animasi kanak-kanak Upin dan Ipin menemui watak wanita dalam cerita ini banyak berperanan sebagai pendidik kepada anak kecil dalam kehidupan berkeluarga. Antara didikan yang diterapkan dalam cerita tersebut adalah amalan bersalaman dalam keluarga termasuklah ketika sebelum tidur. Hal ini menggambarkan amalan ini sememangnya sehati dengan budaya kehidupan berkeluarga masyarakat Melayu.

Menurut Jamihad dan Nur Nasliza (2016), pengetahuan muda mudi Melayu masa kini terhadap ‘amalan budi bahasa budaya kita’ adalah tinggi. Kajian menemui antara amalan yang masih diketahui secara umum akan kepentingannya adalah berjabat tangan dengan orang tua. Antara faktor yang dikenal pasti yang membawa kepada tahap pengetahuan yang tinggi adalah didikan ibu bapa tentang amalan budi bahasa tersebut. Responden menyatakan ibu bapa sentiasa menghulurkan tangan kepada mereka untuk bersalaman yang akhirnya telah memberi kesan kepada anak-anak untuk menghayati amalan mulia itu.

Dalam satu kajian berkaitan pengaruh aktiviti sekolah terhadap pembentukan akhlak pelajar, Norhisham (2018) menemukan berjabat tangan atau bersalaman ketika bertemu orang merupakan antara komponen penghayatan akhlak terhadap diri yang sederhana tinggi. Skor min yang dicatatkan bagi aktiviti tersebut adalah 3.72. Dapatan ini jelas menunjukkan amalan bersalaman masih relevan dipraktikkan dalam kalangan pelajar sekolah.

Secara keseluruhannya, sorotan kajian menunjukkan bahawa adab bersalaman dalam kalangan masyarakat Melayu tetap relevan dan memainkan peranan penting dalam mengukuhkan hubungan kemasyarakatan. Kajian-kajian lepas lebih banyak memaparkan tentang budaya bersalaman dalam kalangan masyarakat Melayu dan kurang menfokuskan terhadap budaya tersebut dalam realiti kehidupan berkeluarga. Walaupun ia secara tidak langsung menggambarkan amalan tersebut tetap wujud dalam keluarga, namun perbincangannya tidak secara terperinci. Justeru, kajian ini dijalankan bertujuan untuk menganalisis penghayatan masyarakat Melayu terhadap hukum bersalaman sesama ahli keluarga dari perspektif syarak. Ia adalah satu kajian yang relevan kerana Islam menetapkan batasan yang tertentu dalam isu bersalaman antara berlainan jantina meskipun dalam kalangan ahli keluarga.

3.0 Metodologi

Kajian ini berbentuk kajian kuantitatif. Berikut merupakan penjelasan terperinci berkaitan metodologi bagi kajian ini:

Kaedah Pengumpulan Data

Data dikumpul melalui edaran borang soal selidik. Borang soal selidik yang dibina terbahagi kepada empat bahagian iaitu profil, pengetahuan tentang istilah mahram, pengetahuan tentang konsep mahram dan ajnabi serta pengetahuan berkaitan batasan pergaulan sesama mahram dan ajnabi. Dalam membincangkan berkaitan pengetahuan responden terhadap hukum bersalaman dari perspektif syarak, kertas kerja ini hanya membentangkan data untuk dua bahagian sahaja iaitu bahagian profil dan pengetahuan berkaitan batasan pergaulan sesama mahram dan ajnabi. Dalam bahagian pertama, enam kriteria responden dikenalpasti untuk membentuk profil responden. Manakala dalam bahagian kedua, tujuh soalan tentang batas bersalaman dalam kalangan ahli keluarga telah dikemukakan. Daripada tujuh soalan tersebut, empat daripadanya menggunakan ayat kenyataan positif dan tiga menggunakan kenyataan negatif. Responden perlu memberi respon kepada setiap soalan dengan pilihan jawapan melalui skala Likert iaitu sangat tidak setuju, tidak setuju, tidak pasti, setuju dan sangat setuju.

Borang soal selidik yang dibina telah diedarkan dengan menggunakan aplikasi *Google Forms*. Edaran melalui aplikasi ini dipilih kerana ia sangat memudahkan dan dapat menjimatkan masa, kos serta tenaga pengkaji. Menurut Siti Nurakmal, Siti Huzaima & Norzaliza (2023), *Google Forms* adalah sebuah aplikasi berasaskan laman web yang membolehkan pengguna atau responden yang disasarkan dapat memberi respons yang cepat hanya melalui telefon pintar atau komputer. Pautan soal selidik yang dimuatkan ke aplikasi *Google Forms* seterusnya diedar dengan menggunakan pelbagai platform media sosial termasuk aplikasi *WhatsApp*, *Telegram*, *Face Book* dan

Instagram. Edaran pautan telah dilakukan bermula 21hb Mei hingga 6hb Jun 2024.

Populasi dan Sampel Kajian

Populasi kajian terdiri daripada semua masyarakat Islam di Malaysia termasuk daripada Sabah dan Sarawak yang berusia 15 tahun ke atas. Menurut Jabatan Perangkaan Malaysia, jumlah penduduk Malaysia yang berbangsa Melayu pada akhir tahun 2023 telah mencapai 17,614,900 (Jadual Penduduk: Malaysia, Laman OpenDOSM, 2024). Daripada jumlah ini, populasi sebenar dijangka lebih mengurangi dari angka tersebut kerana data yang disediakan oleh Jabatan Perangkaan Malaysia adalah merujuk kepada semua penduduk dari pelbagai lapisan usia dan bukan semua penduduk berbangsa Melayu itu beragama Islam. Walau bagaimanapun, menurut Krejcie dan Morgan (1970), populasi yang melebihi 100,000 orang adalah merupakan populasi yang terbesar dan saiz sampelnya adalah seramai 364 orang. Justeru melalui persampelan rawak mudah, seramai 364 orang sampel telah dilibatkan dalam kajian ini yang terdiri daripada penduduk Muslim lelaki dan perempuan dari semua negeri di Malaysia.

Kaedah Analisis Data

Data kuantitatif yang dikumpul dianalisis dengan menggunakan Perisian *Statistical Package for the Social Sciences* (SPSS) versi 28. Analisis lebih terfokus kepada analisis deskriptif dengan memberi penekanan kepada analisis frekuensi dan peratusan. Dalam bahagian dua borang soal selidik, data dan skor berkaitan ayat kenyataan negatif telah ditukar kepada kenyataan positif bagi memudahkan urusan persembahan dan analisis data.

Bagi menizharkan pengetahuan responden dengan lebih jelas, pungutan skor bagi lima skala Likert yang digunakan telah dianalisis mengikut tiga kumpulan pengetahuan iaitu pengetahuan benar, pengetahuan tidak pasti dan pengetahuan salah. Responden yang memberi respon sangat setuju dan setuju diklasifikasikan sebagai pengetahuan benar dan mereka yang memberi respon tidak setuju dan sangat tidak setuju diklasifikasikan sebagai pengetahuan salah. Adapun respon tidak pasti dikekalkan sebagai pengetahuan yang tidak pasti. Hal keadaan ini kerana respon tidak pasti memberi gambaran responden kurang pasti terhadap respon yang diberi sama ada setuju ataupun tidak setuju dengan kenyataan yang diberikan.

4.0 Dapatan dan Perbincangan

Terdapat dua bahagian penting yang akan dibentangkan dalam tajuk ini. Bahagian pertama akan memerihalkan tentang profil responden, manakala bahagian kedua pula akan menganalisis penghayatan responden dari perspektif syarak tentang adab bersalaman dalam kalangan ahli keluarga yang menjadi amalan masyarakat Melayu sejak turun temurun. Penghayatan responden ini akan diukur melalui pengetahuan mereka terhadap hukum bersalaman sesama ahli keluarga.

Profil Responden

Jadual 1 menunjukkan maklumat berkaitan profil responden. Hasil kajian menunjukkan majoriti responden terdiri daripada golongan perempuan apabila jumlah mereka adalah melebihi 2/3 (71.1%) dari keseluruhan responden. Dari sudut umur, kebanyakan responden berada dalam lingkungan umur 35-44 tahun iaitu seramai 95 orang (24.7%) dan diikuti oleh kumpulan lingkungan umur 15-24 tahun iaitu seramai 86 orang (22.4%). Manakala kumpulan umur yang paling sedikit menyertai kajian ini adalah kumpulan warga emas iaitu 65 tahun ke atas apabila hanya 5 orang responden sahaja yang berada dalam kumpulan usia tersebut.

Negeri Terengganu mencatatkan bilangan responden yang tertinggi. Seramai 97 orang (25.3%) responden dari negeri ini menyertai kajian, diikuti oleh Johor (12.0%), Kelantan (11.5%) dan Selangor (10.7%). Jumlah responden dari negeri-negeri lain adalah lebih rendah dan mencatat peratusan bawah dari 10%, dengan Perlis mencatatkan bilangan terendah iaitu hanya sebanyak 0.8% sahaja. Peratusan rendah yang dicatatkan oleh responden dari Perlis mungkin mempunyai kaitan dengan keluasan dan populasi negeri tersebut.

Jadual 1: Profil Responden

Kriteria	Kekerapan & Peratusan
Jantina	
Lelaki	111 (28.9 %)
Perempuan	273 (71.1 %)
Umur	
15-24 tahun	86 (22.4 %)
25-34 tahun	84 (21.9 %)
35-44 tahun	95 (24.7 %)
45-54 tahun	81 (21.1 %)
55-64 tahun	33 (8.6 %)
65 tahun ke atas	5 (1.3 %)
Negeri	
Johor	46 (12.0 %)
Melaka	11 (2.9 %)
Negeri Sembilan	28 (7.3 %)
Wilayah Persekutuan	11 (2.9 %)
Selangor	41 (10.7 %)
Perak	18 (4.7 %)
Pahang	34 (8.9 %)
Kedah	21 (5.5 %)
Kelantan	44 (11.5 %)
Terengganu	97 (25.3 %)
Pulau Pinang	11 (2.9 %)
Perlis	3 (.8 %)
Sabah	8 (2.1 %)
Sarawak	11 (2.9 %)
Tahap Pendidikan Terakhir	
UPSR	3 (.8 %)
SRP/PMR/PT3	7 (1.8 %)
SPM	50 (13.0 %)
STPM/STAM/Sijil Kemahiran/Matrikulasi/Asas	53 (13.8 %)
Diploma	39 (10.2 %)
Ijazah Sarjana Muda	176 (45.8 %)
Ijazah Sarjana	49 (12.8 %)
Doktor Falsafah	7 (1.8 %)
Tahap Pendidikan Agama Tertinggi	
UPSR	7 (1.8 %)
SRP/PMR/PT3	14 (3.6 %)
SPM	163 (42.4 %)
STPM/STAM/Sijil Kemahiran/Matrikulasi/Asas	64 (16.7 %)
Ijazah Sarjana Muda	113 (29.4 %)
Ijazah Sarjana	18 (4.7 %)
Doktor Falsafah	5 (1.3 %)
Status Kerjaya	
Pelajar	84 (21.9 %)
Tidak Bekerja	45 (11.7 %)
Bekerja Sendiri	41 (10.7 %)
Kerja Kerajaan	125 (32.6 %)
Kerja Swasta	64 (16.7 %)
Pesara	25 (6.5 %)

Rujukan: Borang soal selidik kajian melalui Google Form (2024)

Dari sudut latar belakang pendidikan responden, jadual 1 mempamerkan hampir separuh daripada responden (45.8%) memiliki Ijazah Sarjana Muda. Data ini menunjukkan kebanyakan mereka adalah berpendidikan tinggi. Bahkan terdapat sejumlah responden yang melepasi pendidikan di peringkat Ijazah Sarjana Muda apabila dapatan menunjukkan 12.8% responden berkelulusan Ijazah Sarjana, manakala 1.8% berkelulusan Doktor Falsafah. Namun, dari segi pendidikan agama tertinggi, majoriti responden hanya mempunyai kelulusan pendidikan agama tertinggi secara formal di peringkat sekolah menengah (Sijil Pelajaran Malaysia) sahaja. Hal ini mencerminkan secara umumnya, latar belakang pendidikan agama majoriti responden bukanlah dari pendidikan tinggi. Walaupun kebanyakan mereka merupakan lepasan pengajian tinggi, namun bidang pengajian mereka tidak terfokus kepada bidang agama.

Selanjutnya, dapatan turut menunjukkan kebanyakan responden berada dalam lingkungan usia bekerja, dengan 60% daripada mereka masih aktif bekerja. Ini termasuklah 32.6% yang bekerja dalam sektor kerajaan, 16.7% dalam sektor swasta, dan 10.7% yang bekerja sendiri. Di samping itu, 21.9% responden adalah pelajar, menunjukkan responden kebanyakannya adalah golongan yang masih produktif dalam kerjaya atau pengajian.

Secara keseluruhan, analisis profil ini menunjukkan bahawa kebanyakan responden terdiri daripada golongan wanita berusia antara 35-44 tahun dan bekerja dalam sektor kerajaan, yang mana negeri Terengganu menyumbang jumlah responden yang terbesar. Meskipun rata-rata responden adalah lepasan universiti, namun kebanyakan mereka hanya mendapat pengajian tertinggi agama secara formal di peringkat sekolah menengah sahaja.

Penghayatan Masyarakat Melayu tentang Hukum Bersalaman dari Perspektif Syarak

Bagi menganalisis penghayatan responden terhadap hukum bersalaman dari perspektif syarak, sebanyak tujuh item yang menyentuh perihal keharusan bersalaman sesama ahli keluarga yang berlainan jantina telah dikemukakan dalam borang soal selidik. Daripada tujuh item tersebut, empat daripadanya menyentuh hukum bersalaman dengan keluarga tiri dan tiga daripadanya menyentuh hukum bersalaman sesama adik beradik, keluarga susuan dan ahli keluarga ibu saudara. Dapatan akan dianalisis berdasarkan prioriti hukum berasaskan keakraban dalam hubungan kekeluargaan iaitu pengetahuan hukum bersalaman antara adik beradik, keluarga tiri, keluarga susuan dan keluarga ibu saudara.

Jadual 2: Pengetahuan Responden Berkaitan Hukum Bersalaman Sesama Adik Beradik

Hukum Bersalaman	Benar	Tidak Pasti	Salah
1 Seorang lelaki harus bersalaman dengan adik beradik sebapa yang berlainan jantina	306 (79.7%)	15 (3.9%)	63 (16.5%)

Rujukan: Borang soal selidik kajian melalui Google Form (2024)

Merujuk kepada jadual 2 berkaitan dengan pengetahuan responden berkaitan keharusan bersalaman dengan adik beradik, seramai 306 orang responden (79.7%) mengetahui bahawa seorang lelaki diharuskan bersalaman dengan adik beradik perempuan sebapa. Pengetahuan ini menggambarkan penghayatan kebanyakan responden dalam isu bersalaman antara adik beradik adalah baik. Hal ini kerana dalam Islam, adik beradik disabitkan hukumnya sebagai mahram *muabbad* atas dasar adanya hubungan pertalian nasab sesama mereka (al-Nawawi, t.t.). Mahram *muabbad* ialah individu berlainan jantina yang diharamkan berkahwin dengan seseorang untuk selama-lamanya dalam apa keadaan sekalipun, (Jamalluddin, 2024) sama ada dengan faktor nasab, persemendaan atau susuan (al-Ghazali, 2001). Syarak telah menetapkan terdapat tujuh golongan mahram *muabbad* atas faktor nasab seperti yang dinyatakan dalam ayat 23 surah al-Nisa'. Menurut al-Dusuqi (2011), antara mereka termasuklah semua zuriat ibu atau bapa kepada seseorang individu sama ada seibu sebapa, sebapa mahupun seibu. Mereka ini dikenali sebagai adik beradik. Justeru, adik beradik yang dikira mahram *muabbad* merangkumi adik beradik seibu dan sebapa, sebapa dan seibu (al-Mawardi, 1999). Selain daripada mereka diharamkan berkahwin, syarak turut menetapkan keharusan bersentuhan pada kawasan yang bukan batas aurat. Keharusan ini adalah termasuk dengan amalan bersalaman sesama mereka (Wazarat al-Awqaf, 1983). Hal ini kerana bersalaman merupakan salah satu bentuk aktiviti bersentuhan. Maka bersalaman sesama mahram adalah perkara yang dibenarkan syarak, malah turut disunatkan (Zaidan, 2000) sebagai mana yang dinyatakan dalam hadis sebelum ini. Walaupun majoriti responden

telah mengetahui hukum ini, namun masih ada segelintir yang belum dapat menghayati hukum amalan bersalaman sesama adik beradik sebapa. Ia dibuktikan apabila 16.5% responden masih berada dalam kumpulan pengetahuan yang salah apabila mereka memberi respon tidak bersetuju dan sangat tidak bersetuju pada kenyataan tersebut. Keadaan ini menggambarkan sekumpulan responden masih beranggapan mereka tidak mempunyai hubungan mahram sesama adik beradik sebapa. Dengan kata lain, penghayatan mereka terhadap perkara ini adalah tidak dibenarkan untuk bersalaman dengan adik beradik sebapa. Jika jumlah peratus kumpulan responden pengetahuan yang salah digabungkan dengan kumpulan pengetahuan yang tidak pasti, peratusannya agak lebih besar iaitu melebihi 20%.

Seterusnya, jadual 3 menunjukkan dapatan keseluruhan berkaitan pengetahuan responden terhadap hukum bersalaman dengan ahli keluarga tiri. Dalam Islam, ahli keluarga tiri sebahagiannya akan berstatus mahram dan sebahagiannya pula adalah bukan mahram. Mereka yang berstatus mahram adalah disebabkan wujudnya hubungan persemendaan. Mahram yang disebabkan persemendaan terdiri daripada mereka yang haram dikahwini kerana wujudnya hubungan perkahwinan sesama mereka atau sesama ahli keluarga mereka (Zaidan, 2000). Daripada empat item yang dikemukakan, didapati dua item didominasi oleh kumpulan pengetahuan benar dan dua lagi didominasi oleh kumpulan pengetahuan salah. Peratusan kumpulan pengetahuan tidak pasti juga agak besar bagi setiap item jika dibandingkan dengan item berkaitan hukum bersalaman antara adik beradik iaitu melebihi 10%.

Jadual 3: Pengetahuan Responden Berkaitan Hukum Bersalaman Sesama Keluarga Tiri

	Hukum Bersalaman	Benar	Tidak Pasti	Salah
1	Seorang lelaki harus bersalaman dengan isteri bapa (ibu tiri) walaupun bapa dan ibu tirinya belum melakukan persetubuhan	57 (14.9%)	51 (13.3%)	276 (71.9%)
2	Seorang perempuan tidak harus bersalaman dengan suami ibu (bapa tiri) sebelum mereka melakukan persetubuhan	258 (67.2%)	57 (14.8%)	69 (18.0%)
3	Seorang lelaki tidak harus bersalaman dengan ibu kandung kepada ibu tirinya	105 (27.3%)	74 (19.3%)	205 (53.4%)
4	Seorang perempuan tidak harus bersalaman dengan bapa kandung kepada ibu tiri	213 (55.5%)	83 (21.6%)	88 (22.9%)

Rujukan: Borang soal selidik kajian melalui Google Form (2024)

Item yang mencatat pengetahuan benar paling tinggi adalah item dua. Seramai 258 orang responden (67.2%) mengetahui bahawa seorang perempuan hanya dibenarkan bersalaman dengan bapa tiri (suami baharu ibu) setelah mereka berdua melakukan persetubuhan selepas akad nikah. Dapatan ini menunjukkan rata-rata responden dapat menghayati hukum fiqh yang sebenar berkaitan hukum bersalaman antara seorang anak perempuan dengan suami baharu ibunya. Walaupun hubungan mereka lazimnya dalam masyarakat Melayu telah dikenali sebagai bapa tiri, namun dari segi fiqh, pensabitan sebagai bapa tiri masih belum berlaku selagi mana belum berlaku persetubuhan antara si ibu dan suami baharunya.

Penghayatan ini secara umumnya adalah berasaskan kepada firman Allah s.w.t. berikut:

"حُرِّمَتْ عَلَيْكُمْ أُمَّهَاتُكُمْ وَبَنَاتُكُمْ وَأَخَوَتُكُمْ وَعَمَّاتُكُمْ وَخَالَاتُكُمْ وَبَنَاتُ الْأَخِ وَبَنَاتُ الْأُخْتِ وَأُمَّهُنَّ الَّتِي أَرْضَعْنَكُمْ وَأَخْوَانُكُم مِّنَ الرِّضَاعَةِ وَأُمَّهُتُمْ نِسَائِكُمْ وَرَبِّبُكُمْ الَّتِي فِي حُجْرَتِكُمْ مِّنْ نِّسَائِكُمُ الَّتِي دَخَلْتُمْ بِهِنَّ فَإِن لَّمْ يَكُونُوا دَخَلْتُمْ بِهِنَّ فَلَا جُنَاحَ عَلَيْكُمْ..."

Maksudnya: “Diharamkan kepada kamu (mengahwini) ibu-ibumu, anak-anakmu yang perempuan, saudara-saudara perempuanmu, saudara-saudara perempuan sebamumu, saudara-saudara perempuan seibumu, anak-anak perempuan daripada saudara-saudara lelakimu, anak-anak perempuan daripada saudara-saudara perempuanmu, ibu-ibu yang menyusui kamu, saudara susuan perempuanmu, ibu-ibu isterimu (mentua), anak-anak isterimu yang dalam pemeliharaanmu daripada isteri yang telah kamu campuri, tetapi jika kamu belum bersama dengan isterimu itu (dan sudah kamu ceraikan), maka tidak berdosa kamu untuk mengahwininya...”

(al-Nisa': 23)

Di akhir ayat di atas, Allah s.w.t. meletakkan syarat untuk pensabitan mahram antara seorang lelaki dengan anak isterinya (anak tiri) dengan berlakunya persetubuhan. Ini bermakna setelah seorang lelaki berkahwin dengan janda yang mempunyai seorang anak perempuan, anak perempuan tersebut belum boleh bersalaman dengan bapa tirinya. Hal ini kerana hubungan mereka berdua masih belum berstatus mahram (al-Nawawi, t.t.). Para fuqaha bersepakat dalam menyatakan seseorang muslim diharamkan bersentuhan dengan mereka yang berlainan jantina yang berstatus bukan mahram atau juga dikenali sebagai ajnabi (Zaidan, 2000). Walaupun di sana ada percanggahan hukum tentang keharusan bersalaman dengan ajnabi dalam kalangan fuqaha, namun fuqaha dalam mazhab Syafie tidak mengharuskannya (Wazarat al-Awqaf, 1983). Penghayatan responden dalam hukum ini adalah sangat positif kerana dalam hukum syarak, syarat persetubuhan yang perlu berlaku dalam sebuah perkahwinan untuk mensabitkan mahram hanya ditetapkan untuk satu kes ini sahaja. Adapun pensabitan mahram yang disebabkan hubungan persemendaan yang lain tidak ditetapkan syarat berlakunya persetubuhan terlebih dahulu.

Antara hubungan mahram dengan sebab persemendaan yang tidak memerlukan syarat persetubuhan adalah seperti dalam item satu. Walaupun demikian pengetahuan responden berkaitan item ini tidak sebagai mana item dua, malah merupakan item yang paling kurang dapat dihayati hukumnya dengan tepat oleh responden. Item ini adalah berkaitan dengan hukum bersalaman bagi seorang lelaki dengan ibu tiri (suami baharu bapa) yang belum berlaku persetubuhan dengan suaminya. Hal ini terbukti apabila kumpulan pengetahuan yang paling dominan bagi item ini adalah pengetahuan salah iaitu seramai 276 orang (71.9%) dan melebihi 2/3 daripada jumlah keseluruhan. Responden yang mempunyai pengetahuan yang benar dalam isu ini hanyalah seramai 57 orang (14.9%) sahaja. Data ini secara tidak langsung menunjukkan kebanyakan responden memahami bahawa hubungan seorang lelaki dengan ibu tirinya belum berstatus mahram selagi mana tidak berlaku persetubuhan antara bapa dan ibu tirinya itu. Oleh demikian, mereka sangat tidak bersetuju dan tidak bersetuju dengan kenyataan bahawa mereka berdua boleh saling bersalaman meskipun belum berlakunya persetubuhan. Pengetahuan ini bertentangan dengan hukum syarak yang membenarkan amalan bersalaman sesama mahram *muabbad* (Wazarat al-Awqaf, 1983). Dalam kes ini, lelaki tersebut diharuskan bersalaman dengan ibu tirinya sejurus selepas akan perkahwinan sah kerana pensabitan mahram tersebut tidak memerlukan syarat persetubuhan (al-Nawawi, t.t.). Ia berasaskan kepada firman Allah s.w.t. yang berbunyi:

"وَلَا تَنْكِحُوا مَا نَكَحَ آبَاؤُكُمْ مِنَ النِّسَاءِ إِلَّا مَا قَدْ سَلَفَ ..."

Maksudnya: "Dan janganlah kamu mengahwini wanita-wanita yang telah dikahwini oleh ayahmu, kecuali 4pada masa yang telah lampau

(al-Nisa': 22)

Ayat ini menjelaskan antara individu yang diharamkan kahwin adalah isteri kepada bapa (ibu tiri). Ia merangkumi isteri yang belum dan telah disetubuhi kerana lafaz 'yang telah dikahwini' dalam ayat ini memberi maksud yang selesai akad nikah dan juga yang telah dipersetubuhi. Maka, mana-mana isteri bapa yang telah diakad nikahkan dan juga yang selesai berlakunya persetubuhan kedua-duanya merangkumi maksud mahram *muabbad* (Zaidan, 2000). Ini bermakna mereka turut diharuskan bersalaman atas dasar hubungan mahram persemendaan.

Jadual 4 menunjukkan penghayatan responden berkaitan hukum bersalaman sesama ahli keluarga susuan. Dalam hukum syarak, penyusuan juga termasuk sebagai salah satu sebab yang boleh mensabitkan hubungan mahram (al-Mawardi, 1999). Berdasarkan sebuah hadis riwayat Sahih al-Bukhari, Rasulullah s.a.w. pernah menyatakan hubungan susuan akan mensabitkan mahram sebagai mana ia disabitkan dengan sebab nasab (al-Bukhari, 2000). Antara mahram yang disebabkan proses susuan kepada bayi pada waktu kecil adalah bapa mentua susuan. Menurut al-Nawawi (t.t.) mentua susuan termasuk mahram *muabbad* secara kiasan (*majazi*) sama ada pasangan yang berkahwin itu belum atau telah melakukan persetubuhan.

Jadual 4: Pengetahuan Responden Berkaitan Hukum Bersalaman Sesama Keluarga Susuan

Bersalaman	Benar	Tidak	Salah
Seorang perempuan harus bersalaman dengan bapa mentua susuan	164 (42.7%)	86 (22.4%)	134 (34.9%)

Rujukan: Borang soal selidik kajian melalui Google Form (2024)

Dapatan dalam jadual di atas menunjukkan majoriti responden mempunyai pengetahuan yang benar berkaitan keharusan seorang perempuan bersalaman dengan bapa mentuanya. Hampir 50% responden iaitu seramai 164 orang (42.7%) memberi respon sangat bersetuju dan bersetuju dengan item berkaitan keharusan tersebut. Pengetahuan terhadap keharusan bersalaman ini adalah sangat berasas kerana mahram disebabkan penyusuan bukan hanya terfokus kepada anak susuan dan ibu atau bapa susu sahaja, malah mempunyai senarai mahram yang sama dengan individu yang tidak terlibat dengan penyusuan, tetapi mempunyai hubungan nasab dan persemendaan. Bapa mentua susuan merujuk kepada bapa susu isteri (Jamalluddin, 2024). Menurut (Rafidah et al. 2024) terdapat sembilan golongan mahram yang disebabkan hubungan susuan dan ia termasuk bapa atau ibu mentua susu. Pandangan ini adalah bertepatan dengan apa yang dinyatakan oleh fuqaha' Syafie (al- Nawawi, t.t.; Khatib al-Shirbini, 1994). Justeru, apabila mereka disabitkan sebagai mahram *muabbad* kerana susuan, mereka sudah pasti diharuskan untuk bersalaman (Wazarat al-Awqaf, 1983).

Bagi item terakhir yang diuji dalam soal selidik, dapatannya sangat memberangsangkan apabila mencatat peratusan pengetahuan benar responden yang paling tinggi. Item ini menyentuh tentang keharaman bersalaman antara seorang perempuan dengan suami ibu saudaranya. Berdasarkan jadual 5, dapatan menunjukkan hanya 16 orang responden sahaja (4.2%) yang berada dalam kumpulan pengetahuan yang salah. Hal ini menggambarkan hampir keseluruhan responden (80.7%) sangat menghayati hukum bersalaman antara seseorang individu perempuan dengan pasangan ibu saudaranya.

Jadual 5: Pengetahuan Responden Berkaitan Hukum Bersalaman Sesama Keluarga Ibu Saudara

Hukum Bersalaman	Benar	Tidak Pasti	Salah
1 Seorang perempuan tidak harus bersalaman dengan suami ibu saudara	310 (80.7%)	16 (4.2)	58 (15.1%)

Rujukan: Borang soal selidik kajian melalui Google Form (2024)

Dalam Islam, pasangan kepada ibu saudara bagi seorang perempuan bukan termasuk mahram *muabbad*. Menurut al-Ghazali (2001), seorang lelaki tidak dibenarkan memadukan isteri dengan anak saudara isterinya kerana anak saudara tersebut termasuk dalam mahram *muaqqat* baginya. Mahram *muaqqat* merupakan individu berlainan jantina yang diharamkan berkahwin dengan seseorang atas sebab atau keadaan tertentu untuk beberapa tempoh waktu sehinggalah sebab pengharaman tersebut hilang (Jamalluddin et al., 2000). Dari sudut bersalaman sesama mahram *muaqqat*, hukumnya tidak sama sebagai mana keharusan sesama mahram *muabbad*. Hal ini kerana mahram yang dinyatakan oleh fuqaha yang diharuskan untuk bersalaman adalah mahram *muabbad* sahaja, dan tidak merangkumi mahram yang mempunyai faktor penghalang yang boleh hilang iaitu mahram *muaqqat* (al-Bantani, 2012). Justeru, mereka diharamkan bersentuhan apatah lagi untuk bersalaman.

Secara keseluruhannya, daripada tujuh kenyataan yang dikemukakan berkaitan keharusan bersalaman sesama ahli keluarga, kajian mendapati hanya lima kenyataan sahaja yang dihayati secara positif dari perspektif syarak oleh majoriti responden. Ini bermakna penghayatan responden terhadap hukum bersalaman bagi lima kenyataan tersebut adalah baik jika dibandingkan dengan penghayatan hukum terhadap dua kenyataan lagi. Jika dilihat kepada skor min yang dipungut oleh keseluruhan responden bagi setiap kenyataan, skor yang paling tinggi adalah 4.18 iaitu kenyataan yang terakhir, manakala skor min yang paling rendah adalah 2.10. Kenyataan tersebut adalah yang berkaitan hukum bersalaman antara seorang dengan ibu tir sebelum berlaku perisetubuhan.

5.0 Kesimpulan

Hasil kajian mendapati bahawa adab bersalaman merupakan amalan mulia yang diamalkan oleh masyarakat Melayu sejak turun temurun dan kekal sehingga kini. Dari segi konsep, amalan ini secara umumnya selari dengan agama Islam yang sangat menggalakkan aktiviti bersalaman sesama muslim, apatah lagi apabila ia melibatkan ahli keluarga. Namun anjuran sunnah bersalaman ini perlu memelihara batas yang ditetapkan oleh syarak apabila ia melibatkan individu berlainan jenis jantina. Kajian menemui masyarakat semasa belum dapat menghayati secara sempurna tentang batasan bersalaman antara ahli keluarga. Ada dalam kalangan responden kajian yang keliru tentang keharusan hukum bersalaman dengan sebahagian ahli keluarga. Ia berpunca daripada tahap pengetahuan responden tentang jenis status hubungan sama ada ahli keluarga tersebut termasuk dalam mahram *muabbad*, *muaqqat* atau bukan mahram. Kedudukan status hubungan ini akan memberi kesan yang berbeza kepada keharusan

bersalaman. Dapatan ini memberi implikasi untuk diketengahkan hukum hakam berkaitan status mahram dan ajnabi dalam keluarga kepada masyarakat. Selain itu apa yang lebih penting, kajian ini mencadangkan untuk diberi garis panduan khusus berkaitan batas bersalaman dengan ahli keluarga agar masyarakat tidak melanggar ketetapan syarak dalam memenuhi tuntutan yang disunatkan dalam Islam.

Penghargaan

Kami amat berterima kasih atas sokongan yang tidak ternilai daripada Pusat Kecemerlangan Penyelidikan & Pengurusan Inkubasi (CREIM), Fakulti Pengajian Kontemporari Islam (FKI), Universiti Sultan Zainal Abidin dan Dar Al-Qari Resources (DAQR) yang memberi dana serta sokongan terhadap penerbitan kertas kerja ini. Kertas kerja ini merupakan sebahagian daripada Projek Penyelidikan Luar bersama Dar Al-Qari Resources (DAQR) yang bertajuk 'Kekeliruan Masyarakat Terhadap Hukum Berkaitan Pergaulan dalam Keluarga dan Penyelesaiannya Melalui Buku Poket Mahram Ajnabi' (UniSZA/2023/PPL/DAQR(085)).

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THE APPLICATION OF THE CONCEPTS *MANTUQ* AND *MAFHUM* IN ISLAMIC RESEARCH METHODOLOGIES

Kasimah Kamaruddin, Nur Sakiinah Ab Aziz, Mariam Nabilah Mohd Noor, Hussein Ali Abdullah Al-Thulaia, Wan Mohd Khairul Firdaus bin Wan Khairuldin ¹, Norashikin Ahmad

¹Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin (UniSZA), Kampus Gong Badak, 21300 Kuala Nerus, Terengganu, Malaysia

*corresponding author: kasimah@unisza.edu.my

Abstract:

This article explores the concepts of mantuq and mafhum in the context of Islamic research methodologies. Mantuq refers to the explicit or literal meaning stated in sacred texts, while mafhum refers to the implicit or understood meaning derived from the texts. Both concepts are crucial role in the process of interpreting texts and determining Islamic law (sharia). This study aims to elucidate the definitions and roles of mantuq and mafhum in usul fiqh, and to examine the practical applications of these concepts in various fields of Islamic research such as fiqh, muamalat (Islamic transactions), social sciences, education, law, and Islamic economics. A qualitative approach is used in this study, involving document analysis and the sacred texts of the Quran. Case studies are also applied to demonstrate the practical applications of mantuq and mafhum in contemporary issues. Data is collected through literature reviews and analysed using usul fiqh methodologies. The results show that the concepts of mantuq and mafhum are essential tools in interpreting sacred texts and determining Islamic law. The application of these concepts spans various fields such as legal rulings, Islamic financial contracts, social justice, Islamic education, and legislation. Despite the challenges in applying these concepts in a modern context, this study finds that a deep understanding of usul fiqh and a contextual approach can overcome these challenges. This study contributes to a deeper knowledge of Islamic research methodologies by emphasizing the importance of the concepts of mantuq and mafhum. It provides practical guidance for researchers in effectively using these concepts. The study also highlights the importance of integrating Islamic principles into contemporary research to ensure the relevance and accuracy of analysis in various fields.

Keywords: *mantuq* concept, *mafhum* concept, Islamic research methodologies

1.0 Introduction

Research is an organized process that uses particular techniques to deal with a range of issues and uncertainties. Islamic research methodology is defined as a research strategy that is grounded in Islamic sciences, such as *usul al-fiqh* (principles of Islamic jurisprudence) and others (Salleh, 2008). According to Salleh (2011), three basic principles must be followed by Islamic research methodology. First, it involves the integration of two types of knowledge: *ilmu al-daruri* (necessary knowledge) and *ilmu al-nazari* (theoretical knowledge). Second, it needs to be grounded in the Islamic worldview and epistemology. Third, the methods employed by researchers must be relevant to Islamic affairs and Muslim society (Alias, 2016). Louay (2006) describes Islamic research methodology as an alternative scientific approach to studying social sciences, integrating classical Muslim research methods with contemporary social science research methods in line with Islamic principles. This strategy aligns with al-Buti's (1990) suggestions to adapt traditional Islamic research methodologies to contemporary contexts.

In this context, traditional methods such as *mantuq* and *mafhum* have grown more important for a deeper understanding and interpretation of Islamic texts. In the study of *usul al-fiqh*, the idea of *mantuq* and *mafhum* are fundamental. *Mantuq* refers to the understanding of the explicit meaning clearly stated in the text, while *mafhum* involves the understanding of implicit meanings that can be derived through the implications of the text (Al-Qattan, 2002; Al Qaradawi, 1996). These two methods have long been used by Islamic scholars in the discipline of *usul al-fiqh* to interpret legal texts. They play a crucial role in the formulation of Islamic law (Sharia) (Kamali, 2003; Hallaq, 1997) and are suitable as a legal analysis method in Islamic research methodology (Hassan, 2018; Miswan, 2014). Therefore, this study aims to explore the application of *mantuq* and *mafhum* methods in Islamic research methodology. The findings from this study will highlight the use of these concepts as an alternative to conventional data analysis methods in social sciences.

2.0 Literature Review

2.1 The Concepts of *Mantuq* and *Mafhum*

The concepts of *mantuq* and *mafhum* are foundational in *usul al-fiqh*, the branch of Islamic knowledge that deals with the principles and methodologies for deriving Islamic legal rulings. Research on these concepts in the interpretation of Islamic texts has highlighted the evolution of their understanding and application, ranging from traditional to contemporary approaches.

Recent studies by Rachman et al. (2024) specifically examine the role of *mantuq* in the interpretation (*tafsir*) of the Qur'an by the renowned Islamic scholar Tahir Ibn Ashur. It analyzes how Ibn Ashur utilized *mantuq* in his exegesis *Tafsir al-Tahrir wal-Tanweer*. While, Wahid et al. (2023), center on the fundamental definitions and applications of *mantuq* (explicit meaning) and *mafhum* (implied meaning) within the context of the Quran. It provides a broad overview of how these concepts are used in Islamic legal theory (*usul al-fiqh*) to interpret Shariah law. The paper by Rasyid et al. (2023) aims to explain the nature of the concepts of *Mantuq* (explicit meaning) and *Mafhum* (implicit meaning) as they are applied in the interpretation of the Quran. The study focuses on how these concepts are essential in the field of *Usul al-Fiqh* (Islamic jurisprudence principles) and their relevance in understanding the Quranic texts, especially in deriving legal rulings. Abdallahi et al. (2022) focus on the concept of counter-implicature *mafhum al-mukhalafah* as applied in Quranic exegesis, particularly through the Tafsir Adwa al Bayan by al-Shanqiti. The main objectives are to understand what *mafhum al-mukhalafah* is, the factors that may hinder its use as a source of legislation, and examples of its application in interpreting Quranic verses. The study by Kusmardani et al. (2021) aims to analyze the interpretation of Quranic verses related to legal rulings (*ayat ahkam*) by exploring the concepts of *dilalah mantuq* (explicit meaning) and *mafhum* (implied meaning). It seeks to understand how these concepts are applied in deriving legal rulings from the Quran and their significance in Islamic jurisprudence.

The study by Ramic (2019), in the context of the Shafi'i school of thought, highlights how *mantuq* is used to support legal arguments and how *mafhum* helps adapt legal rulings to new contexts. This demonstrates that both methods are fundamental in maintaining the accuracy and relevance of Islamic law in changing situations. This approach showcases the flexibility of *mantuq* and *mafhum* methods in ensuring that legal rulings remain relevant even in changing contexts. Difference with the study by Muhammadi (2018), aims to explore how the concepts of *Mantuq* (explicit meaning) and *Mafhum* (implicit meaning) are applied to Quranic verses related to criminal acts of murder and compare these interpretations with the Indonesian Criminal Code (KUHP). The study seeks to identify differences in the categorization and legal implications of murder between Islamic law and the KUHP, especially focusing on intentional and unintentional killings. Meanwhile Asni (2017) explains in his study the methodology used by al-Syatibiy in the science of *usul al-fiqh*. Among the methods analyzed are the methods of *al-amr* and *al-nahy*, and *mafhum mukhlafah*. Therefore, the theory proposed by al-Syatibiy is suitable for application in the process of issuing fatwas in Malaysia. In the contemporary context, *mantuq* and *mafhum* have been used in modern studies to understand current issues. Al-Khader (2015), in his study on *Mantuq* and *Mafhum* in Contemporary Islamic Jurisprudence, emphasizes these two concepts can be applied to address problems that are not directly discussed in classical texts but are relevant to modern challenges.

Overall, these studies show the evolution of the use of *mantuq* and *mafhum* from traditional to more modern approaches. They also highlight the importance of maintaining fundamental Islamic principles while allowing

flexibility in interpretation to ensure that Islamic law remains relevant and effective in an ever-changing world.

2.2 Application of Islamic Sciences in Data Analysis Methods for Islamic Research

Recent studies indicate a significant evolution in the application of *usul al-fiqh*, *tafsir* (Quranic exegesis), and *hadith* in the context of Islamic research, with a growing focus on the need to adapt traditional methods to contemporary challenges. Kamaruddin, (2020) introduced the application of *usuliyyah al-lughawiyah* (linguistic principles) in the data analysis of Islamic research. This study emphasizes an approach that combines linguistic aspects with *usul al-fiqh* to enhance the accuracy and appropriateness of analysis in Islamic research. Similarly, Khairuldin et al. (2020) highlight the implementation of the *al-takyif* method in research methodology, showing that this method can be adapted to address contemporary issues through *qiyas* (analogical reasoning).

In addition, Hassan (2018) focuses on the use of the *dilalat* method in the analysis of Islamic texts, with an emphasis on structure and systematic approaches in this method. Both Hassan (2018) and Miswan (2014) propose the analysis of Islamic texts through the use of *dilalat* methods. In his study, Hassan (2018) asserts that *dilalat* methods are more comprehensive compared to conventional textual and content analysis methods. Miswan (2014) suggested that two elements of *dilalah*, namely *mafhum muafaqah* and *mafhum mukhalafah*, be used in analyzing qualitative data based on texts. He also proposed four steps in concluding texts or textual analysis, which are identifying relevant statements, interpreting the statements, explaining (*ta'li*) the statements and establishing general methods and concepts. Langa (2009) and Abd Majid (2009) further contribute to this discourse by discussing various textual analysis approaches, including *lafziyyah* (literal analysis) and external and internal criticism within *usul al-fiqh*, demonstrating that these traditional methods remain relevant in ensuring the validity and accuracy of data in Islamic research.

The studies by Embong (2017) and Hanapi (2017) highlight the possibility in incorporating the *tafsir* methods utilized by classical scholars (*mufassirin*) can be integrated into contemporary Islamic research. Their approaches highlight the structured and systematic nature of data analysis, ensuring that *tafsir* methods such as *al-tahlili* (analytical), *al-ijmali* (summarized), *al muqaran* (comparative), and *al-mawdu'i* (thematic) are not only relevant for text interpretation but can also be applied throughout the entire research process. In an earlier study, Hanapi (2013) evaluated various *tafsir* methods that could be applied in data analysis, paving the way for a broader use of *tafsir* methods in Islamic research. Mokhtar (2017) and Hanapi (2016) discuss the application of the *hadith al-mawdu'i* method as a tool for data collection and analysis. This study highlights the suitability of the *hadith al-mawdu'i* method in Islamic research, emphasizing the thematic approach as an effective tool for ensuring that the data analyzed remains relevant and aligned with current developments.

Overall, these studies demonstrate that the approaches of *usul al-fiqh*, *tafsir*, and *hadith* not only remain relevant but can also be adapted to meet the challenges of modern research. By integrating these traditional methods into Islamic research methodology, researchers can ensure that their findings are not only accurate and valid but also relevant in a changing context. This emphasizes how importance it is to keep improving and modifying these techniques in order to keep Islamic research current and dynamic in response to changing demands.

3.0 Methodology

This research is qualitative. Data was collected using document sources. This study used three main source of data: the first source consists of Quranic texts, which serve as the primary data; the second source includes works of *usul al-fiqh* related to the concepts of *mantuq* and *mafhum*; and the third source comprises books, journals, and theses related to the application of *mantuq*

and *mafhum* concepts and methods of data analysis in Islamic research. The data collected through the literature review was analyzed using the *usul al-fiqh* methodology, specifically the *mantuq* and *mafhum* methods. The *mantuq* analysis method involves understanding the clear and explicit meanings expressed in the text, while the *mafhum* analysis method encompasses the understanding of implicit meanings that can be inferred from the text.

4.0 Discussion and Conclusion

This section will discuss the concepts of *mantuq* and *mafhum* and their application in Islamic research methodologies.

4.1 The Concepts of *Mantuq* and *Mafhum*

According to Abu Zahrah (n.d.), *dilalah* is the clarity and expressive quality that permit certain words in the text (nas) to interpret other parts of the text. It is a method used to deduce legal rulings from these texts. According to al-Khudhari (2000) and al-Zuhayli (al-Shafi'i divided *dilalah* into two parts: *mantuq* and *mafhum*.

Definition of Mantuq and Its Types

In Arabic, *mantuq* is derived from the word *nataqa*, which means to speak (al-Qattan, 2000). According to al-Jurjani (1887), *mantuq* refers to what is spoken and understood directly from the text. Scholars of *usul al-fiqh* categorize *mantuq* into three types: *nas*, *zahir*, and *muawwal* (al-Qattan, 2000).

i. *Nas* refers to a word or phrase that directly indicates the intended meaning without implying any other meaning (al-Zuhayli, 1998). For example, the verse:

"If he cannot afford to offer a sacrifice, he should fast three days during the Hajj and seven days when you return, making ten days in all." (Surah al-Baqarah, 2:196)

The word "ten" in this verse conveys a definite meaning and eliminates any possibility of interpreting "ten" in a symbolic or figurative sense (al-Qattan, 2000).

ii. *Zahir* refers to a word that indicates a meaning immediately understood when it is spoken, but it may also imply a weaker secondary meaning (al-Zuhayli, 1998). For example, the verse:

"Indeed, Allah has forbidden to you dead animals, blood, the flesh of swine, and that which has been dedicated to other than Allah. But whoever is forced by necessity, neither desiring it nor transgressing its limit, then Allah is Forgiving and Merciful." (Surah al-Baqarah, 2:173)

The word *al-baghi* is used for the meaning *al-jahil* (ignorant) and *al-zalim* (oppressor), with the latter being more commonly understood. The stronger meaning is *al-zalim*, while the weaker is *al-jahil* (al-Qattan, 2000).

iii. *Muawwal* refers to a word interpreted with a weaker meaning due to the presence of evidence preventing the stronger meaning from being adopted (al-Zuhayli, 1998). For example, the verse:

"And lower to them the wing of humility out of mercy and say, 'My Lord, have mercy upon them as they brought me up [when I was] small.'" (Surah al-Isra, 17:24)

This verse encourages us to treat our parents with kindness and humility and to pray for them as they cared for us during childhood. The phrase *janah...alrahmah* is interpreted as humility and good conduct toward parents rather than meaning a "wing," as humans do not have wings (al-Qattan, 2000).

Definition of *Mafhum* and Its Types

Mafhum refers to the meaning inferred from a word but not explicitly stated. It is divided into two categories: *mafhum muwafaqah* and *mafhum mukhalafah*. *Mafhum muwafaqah* refers to a meaning whose ruling aligns with what is explicitly stated. *Mafhum* has two types: *Fahwa al-Khitab* and *Lahnul Khitab* (al-Qattan, 2000).

i. *Fahwa al-Khitab* refers to the interpretation that the inferred ruling is more deserving of being applied than what is explicitly stated. For example, the prohibition of cursing, insulting, and physically abusing parents is inferred from the verse:

"And your Lord has decreed that you not worship except Him, and to parents, good treatment. Whether one or both of them reach old age [while] with you, say not to them [so much as], 'uff,' and do not repel them but speak to them a noble word." (Surah al-Isra, 17:23)

The *mantuq* of this verse is that it is prohibited to say "uff" to one's parents. However, it is even more important to prohibit cursing and insulting them, as these actions are more severe.

ii. *Lahnul al-Khitab* is when the ruling inferred by *mafhum* is the same as the ruling stated by *mantuq*. For example:

"Indeed, those who devour the property of orphans unjustly are only consuming into their bellies fire. And they will be burned in a Blaze." (Surah al-Nisa, 4:10)

This verse warns against the prohibition of destroying or squandering the property of orphans. This is referred to as *Lahnul al-Khitab* because destroying or burning the property is akin to consuming it unjustly. Both of these *mafhum* types are known as *mafhum al-muwafaqah* because the implied meaning's ruling aligns with the ruling of the explicitly stated meaning.

Mafhum Mukhalafah refers to a meaning whose ruling differs from the *mantuq* (explicit meaning). *Mafhum mukhalafah* has four types (al-Qattan, 2000):

i. *Mafhum Sifat*:

"O you who have believed, if there comes to you a disobedient one with information, investigate, lest you harm a people out of ignorance and become, over what you have done, regretful." (Surah al-Hujurat, 49:6)

The *mafhum* of this verse is that the information brought by a truthful person does not need to be verified. This means that the news delivered by a trustworthy person must be accepted.

ii. *Mafhum Syarat*:

"Live with them in kindness; if you dislike them, it may be that you dislike something in which Allah has placed much good." (Surah al-Talaq, 65:6)

The *mafhum* here is that a divorced wife who is not pregnant is not entitled to financial support. iii. *Mafhum*

Ghayah:

"And if he divorces her [again], then she is not lawful to him afterward until [after] she marries a husband other than him. And if the latter husband divorces her [or dies], there is no blame upon the woman and her former husband for returning to each other if they think that they can keep [within] the limits of Allah. These are the limits of Allah, which He makes clear to a people who know." (Surah al-Baqarah, 2:230)

The *mafhum* is that the wife becomes lawful for the first husband after she marries another man and fulfills the conditions of the marriage.

iv. *Mafhum Hashr*:

"It is You we worship, and You we ask for help." (Surah al-Fatihah, 1:5)

The *mafhum* here is that nothing other than Allah deserves to be worshipped, and there is no need to seek help from anyone other than Him.

Diagram 1 below summarizes the discussion about the concepts of *mantuq* and *mafhum*.

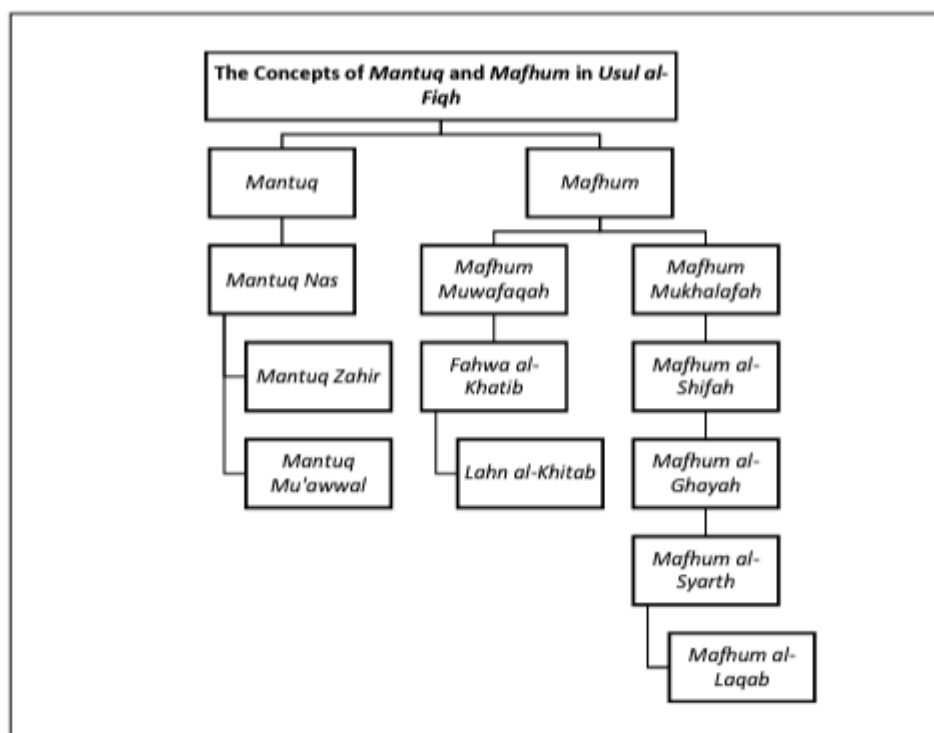


Diagram 1: The Concepts of Mantuq and Mafhum in Usul al-Fiqh

4.3 The Concepts of *Mantuq* and *Mafhum* in Islamic Research Methodology Data Analysis

The concepts of *mantuq* and *mafhum* can be effectively applied as data analysis methods within Islamic research methodology. This is because conventional data analysis methods in social sciences often have limitations in examining and analyzing the explicit and implicit meanings in Islamic texts and legal documents. For example, content analysis, commonly used in Islamic research, often fails to consider the implicit meanings in texts (Bryman, 2012; Babbie & Rubin, 2014:). Therefore, the concepts of *mantuq* and *mafhum* provide a precise method for analyzing Islamic texts and research. As a result of studying these concepts, researchers have developed a data analysis method based on *mantuq* and *mafhum* as illustrated in the diagram 2 below.

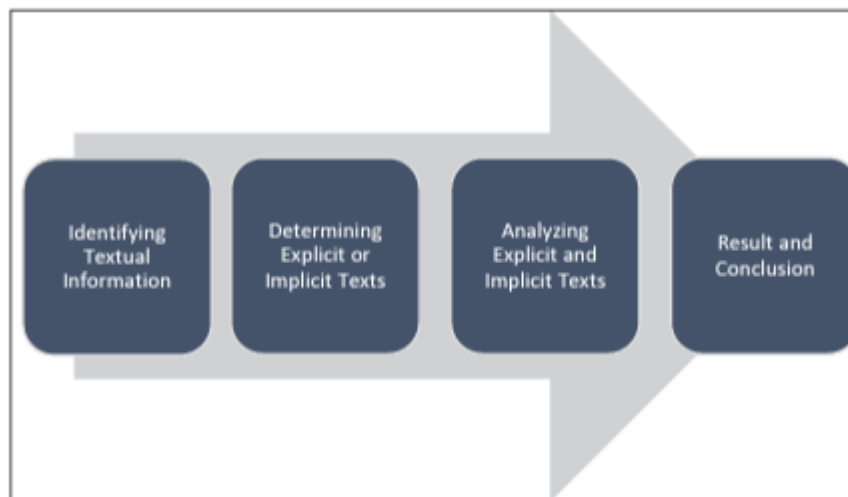


Diagram 2: Data Analysis Process Using the Concepts of Mantuq and Mafhum

Diagram 2 shows the flowchart of the data analysis process using the concepts of *mantuq* and *mafhum* as a method for data analysis in Islamic research. The following are the steps involved in applying these methods in the context of data analysis:

Identifying Textual Information

The first step in the analysis is identifying *mantuq*, the explicit meaning directly derived from the text. To comprehend the primary decisions or directives, this entails looking closely at the text's concise, direct assertions. This involves examining clear and direct statements within the text to understand the main rulings or commands. The application of this method in data analysis is a step in identifying clear and unambiguous information or commands from a data set. For instance, *mantuq* refer to explicit order or prohibitions when interpreting Islamic texts to determine verticts.

Determining Explicit or Implicit Texts

In data analysis, this decision point is crucial in determining whether additional layers of interpretation are needed. The analyst can use the explicit information straight away if the wording or data is unambiguous and transparent. If not, more explanation is needed.

Analyzing Explicit and Implicit Texts

If the text is not explicit, the analyst uses *mafhum muwafaqah*, which refers to an implied meaning that aligns with the explicit text. For example, if a text explicitly prohibits disrespect towards parents, *mafhum muwafaqah* would extend this prohibition to more severe forms of disrespect (e.g., physical violence). In order to ensure that the analysis takes into account both the direct meaning and any implications that may follow from the explicit meaning, it is necessary to interpret the data or texts in a manner that is compatible with the explicit directions. *Mafhum mukhalafah* is used if the suggested meaning implies something different from what is stated explicitly in the text. For example, if a text states that a certain action is obligatory under specific conditions, *mafhum mukhalafah* may imply that the action is not obligatory under different conditions. By using this approach, analysts can ensure a thorough comprehension of the significance when the evidence points to alterbative or contradictory rulling.

After applying *mantuq* and *mafhum*, the analyst proceeds to analyze the data and draw conclusions. This step involves synthesizing explicit and implicit meanings to achieve a comprehensive understanding of the text. In

terms of data analysis, this is equivalent to combining all relevant fact (both explicit and implicit) in order to arrive at conclusions that are in line with the texts main ideas. This ensures that the analysis is thorough and considers all relevant factors.

Results and Conclusions

The final step is to issue a ruling or decision based on the analysis conducted using *mantuq* and *mafhum*. This is where the conclusions drawn become actionable decisions. In the context of data analysis, this could entail developing policies, guidelines, or recommendations based on the analysis's findings. The decisions made at this stage should be well-supported by the data and interpretations used.

4.4 The Applications of Concepts *Mantuq* And *Mafhum* In Islamic Research Methodologies

This study also examines the practical applications of these concepts in various fields of Islamic research such as *fiqh* (Islamic jurisprudence), *muamalat* (Islamic transactions), social sciences, education, law, and Islamic economics.

Application in Fiqh

Mantuq and *mafhum* play crucial roles in *fiqh* by helping scholars derive legal rulings. *Mantuq* refers to the clear and explicit meaning derived from the text, while *mafhum* refers to the implied or understood meaning. Scholars of *fiqh* use these concepts to interpret Quranic verses and Hadiths to derive legal rulings. For example, the prohibition of *riba* (interest) is taken from an explicit text (*mantuq*), while *mafhum* might be used to determine the permissibility or impermissibility of certain financial practices not explicitly mentioned. Scholars use *mantuq* and *mafhum* during *ijtihad* (independent reasoning) to extend the application of rulings to new situations that may not be directly addressed in classical texts, ensuring that these rulings remain relevant.

Application in Muamalat (Islamic Transactions)

In *muamalat* (Islamic transactions), the concepts of *mantuq* and *mafhum* are essential for understanding and applying Shariah-compliant principles in financial transactions. The interpretation of explicit terms in contracts (*mantuq*) is crucial for determining the validity of agreements under Islamic law, while *mafhum* is used to interpret conditions or implications that are not directly stated but are necessary to understand the contract as a whole. Avoiding *riba* and *gharar* (excessive uncertainty) in Islamic finance depends on *mantuq* and *mafhum* to avoid interest (*riba*) and excessive uncertainty (*gharar*) in contracts. The clear prohibition of *riba* is based on *mantuq*, while understanding what constitutes *gharar* is derived from *mafhum*.

Application in Social Sciences

In social sciences, *mantuq* and *mafhum* are applied to interpret Islamic teachings and their implications for social behavior and social structures. Scholars use *mantuq* to apply clear Quranic commands related to justice, equality, and welfare, while *mafhum* is used to derive broader social principles that can be applied in modern contexts, such as addressing issues like poverty and gender equality. *Mafhum* is a tool used by Islamic social scientists to examine cultural behaviour in Muslim country these activities are observed to be consistent with Islamic principles, even when they are not mentioned directly in the main sources.

Application in Education

In education, *mantuq* and *mafhum* guide curriculum development and teaching methods that align with Islamic values. Using *mantuq*, educators can make sure that the lesson covered in Islamic education are founded I unambiguous precepts such as the duty to worship. *Mafhum* is applied to convey the values and ethics understood from these teachings, promoting a holistic moral education. The use of *mantuq* in teaching focuses on the explicit content of texts, while *mafhum* allows educators to encourage critical thinking and understanding of the underlying principles of these teachings.

Application in Law

In the field of law, particularly in shariah law, *mantuq* and *mafhum* are essential tools for interpreting legal texts and applying them to contemporary issues. Judges and scholars use *mantuq* to apply clear rulings from Islamic texts in legal decisions. *Mafhum* helps to extend these rulings to new cases that may not be directly covered by the explicit text, ensuring that the law remains relevant and just. *Mafhum* is essential to legal reasoning because it takes into account the principles and wider implication of a decision in order to make sure that the goals of shariah (*maqasid al-shariah*) are met by the law.

The application of *mantuq* and *mafhum* concepts is vital in interpreting and applying Islamic teachings in various fields, ensuring that Islamic principles remain relevant and are correctly applied in different contexts.

4.5 Conclusion

In general, the methods of *mantuq* and *mafhum* are two crucial approaches in *usul al-fiqh* that have been widely used by scholars in the interpretation of Islamic texts. This study shows that the concepts of *mantuq* and *mafhum* are crucial for both comprehending Islamic texts and making sure that the rulings that are drawn from them are applicable and useful in dealing with contemporary issues. The use of *mantuq* provides a clear foundation, while *mafhum* offers the flexibility to adapt rulings to changing circumstances, making them essential tools in the process of *istinbat hukum* (deriving legal rulings) and the interpretation of Islamic texts. The use of these two concepts ensures that Islamic law remains relevant, accurate, and capable of addressing various contemporary issues, as well as resolving differences in *fiqh*, making them critical tools in ensuring justice and the alignment of rulings with the objectives of Shariah (*maqasid al-shariah*). The application of *mantuq* and *mafhum* in data analysis within Islamic law ensures a systematic and comprehensive approach to text interpretation. Scholars can derive rulings based on Islamic principles by starting with clear meanings and then taking implicit meanings into consideration if needed. By using a structured method, it also guarantees that all pertinent feature of the text are taken into consideration, resulting in conclusion that are fair and accurate. In a broader context, this method can be adapted to analyse various types of data where both explicit and implicit meanings need to be interpreted to make accurate decisions.

Acknowledgments

We are deeply grateful for the invaluable support provided by the Center for Research Excellence & Incubation Management (CREIM) and the Faculty of Islamic Contemporary Studies at Universiti Sultan Zainal Abidin, which has been instrumental in supporting the publication of this paper. This paper forms part of a research project titled 'Pembinaan Kaedah Usuliyyah Sebagai Kaedah Analisis Data Penyelidikan Berteraskan Islam', (UniSZA/2022/DPU1.0/11 | R0362).

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BEYOND PURITY: UNVEILING TAYYIB ELEMENTS IN THE PHARMACEUTICAL INDUSTRY

Nadhirah Nordin^{1*} & Azie Zurianie Mat Zaid²

¹ Associate Professor, Faculty of Islamic Contemporary Study, Universiti Sultan Zainal Abidin, ² PhD Candidate, Faculty of Islamic Contemporary Study, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia

*Corresponding author: nadhirahnordin@unisza.edu.my

Abstract:

The concept of tayyib extends beyond the basic requirement of halal (permissible) in Islamic teachings, encompassing attributes of wholesomeness, purity, and ethical integrity. While the application of halal principles in the pharmaceutical industries is well-established, the integration of tayyib elements, representing a higher standard of quality and ethical responsibility—remains underexplored. This study aims to examine the existence and implementation of tayyib elements in the pharmaceutical industry, proposing a comprehensive framework that incorporates safety, ethical sourcing, transparency, and traceability across the supply chain. Employing a qualitative approach, the study draws on document analysis and semi-structured interviews. Findings reveal that while there is a growing awareness of the importance of tayyib elements, significant challenges remain, including regulatory compliance, knowledge gaps, supply chain integrity, consumer trust, and market competition. The study proposes a structured framework for enhancing tayyib compliance, offering practical steps for pharmaceutical companies to adopt more holistic standards that align with both consumer expectations and ethical imperatives. This research contributes to the discourse on ethical standards in healthcare by highlighting the potential benefits of incorporating tayyib principles, ultimately fostering trust and ensuring better health outcomes for consumers.

Key words: Tayyib, Halal, Pharmaceutical Industry, Ethical Standards, Islamic Principles

1.0 Introduction

In the era of globalization and rapid advancement in medical technology, the Shariah-compliant pharmaceutical industry is gaining increasing attention, not only among Muslim communities but also within the global healthcare arena. The concept of halal is often associated with compliance with Islamic law regarding food and products; however, this concept encompasses much more than just fulfilling physical needs. *Tayyib*, which means good, pure, and beneficial, extends beyond the halal aspect by emphasizing blessings, spiritual well-being, and holistic health (Al-Dibyan, 2002; Ar-Razi, 1981).

Within healthcare, the notion of *tayyib* is particularly relevant, calling for medical products and services that are not only legally permissible but also pure, ethically produced, and beneficial to human health in a holistic manner. *Tayyib* surpasses the basic requirement of avoiding haram (forbidden) substances and practices; it demands the highest standards of integrity, safety, and healthfulness in production and distribution processes (Ali, 2019; Al-Khatib, 2021). This broader application of *tayyib* aligns with the Islamic ethical imperative to ensure the well-being of both body and soul, making it particularly significant in the pharmaceutical industry, where safety, efficacy, and ethical production are of paramount importance (Al-Qaradawi, 1997).

In the pharmaceutical industry context, *tayyib* necessitates not only adherence to Islamic law but also a focus on maximizing benefits to consumers—physically, mentally, and spiritually. This principle is grounded in the teachings of the Qur'an and Sunnah, which instruct every Muslim to seek what is good, pure, and beneficial in all aspects of life (Ibn Taimiyyah, 1908; Ibn Kathīr, 2004).

In healthcare and pharmaceuticals, the principle of *tayyib* is increasingly important due to the growing recognition that patient health encompasses more than the mere absence of disease; it involves a state of complete physical, mental, and social well-being (WHO, 2020). Research on the concept of halal in the pharmaceutical industry has been widely discussed across various disciplines; however, the concept of *tayyib*, which goes beyond halal, has not yet received the appropriate level of attention. *Tayyib* involves not only compliance with Shariah but also emphasizes the aspects of blessings, purity, and comprehensive goodness in all aspects of life, including in the context of pharmaceuticals. Pharmaceuticals adhering to *tayyib* principles are expected to meet stringent criteria for safety, quality, and ethical standards. This aligns with a rising trend towards ethical consumerism, where transparency, environmental sustainability, and social justice are key concerns (Hashim et al., 2016). By integrating *tayyib* principles, pharmaceutical companies can cater to these demands, potentially expanding their market reach and enhancing consumer trust.

This article aims to explore the existence and significance of *tayyib* elements in the pharmaceutical industry, particularly in Malaysia. It seeks to address gaps in understanding of *tayyib* beyond its traditional association with halal certification, providing a more comprehensive perspective on its application in pharmaceuticals. By examining current practices, consumer expectations, and regulatory environments, the article outlines a pathway for implementing *tayyib* principles in the industry, promoting a more ethical, wholesome, and spiritually aligned approach to pharmaceutical production and consumption.

2.0 Literature Review

The Concept of *Tayyib* in Islam

In the era of globalization and rapid medical technology development, the Shariah-compliant pharmaceutical industry, or the *tayyib* pharmaceutical industry, encompasses more than just disease treatment and physical care. The concept of *tayyib* in Islam, often associated with food that is halal and pure, actually covers all aspects of life, including the pharmaceutical industry. Just as *tayyib* food must meet the halal criteria outlined in the Qur'an and Sunnah—such as animals slaughtered in the name of Allah SWT, free from blood and impurities, and not infringing upon the rights of others (Imam Ibn Jarir at-Ṭabari, 2001; Abu Al-Barakat An-Nasfī, 1998; Abdul Malik Abdul Karim Amrullah, 1990; Al-Dibyān, 2002; Imam Ar-Rāzī, 1981; al Ṣabūnī, 1999)—the pharmaceutical industry must also meet these same standards. Adherence to these principles is an obligation for every Muslim in seeking what is *tayyib*, not only in the context of food but also in accepting and providing pharmaceutical products. Just as *tayyib* food is not only halal and appetizing but also nourishing for the body, *tayyib* pharmaceutical products should provide maximum benefits to the user's physical and mental health. This aligns with the views of scholars such as al-Qurtubi (2006) and al-Zuhayli (1991), as well as a hadith from Sahih Bukhari which states, "Indeed, your body has a right over you (that needs to be fulfilled)."

'Halal' (permissible) and '*tayyib*' (pure and wholesome) are distinct concepts; while halal is a minimum requirement, *tayyib* represents a higher standard of quality and safety. The most important aspect of fulfilling the true concept of *tayyib* is the spiritual development that arises from a sense of servitude (ubudiyyah) to Allah SWT. Just as *tayyib* food benefits both physically and spiritually, *tayyib* pharmaceutical products should also contribute to spiritual well-being, fostering a positive soul, a clear mind, and sincerity in obeying Allah's commands. Scholars like Imam al-Baghawi (1997), Ibn Taimiyyah (1908), Ibn 'Ashur (1984), and Ibn Kathir (2004) emphasize that the ultimate purpose of every command and prohibition of Allah is to worship Him wholeheartedly. Earlier scholars such as Ibn Jarir at-Ṭabari (2001), Imam Ar-Razi (1981), and Ibn Taimiyyah (1908) emphasized that all actions, including those within the pharmaceutical industry, should comply with Shariah and promote comprehensive goodness.

The Concept of *Halalan Tayyiban* in the Pharmaceutical Industry

The pharmaceutical industry in Malaysia plays a vital role in the nation's healthcare system, providing essential medications and medical products to its population. The industry has experienced substantial growth over the years, with an increasing demand for high-quality and affordable pharmaceutical products. This growth is driven by several factors, including population expansion, increasing healthcare awareness, and government initiatives to

promote the local pharmaceutical sector (Zainal et al., 2021). The Malaysian pharmaceutical market is divided into two primary segments: generic drugs and branded drugs, with the former accounting for a significant share of the market due to its cost-effectiveness and accessibility (Khan & Sulaiman, 2020).

Malaysia has positioned itself as a global leader in the halal pharmaceutical market. The country has developed comprehensive halal certification standards for pharmaceuticals, ensuring that medications meet the requirements of Shariah law. The concept of halal in the pharmaceutical industry encompasses not only the absence of prohibited substances, such as alcohol and certain animal derivatives, but also adherence to ethical manufacturing processes that are free from contamination and impurity (Aziz & Chok, 2013). The halal certification by the Department of Islamic Development Malaysia (JAKIM) is globally recognized and has become a benchmark for halal pharmaceuticals. As such, many pharmaceutical companies in Malaysia are investing in halal certification to cater to the growing demand for halal products, both locally and internationally (Noordin et al., 2009).

The concept of *tayyib* in Islam extends beyond halal compliance, encompassing a holistic approach to health and well-being that is particularly relevant in the pharmaceutical industry. *Tayyib* principles emphasize the permissibility, purity, ethical production, and overall benefits of products to physical, mental, and spiritual health. This broader understanding of *tayyib* is essential for guiding the development of pharmaceutical products that align with Islamic values and meet the needs of consumers seeking quality and ethical integrity.

In the context of the Malaysian pharmaceutical industry, integrating *tayyib* principles alongside halal standards is crucial for fostering consumer trust and ensuring the safety and efficacy of medications. As Malaysia positions itself as a global leader in halal pharmaceuticals, addressing the challenges associated with implementing these principles will be vital for enhancing the quality of healthcare offerings and promoting a more ethical approach to pharmaceutical production.

Ultimately, a commitment to *tayyib* not only fulfills religious obligations but also contributes to the long-term well-being of individuals and communities. By prioritizing *tayyib* in the pharmaceutical industry, stakeholders can ensure that their products comply with Shariah law while promoting holistic health and spiritual fulfilment, aligning with the broader objectives of Islamic teachings.

3.0 Methodology

This study employs a qualitative approach, where the data comprises information in textual form, without a specific structure, and is not represented through numbers or statistics (Lim, 2007; Darusalam & Hussin, 2018). The research design adopted is exploratory, aimed at achieving the predefined objectives. According to Bart (2010), descriptive data such as interviews, documents, and human behavior are well-suited for exploratory studies, as they allow researchers to discover, construct, and develop theories. This approach is appropriate for achieving the objective of the study, which is to provide an overview of *tayyib* elements in pharmaceutical industry.

Data collection methods include document analysis and interviews. The document analysis method is utilized to obtain data from written texts and documents, which provide a wide range of information that can serve as evidence or authentic insights on the subject under study. This encompasses primary and secondary resources such as books, journals, articles, reports, and websites. To achieve the study's objectives, various materials discussing the concept of *halalan tayyiban* will be reviewed and analyzed to gather perspectives on the concept of *tayyib*. The study will also examine documents related to pharmaceutical industry in Malaysia, which will enable the assessment of *tayyib* principles in these areas.

Semi-structured interviews will be conducted with selected informants to gather input. The study employs purposive sampling, selecting informants who have direct involvement with expertise in the field. The study uses content analysis as its analytical method, which is a common technique in qualitative research (Neuendorf, 2002:1; Schreier, 2012:1). Content analysis is used to examine and interpret data found in documents systematically and objectively, allowing for meaningful conclusions to be drawn from the data (Yusof, 2004:34; Krippendorff, 2004:18).

4.0 Discussion and Conclusion

The regulatory framework in Malaysia for halal pharmaceuticals is well established, but the integration of *tayyib* principles is still in its nascent stages. Current regulations by the National Pharmaceutical Regulatory Agency (NPRA) focus primarily on safety, quality, and efficacy, but there is potential to expand these regulations to include elements of *tayyib* that align with Islamic ethical standards (Mohamed, 2023; Karim & Ariffin, 2015).

The concept of *tayyib*, which signifies purity, goodness, and wholesomeness, is crucial in the context of halal pharmaceuticals in Malaysia. As the halal pharmaceutical market continues to expand, compliance with *tayyib* principles has become increasingly important. This compliance not only ensures that products are halal but also that they meet high standards of safety, efficacy, and ethical production practices.

In Malaysia, the initial standard guideline for halal pharmaceuticals, known as MS 2424:2010, was released in February 2011. This standard aimed to provide a framework for the halal certification of pharmaceutical products, emphasizing the importance of both halal and *tayyib* principles in manufacturing processes (Ramli & Salleh, 2012). The halal pharmaceutical industry is encouraged to project a broader image of Islamic values, integrating good, clean, and wholesome practices into their production processes (Jamaluddin, 2023; Abdul Aziz et al., 2022; Azmi & Salleh, 2013). The MS 2424:2010 standard outlines the requirements for halal pharmaceuticals, ensuring that they comply with Shariah law while also adhering to Good Manufacturing Practices (GMP). This comprehensive approach is essential for maintaining the integrity of halal products and ensuring that they are free from contamination and impurities (Department of Standards Malaysia, 2012).

The Malaysian Standards (MS) such as MS 1500, MS 1480, and MS 1514, along with the Halal Food Manual Procedures, serve as critical references for ensuring that halal pharmaceuticals adhere to both halal and *tayyib* standards. These standards are designed to ensure that the production processes are not only compliant with Shariah law but also uphold ethical business practices and sustainability (Sazelin & Safiah, 2023).

Despite the established guidelines, challenges remain in ensuring widespread compliance with *tayyib* principles in the pharmaceutical sector. A study by Ramli et al. (2018) highlighted issues regarding the knowledge and attitudes of pharmacists toward halal certification and their readiness to produce halal medicines. The competency of pharmacists plays a significant role in ensuring the halalness of pharmaceuticals, as they are responsible for verifying the ingredients and processes involved in drug production (Rahem et al., 2021).

Furthermore, the halal pharmaceutical market faces challenges related to the misuse of halal logos and the questionable status of halal products. Reports of fraud in halal food and pharmaceuticals have raised concerns among consumers about the integrity of halal certification processes (Sazelin & Safiah, 2023). This underscores the need for more stringent oversight and transparency in the halal certification of pharmaceuticals.

Consumer awareness regarding the importance of *tayyib* compliance is growing, particularly among Muslim consumers who seek products that align with their religious beliefs. Research indicates that the intention to consume halal pharmaceutical products is positively influenced by factors such as knowledge of halal products, attitude, and religiosity (Sadeeqa & Sarriiff, 2014). As the market for halal pharmaceuticals expands, there is a pressing need for educational campaigns to enhance consumer understanding of *tayyib* principles and their implications for health and safety.

The Malaysian pharmaceutical industry is experiencing a growing demand for halal and *tayyib* compliant products, driven by both local and international markets. However, the implementation of *tayyib* principles—representing purity, goodness, and wholesomeness—faces several significant challenges that hinder the effective integration of these standards into pharmaceutical practices.

The regulatory framework governing the pharmaceutical industry in Malaysia is intricate, involving multiple agencies such as the National Pharmaceutical Regulatory Agency (NPRA) and the Department of Islamic Development Malaysia (JAKIM). Compliance with the Halal Pharmaceuticals Standard MS2424:2010 is mandatory, which requires adherence to both halal and *tayyib* principles throughout the manufacturing process

(Azmi & Associates, 2023). However, navigating these regulations can be particularly challenging for smaller pharmaceutical companies that may lack the resources to meet stringent compliance requirements. The dual need for adherence to Good Manufacturing Practice (GMP) standards and halal certification complicates the production process, often leading to increased operational costs and logistical challenges.

A significant barrier to the effective implementation of *tayyib* principles is the lack of awareness and understanding among pharmaceutical professionals regarding the importance of *tayyib* beyond halal compliance. Many pharmacists and manufacturers focus primarily on meeting halal certification requirements, often neglecting the broader implications of *tayyib*, which include ethical production and holistic health benefits (Ramli et al., 2018). This gap in knowledge can result in inconsistencies in product quality and safety, undermining consumer trust in halal pharmaceutical offerings (Rahem et al., 2021).

Ensuring the integrity of the supply chain is critical for maintaining *tayyib* compliance. The sourcing of raw materials must align with halal standards, and any contamination or cross contamination with non-halal substances can compromise the *tayyib* status of the final product (Sazelin & Safiah, 2023). Moreover, the logistics involved in transporting and storing pharmaceutical products must also adhere to halal principles. This includes ensuring that halal and non-halal products are not stored or transported together, which can be a logistical challenge in mixed-use facilities (Abdul Aziz et al., 2022). The halal status of pharmaceutical products can become questionable if proper precautions are not taken throughout the supply chain.

The growing demand for ethical and safe pharmaceutical products is accompanied by a heightened expectation for transparency from manufacturers. Consumers are increasingly aware of the health implications and ethical dimensions of the products they use, including pharmaceuticals. For Muslim consumers, the *tayyib* element is particularly crucial as it embodies a commitment to spiritual and physical well-being (Hussain et al., 2020). However, the lack of clear labelling and information regarding the halal status of pharmaceutical products can lead to consumer scepticism and mistrust (Luthviati & Jenvitchuwong, 2021). Many consumers may find it challenging to ascertain whether a product meets *tayyib* standards due to insufficient information on packaging and marketing materials.

The competitive nature of the pharmaceutical market can also impede the implementation of *tayyib* principles. Companies may prioritize cost-cutting measures over adherence to ethical production practices, especially in a market driven by profit margins. This pressure can lead to compromises in product quality and safety, ultimately affecting consumer health and well-being (Hashim et al., 2016). The economic implications of integrating *tayyib* principles, such as increased production costs and the need for rigorous quality control measures, can deter some companies from pursuing halal and *tayyib* certifications altogether.

The challenges associated with implementing *tayyib* principles in the Malaysian pharmaceutical industry are multifaceted, encompassing regulatory compliance, knowledge gaps, supply chain integrity, consumer trust, and market competition. Addressing these challenges requires a collaborative effort among regulatory bodies, industry stakeholders, and educational institutions to enhance awareness, streamline certification processes, and promote best practices in the production of halal and *tayyib* pharmaceuticals. By overcoming these obstacles, the Malaysian pharmaceutical industry can align itself more closely with the expectations of Muslim consumers and contribute to the broader goals of health and well-being.

Despite these challenges, there are considerable opportunities for the Malaysian pharmaceutical industry to leverage the principles of *tayyib* to its advantage. One of the primary opportunities lies in market expansion. As global demand for ethical and wholesome products continues to rise, Malaysian pharmaceutical companies have a unique chance to expand their market reach by promoting *tayyib*-certified products (Sulaiman et al., 2018). Furthermore, increased investment in research and development (R&D) can lead to innovation in new ingredients, production processes, and packaging solutions that align with *tayyib* principles. This investment could establish Malaysia as a leader in ethical pharmaceuticals (Rahman & Syed Omar, 2017). Lastly, a strong emphasis on *tayyib* principles has the potential to enhance consumer trust and loyalty, especially among Muslim consumers who are not only seeking halal-certified but also ethically produced and health-promoting pharmaceutical products (Amin & Isa, 2017). By addressing these challenges and capitalizing on the opportunities, the Malaysian pharmaceutical industry can position itself as a pioneer in integrating *tayyib* principles into contemporary pharmaceutical practices.

The concept of *tayyib* in the pharmaceutical industry in Malaysia is still emerging but holds significant promise for enhancing the ethical standards and quality of healthcare products. To fully capitalize on this potential, there is a need for greater awareness, a supportive regulatory framework, and increased investment in R&D. By integrating *tayyib* principles, the Malaysian pharmaceutical industry can position itself as a leader in producing high-quality, ethical, and wholesome pharmaceutical products that cater to both local and global markets.

Acknowledgements

We are deeply grateful for the invaluable support provided by the Center for Research Excellence & Incubation Management (CREIM) and the Faculty of Islamic Contemporary Studies at Universiti Sultan Zainal Abidin, which has been instrumental in supporting the publication of this paper. This paper forms part of a research project titled *Pembinaan Model Tayyib Dalam Produk dan Perkhidmatan Kesihatan Berasaskan Maqasid al-Shariah* (FRGS/1/2022/SSI13/UNISZA/02/7). This project is also supported by the Research Grant for Strengthening International Research Collaboration – FKI (RU005)

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3H2O MEMBANTU MENINGKATKAN KEMAHIRAN MURID PRASEKOLAH MENYELESAIKAN MASALAH OPERASI TAMBAH MENGGUNAKAN HUBUNGAN SEBAHAGIAN-SEBAHAGIAN-KESELURUHAN.

Sharin Aizrulidana binti Samsuri¹ Emma binti J. Daukom², Florence Engkian³, Nurul Natalia binti Nasif⁴, Siti Fatanah binti Mozes⁵, Dg Ku Rubiah Pg Osman⁶, Mandy Junaidy⁷

SK. Bukit Padang, Kota Kinabalu Sabah
(sharinsamsuri@gmail.com)

ABSTRAK

Matematik merupakan satu bidang yang bukan setakat mengenali angka atau menjalankan operasi asas sahaja, tetapi ianya juga digunakan untuk melatih kanak-kanak berfikir kritis, kreatif, boleh menyelesaikan masalah dan sekaligus mengasah kemahiran berfikir aras tinggi (KBAT) mereka selaras dengan keperluan murid abad ke 21. Kebanyakan kanak-kanak prasekolah sukar untuk menyelesaikan masalah operasi tambah dan tolak yang melibatkan KBAT kerana kanak-kanak pada kohort umur 4+ dan 5+ masih belum boleh memahami konsep **sebahagian nombor** kepada **keseluruhan nombor** ataupun dikenali sebagai **“part-part whole”**. Hubungan sebahagian-sebahagian-keseluruhan atau part-part-whole penting untuk diajar kepada murid di peringkat awal kerana ini akan membantu melengkapkan murid menguasai konsep matematik yang lebih kompleks dengan mudah kelak. Untuk mengembangkan pemikiran fleksibel tentang hubungan part-part-whole, murid perlu memahami bahawa nilai sesuatu nombor dapat ditunjukkan dengan pelbagai cara dan dapat dihasilkan daripada bahagian-bahagian yang berbeza. Guru harus merangsang murid menggunakan KBAT dalam mencari gabungan dua bahagian yang boleh menghasilkan keseluruhan nombor. Justeru itu, bagi memudahkan kanak-kanak berumur 5 dan 6 tahun ini memahami konsep part-part-whole, permainan small-small-big (SSB) untuk operasi tambah dan big-small-small untuk operasi tolak telah diperkenalkan. Kajian ini dijalankan untuk melihat keberkesanan kit permainan **3H2O** dalam membantu murid menyelesaikan empat masalah operasi tambah dalam lingkungan 10 melalui teknik permainan SSB. Responden kajian terdiri daripada tujuh orang kanak-kanak prasekolah Kelas Bestari 2 yang berumur enam tahun yang belum menguasai kemahiran operasi tambah dengan membilang secara terus dari suatu nombor. Kajian ini dijalankan selama 6 minggu termasuk pengumpulan data, pelaksanaan kajian dan pengujian bahan. Dapatan kajian mendapati bahawa terdapat peningkatan markah tujuh orang murid tersebut dalam menyelesaikan operasi tambah yang memerlukan murid memahami hubungan sebahagian nombor kepada keseluruhan nombor. Terdapat juga peningkatan dalam Pentaksiran bilik darjah (PBD) daripada TP1 kepada TP3. Konklusinya, kit permainan **3H2O** telah membantu meningkatkan kemahiran murid dalam menyelesaikan empat permasalahan dalam operasi tambah dan sekaligus mengupayakan guru melaksanakan pembelajaran abad ke-21 yang berpusatkan murid dan menjadikan sesi pengajaran dan pembelajaran lebih seronok dan bermakna kepada murid prasekolah.

Kata kunci : 3H2O, sebahagian nombor, keseluruhan nombor, small-small-big,

1.0 PENDAHULUAN

Di suatu pagi semasa sesi pengajaran dan pembelajaran (PdP) Matematik Awal, guru telah mengajukan soalan operasi tambah secara lisan kepada murid. $5+3$ berapa? Ada murid yang dapat menjawab soalan guru dengan betul. Kemudian guru menukar soalan tersebut. Berapa $+ 3$ dapat 8? Pada awalnya murid hanya diam namun selang beberapa saat kedengaran jawapan dari beberapa orang murid namun semua jawapan salah. Kemudian, guru menukar lagi soalan $5 +$ berapa dapat 8? Suasana masih tetap sama. Pelbagai jawapan yang diterima. Murid meneka jawapan ikut suka hati mereka. Kemudian, guru memberikan satu soalan lagi berapa $+ 3$ berapa dapat 8? Semuanya senyap dan hanya kedengaran bunyi kipas di siling.

Menurut Yap dan Siti Rahaimah Ali (2018), kesilapan jawapan sering timbul disebabkan oleh kefahaman yang cetek dalam matematik. Murid menghadapi masalah pemahaman numerasi kerana tidak mempunyai pemahaman konsep matematik yang kukuh. Situasi di atas jelas menunjukkan bahawa kanak-kanak masih belum boleh menjawab soalan yang melibatkan kemahiran berfikir untuk menyelesaikan masalah operasi tambah walaupun dalam lingkungan 10. Menurut Piaget yang di petik dari Abdul Halim Abdullah (2016), pada peringkat pra-operasi iaitu peringkat kanak-kanak berumur antara dua hingga tujuh tahun, kanak-kanak secara beransur-ansur akan mengembangkan bahasa dan kemahiran untuk berfikir dalam bentuk simbolik. Contohnya, kuantiti tiga biji gula-gula boleh diwakilkan dengan nombor 3, manakala operasi penambahan boleh diwakilkan dengan simbol $+$, dan sebagainya. Tambah beliau lagi, matematik merupakan satu bidang yang bukan setakat mengenali angka atau menjalankan operasi asas yang kebiasaannya dilatih dengan latih tubi, tetapi ianya juga digunakan untuk melatih kanak-kanak menyelesaikan masalah dan mengasah kemahiran berfikir aras tinggi (KBAT). Biasanya di kohort umur ini, guru lebih cenderung memberi pendedahan untuk murid memahami konsep bahawa hasil tambah dua nombor akan menghasilkan satu nombor yang lebih besar. Kanak-kanak masih belum memahami konsep '**sebahagian nombor**' kepada '**keseluruhan nombor**'. Walaupun kanak-kanak mungkin telah dapat mengenal nombor dan sudah boleh membilang nombor satu hingga sepuluh dengan baik, mereka masih belum memahami hubungan atau perkaitan di antara nombor. Mereka masih belum boleh memahami bahawa kuantiti atau nombor tertentu boleh dibahagikan kepada dua atau lebih bahagian atau dengan kata lain suatu nombor dapat dihasilkan daripada bahagian-bahagian yang berbeza. Contohnya, tujuh boleh dihasilkan daripada satu dan enam atau dua dan lima atau empat dan tiga.

Namun, hikmah disebalik situasi di dalam sesi PdP tadi, pengkaji telah muhasabah diri dan menyedari bahawa amalan pedagogi pengkaji selama ini cenderung mengajar murid mengira menggunakan cara hafalan. Kaedah ini sama sekali tidak membantu murid mempelajari konsep matematik secara bermakna dan telah menyebabkan murid gagal memahami konsep membilang dengan baik. "*Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge*" (NCTM, 2000). Kenyataan di atas turut disokong oleh Nur Aini Zaida (2018) yang mengatakan, memahami matematik awal adalah satu matlamat yang penting dalam pembelajaran matematik untuk kanak-kanak. Ini jelas menunjukkan kanak-kanak harus memahami konsep asas matematik, kemudian menggunakan pengetahuan dan pengalaman sedia ada mereka untuk pembinaan konsep yang seterusnya. (Pirie (1994). Murid tidak boleh menghafalnya semata-mata tanpa memahami apa yang mereka pelajari. Menurut Duffin dan Simpson (2000), pemahaman terhadap sesuatu konsep merupakan kemampuan seseorang individu untuk menjelaskan semula konsep tersebut, di mana mereka dapat menjelaskan kembali apa yang telah dikomunikasikan kepada mereka. Murid yang tidak dapat menguasai sesuatu konsep dalam suatu pelajaran akan menganggap subjek itu susah. Subjek matematik sering di anggap sukar oleh murid kerana mereka tidak dapat menguasai konsep asas dengan baik sejak di peringkat awal lagi. Tanpa pemahaman konsep asas yang kukuh, murid tidak akan dapat menyelesaikan sesuatu masalah matematik di peringkat yang lebih tinggi dan sesuatu pengetahuan atau idea baharu yang diperolehi akan mudah dilupakan. Justeru itu, guru perlu memahami konsep matematik terlebih dahulu sebelum memulakan pengajaran agar kanak-kanak dapat belajar dan memahami konsep matematik dengan baik.

Pembelajaran matematik haruslah dikembangkan secara sistematik iaitu daripada konsep atau kemahiran asas kepada konsep atau kemahiran yang lebih kompleks atau abstrak. Dalam pendidikan formal, mengira merupakan asas kepada kemahiran penambahan dan pengurangan (Carpenter dan Moser 1982; Fuson 1992; Verschaffel et al. 2007). Menurut Fuson (1992), untuk menentukan jumlah kuantiti objek, kemampuan kanak-kanak untuk mengira

atau membilang terbahagi kepada 2 tahap perkembangan. Tahap yang pertama adalah mengira semua (*counting all*). Contohnya, untuk menyelesaikan operasi tambah ($3 + 5$), kanak-kanak akan melalui tiga kali proses pengiraan. Kanak-kanak akan mengira tambah yang pertama (1, 2, 3) dan kemudian tambah yang kedua (1, 2, 3, 4, 5) dan kemudian menghitung semua bersama-sama dalam kiraan jumlah akhir (1, 2, 3, 4, 5, 6, 7, 8). Tahap kedua adalah mengira terus (*counting on*). Pada tahap ini, kanak-kanak akan mengira terus ke hadapan dari tambah yang pertama. Contohnya untuk operasi tambah ($3 + 5$), kanak-kanak akan mengira dari 3... 4, 5, 6, 7, 8). Tambah Fuson (1992) lagi, kemahiran '*counting on*' lebih baik berbanding '*counting all*'. Kedua-dua kemahiran ini memerlukan alat atau bahan manipulatif seperti alat pembilang ataupun jari. Kenyataan Fuson ini jelas menunjukkan kanak-kanak perlu menguasai kemahiran asas mengira / membilang terlebih dahulu sebelum menguasai kemahiran yang lebih kompleks seperti operasi nombor tambah dan tolak. Namun hujah Fuson bertentangan dengan Hunting (2003), kerana menurut beliau strategi mengira yang dipelajari awal yang melibatkan pengiraan unit tunggal (*single unit*) boleh menghalangi kanak-kanak menguasai strategi yang lebih tinggi seperti '*decomposition*' kerana strategi pengiraan unit tunggal hanya berfungsi dengan baik untuk menyelesaikan soalan atau masalah operasi yang lebih mudah sahaja. Sedangkan banyak masalah dalam matematik memerlukan teknik yang lebih tinggi untuk murid menyelesaikannya. Di sinilah kepentingan menguasai kemahiran hubungan SSK perlu dipertimbangkan.

2.0 HUBUNGAN SEBAHAGIAN-SEBAHAGIAN-KESELURUHAN (SSK).

Hubungan sebahagian-sebahagian-keseluruhan (SSK) atau *part-part-whole* penting untuk diajarkan kepada murid di peringkat awal kerana ini akan membantu melengkapi murid menguasai konsep matematik yang lebih kompleks di kemudian hari (Domoney, 2002; Fisher, 2009; Fisher 1990). Konsep matematik bahagian-bahagian-keseluruhan di peringkat prasekolah difokuskan kepada bagaimana kuantiti tertentu dapat dibahagikan kepada dua atau lebih bahagian. Contohnya enam boleh dibahagikan kepada satu dan lima atau dua dan empat atau tiga dan tiga. Sekiranya kanak-kanak tidak dapat memahami konsep ini dengan baik, ianya boleh menyebabkan mereka mengalami kesukaran untuk menguasai konsep matematik pada peringkat yang lebih tinggi. Penjelajahan murid bermula dari mengenal nombor dengan cara atau teknik yang berbeza. Menjelaskan idea untuk kanak-kanak prasekolah hanya berdasarkan teori tidak cukup. Kanak-kanak perlu menggunakan pendekatan multi-sensori untuk memahami konsep nombor supaya mereka dapat gambaran keseluruhan tentang nombor. Young-Loveridge (2002) menyatakan bahawa kelebihan kepada murid yang mempunyai pemahaman yang baik terhadap konsep SSK akan dapat menguasai konsep matematik seperti penambahan, pengurangan dan pecahan dengan baik. Memahami hubungan di antara sebahagian dan keseluruhan nombor sangat penting semasa kanak-kanak belajar konsep penambahan dan pengurangan. Untuk kanak-kanak memahami konsep penambahan dan pengurangan dengan baik, mereka perlu faham perkaitan atau hubungan setiap nombor. Untuk mengembangkan pemikiran fleksibel mengenai hubungan SSK, kanak-kanak perlu memahami bahawa nilai suatu nombor dapat ditunjukkan dengan banyak cara. Guru harus merangsang dan memberikan peluang kepada kanak-kanak untuk menggunakan kemahiran KBAT dalam mencari gabungan dua bahagian yang boleh menghasilkan keseluruhan nombor. Murid harus faham bahawa sesuatu nombor dapat dihasilkan daripada bahagian-bahagian berbeza. Murid perlu memahami teknik '*composing*' dan '*decomposing*'. '*Composing*' bermaksud bahagian-bahagian nombor boleh menghasilkan keseluruhan nombor atau untuk murid prasekolah, pengkaji menggunakan istilah *small-small-big* (dua nombor yang kecil untuk menghasilkan satu nombor lebih besar). Manakala '*decomposing*' pula suatu nombor boleh dibahagikan kepada bahagian-bahagian tertentu. Pengkaji telah menggunakan istilah *big-small-small* (satu nombor yang besar boleh dibahagikan / dipecahkan kepada dua bahagian yang kecil). Banyak variasi kombinasi dua nombor yang mewakili sebahagian-sebahagian nombor boleh dihasilkan untuk mendapatkan satu nilai nombor yang mewakili keseluruhan nombor. Contohnya, lima boleh dihasilkan daripada satu dan empat atau dua dan tiga.

Masalah paling kritikal bagi kanak-kanak ialah apabila diminta mencari nombor yang tidak diketahui dalam satu persamaan operasi tambah seperti $? + 3 = 5$, atau $2 + ? = 5$ atau $? + ? = 5$. Dalam hujah Piaget (1965), pengetahuan mengenai pelbagai komposisi 'bahagian' dalam suatu nombor bulat adalah prasyarat untuk memahami konsep penambahan. Mengetahui "hubungan" di antara (tiga nombor) dalam satu persamaan dijadikan asas untuk kanak-kanak menyelesaikan masalah nombor yang tidak diketahui. Kenyataan ini menjelaskan bahawa penting untuk kanak-kanak mengetahui kedudukan sesuatu nombor dan maknanya di dalam satu persamaan seperti $(a + b =$

c). Kedudukan 'a' dan 'b' mewakili **sebahagian** manakala kedudukan 'c' mewakili **keseluruhan**. Justeru itu, langkah pertama murid adalah mereka harus kenal pasti nombor yang tidak diketahui itu sebagai **bahagian** atau **seluruh**. Contohnya, dalam persamaan operasi tambah ($x + 3 = 5$), x dikenalpasti sebagai '**bahagian**' dan '**tidak diketahui**' nilainya. Setelah murid dapat mengenal pasti masalah ini, maka murid akan menggunakan hubungan SSK untuk menyelesaikan masalah tersebut.

2.0 PENGGUNAAN ALAT BANTU MENGAJAR (ABM).

Untuk memahami konsep hubungan sebahagian-sebahagian-keseluruhan ini, kanak-kanak perlu didedahkan dengan pengalaman pembelajaran *hands-on* supaya mereka dapat membina konstruk kefahaman mereka sendiri. Ini kerana apabila mereka berpeluang manipulasi bahan konkrit, mereka akan memahami hubungan dalam numerasi tentang bagaimana hubungan antara satu sama lain. (Lee dan Tan, 2014). Kenyataan ini turut disokong oleh Siti Farhana dan Mahaliza Mansor (2014) yang menyatakan bahawa bagi menggalakan pembelajaran yang bermakna kepada kanak-kanak, pengajaran matematik perlu dimulakan dengan pengalaman belajar yang melibatkan objek sebenar. Penggunaan alat bantu mengajar seperti bahan maujud atau objek-objek konkrit, gambar dan rajah nombor merupakan media yang paling sesuai dalam merangsang kemahiran berfikir kanak-kanak (Abdul Halim Abdullah, 2016). Untuk mengembangkan kemampuan kognitif kanak-kanak, salah satu aktiviti pembelajarannya adalah memahami konsep operasi tambah menggunakan benda-benda konkrit atau bahan maujud (Zakiah Mohamad Ashari *et al.*, 2017). Sebenarnya, kanak-kanak sering melakukan aktiviti yang berkaitan dengan penambahan dan pengurangan dalam aktiviti harian mereka. Tanpa mereka sedari, mereka sebenarnya telah mempelajari konsep operasi nombor dalam kehidupan seharian mereka (Norsyaidah & Mohd Uzi, 2018). Justeru itu, pengkaji telah membina satu ABM berbentuk bahan maujud yang digelar 3H2O untuk memudahkan kanak-kanak menghuraikan hubungan nombor menggunakan konsep *Part-Part-Whole* dalam menyelesaikan empat masalah operasi tambah dengan mudah dan sekaligus merangsang kemahiran aritmetik mental mereka.

3.0 PEMBELAJARAN BERASASKAN PERMAINAN (PBP).

Salah satu strategi pembelajaran yang paling menyeronokkan dan disukai oleh kanak-kanak adalah Pembelajaran Berasaskan Permainan (PBP) atau *Game-Based Learning*. Menurut Shaffer, Squire, Halverson & Gee (2005) yang dipetik dalam Puteri Azwa, Shanizan Herman, Shanizan Imran (2018), PBP secara umumnya merujuk kepada sejenis aktiviti permainan yang mempunyai hasil pembelajaran yang telah ditetapkan. PBP merupakan satu pendekatan yang menggunakan permainan untuk tujuan pendidikan. Permainan secara umumnya dapat mewujudkan rasa seronok dan menyenangkan kepada kanak-kanak. Siti Norhaida (2017) dan Ferozi (2016) berpendapat bahawa PBP dapat meningkatkan pencapaian dan minat murid untuk belajar. Sekiranya kaedah pengajaran dapat digabungkan dengan aktiviti permainan maka kecenderungan terhadap pembelajaran matematik dapat dipertingkatkan. Ini disebabkan sifat semulajadi permainan yang mengandungi komponen objektif, konflik, peraturan, pemenang, interaktif, persaingan dan cabaran yang dapat menjana motivasi intrinsik seseorang pelajar (Schell, 2008). Motivasi intrinsik yang dibina melalui sesi permainan dapat membentuk konsep pengulangan aktiviti terhadap sesi permainan. Elemen pengulangan dalam pembelajaran adalah sangat penting terutamanya dalam disiplin ilmu yang asas seperti matematik. Keperluan latihan tubi yang dipraktikkan dapat memberi kesan yang positif terhadap perkembangan kemahiran asas matematik di kalangan para pelajar. Kaedah latihan tubi yang biasa tidak dapat meningkatkan motivasi kanak-kanak prasekolah untuk melakukannya secara sukarela. Dengan adanya permainan yang berasaskan pendidikan, secara tidak langsung kanak-kanak dapat belajar sambil bermain. Oleh itu, kanak-kanak akan berminat untuk mengulangi permainan tanpa menyedari pembelajaran telah berlaku dalam sesi permainan tersebut. Justeru itu, konsep pembelajaran tersembunyi dapat diaplikasi di mana pelajar akan menjadi lebih yakin dalam menyelesaikan permasalahan dalam permainan yang dibentuk daripada komponen ilmu yang disasarkan (Sharp, 2012).

Banyak kajian menunjukkan bahawa pembelajaran berasaskan permainan dapat meningkatkan minat pelajar dan kemahiran menyelesaikan masalah. Menurut Prasetyo (2016), gamifikasi merupakan kaedah yang digunakan untuk menyelesaikan suatu masalah melalui cara berfikir ketika bermain dan ini merupakan satu usaha untuk membuat penyampaian pembelajaran lebih menarik. Menurut Siti Norhaida (2017), kajian-kajian yang dijalankan

oleh Rohwati (2012), Farozzi (2016) dan Prasetyo (2016) menunjukkan pendekatan PBP akan dapat meningkatkan pencapaian dan minat murid. Melalui pendekatan ini pelbagai kaedah permainan boleh dirancang dalam pembelajaran mengikut susunan yang bersesuaian dengan murid. Sedikit sebanyak kaedah ini akan dapat membantu mencapai matlamat yang disusun dalam proses pengajaran dan pembelajaran. Menurut Liu dan Chen (2013) pula, PBP merujuk kepada penggunaan permainan kad dalam pembelajaran dan seterusnya dapat meningkatkan hubungan interpersonal dalam proses pembelajaran. Dalam kajian Sung dan Hwang (2013), PBP merupakan satu persekitaran pembelajaran yang mengintegrasikan permainan dan memudahkan pelajar berkolaborasi antara satu sama lain dan menyusun ilmu yang dipelajari semasa proses pembelajaran.

Terdapat pelbagai penyelidikan yang telah dijalankan oleh sebilangan penyelidik dalam membuktikan keberkesanan PBP dalam menyelesaikan masalah dalam matematik. Puteri Azwa, Shanizan Herman, Shanizan Imran (2018) pula telah menghasilkan sebuah *board game Ace of Math* dalam bentuk kad sebagai medium pembelajaran alternatif oleh pelajar yang ingin menguasai asas operasi matematik. *Board game* yang berkonsepkan PBP memberi ruang kepada idea pembelajaran aktif menggunakan permainan yang dapat menggalakkan penemuan pengetahuan oleh pelajar melalui alat dan kaedah yang lebih inovatif. Manakala permainan board game Matematik Sifira yang dicipta oleh Azmin S. Rambely & Faridatulazna Ahmad Shahabudin (2014) telah berjaya mempengaruhi minat pelajar terhadap pembelajaran matematik. Justeru itu, pengkaji telah menambah baik ABM 3H2O kepada *board game* yang berkonsepkan PBP untuk membantu meningkatkan kemahiran kanak-kanak yang berasaskan permainan *small-small-big* dalam menyelesaikan empat masalah operasi tambah dengan mudah dan sekaligus membantu meningkatkan penguasaan murid prasekolah dalam operasi tambah.

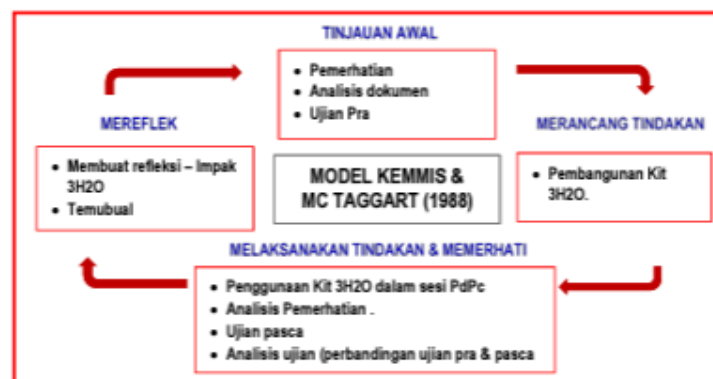
4.0 OBJEKTIF KAJIAN.

Kajian ini bertujuan untuk meningkatkan kemahiran murid prasekolah kelas Bestari 2 dalam menyelesaikan empat masalah operasi tambah dalam lingkungan 10 menggunakan kit permainan 3H2O melalui permainan *Small-Small-Big*.

5.0 METODOLOGI

5.1 Reka bentuk Kajian.

Kajian ini merupakan satu kajian tindakan bertujuan untuk melihat peningkatan kemahiran murid prasekolah dalam menyelesaikan soalan-soalan yang melibatkan permasalahan menambah menggunakan bahan inovasi 3H2O. Tempoh pelaksanaan kajian adalah empat minggu. Bagi kajian ini, pengkaji telah menggunakan model kajian yang telah disarankan oleh Kemmis & McTaggart (1988). Berdasarkan model kajian ini, terdapat empat langkah utama yang digunakan



Rajah 1: Model Kemmis & Mc Taggart (1988)

Sampel kajian terdiri daripada 7 orang kanak-kanak prasekolah di sebuah sekolah di daerah Kota Kinabalu yang berumur 6 tahun. Pemilihan sampel daripada pengkaji adalah berdasarkan dokumen lembaran kerja murid yang telah menguasai kemahiran menambah dalam lingkungan fakta asas. Kemudian, pengkaji telah menjalankan ujian saringan terhadap 7 orang ini. Hasil daripada ujian saringan yang dijalankan, didapati empat orang kanak-kanak lelaki dan tiga orang kanak-kanak perempuan telah memenuhi kriteria yang diperlukan. Mereka ini terdiri daripada kanak-kanak yang boleh menguasai kemahiran operasi tambah dalam lingkungan 10 secara satu arah namun tidak boleh menyelesaikan soalan operasi tambah yang melibatkan kemahiran berfikir seperti $? + 3 = 5$ atau $3 + ? = 5$ atau $? + ? = 5$.

5.3 Instrumen Kajian.

Dalam proses mengumpul data, instrumen yang digunakan dalam kajian ini adalah analisis dokumen, set soalan ujian pra dan set soalan ujian pasca dalam mengukur peningkatan kemahiran murid dalam menyelesaikan masalah operasi tambah menggunakan kit 3H2O dalam permainan *small-small-big*. Set soalan untuk ujian pra dan ujian pasca adalah berbeza namun masih dalam aras yang sama. Pengkaji telah menjalankan ujian pra sebelum kit 3H2O digunakan. Seterusnya pengkaji menjalankan PdP menggunakan kit 3H2O berdasarkan permainan *small-small-big* setiap hari selama tiga minggu. Oleh itu, sebanyak 15 sesi PdP menggunakan kit 3H2O telah dilaksanakan. Setelah itu, ujian pasca telah dijalankan untuk melihat perbezaan skor markah murid. Dapatan bagi kajian ini telah dibincangkan dalam bahagian seterusnya.

5.4 Pelaksanaan Kajian.

Pelaksanaan kajian adalah selama empat minggu. Empat tindakan yang telah dijalankan pengkaji sepanjang tempoh pelaksanaan kajian. Pengkaji telah melaksanakan sesi PdP menggunakan kit 3H2O setiap hari selama 3 minggu untuk tempoh 30 minit bagi setiap sesi PdP. Empat aktiviti telah dijalankan sepanjang 15 sesi PdP untuk melihat keberkesanan inovasi 3H2O dalam membantu kanak-kanak menguasai kemahiran operasi tambah melalui permainan SSB sebelum ujian pasca dijalankan. Lembaran kerja berstruktur telah diberikan kepada murid selepas setiap aktiviti dilaksanakan semasa sesi PdP untuk melihat peningkatan kemahiran murid dalam menyelesaikan masalah operasi tambah.

Jadual 1: Langkah Pelaksanaan Kajian.

TINDAKAN	PERKARA	CATATAN
Tindakan 1	Menjalankan ujian pra.	20 soalan
Tindakan 2	Melaksanakan 4 aktiviti semasa PdP menggunakan kit permainan 3H2O.	Pemerhatian dijalankan sepanjang tempoh PdP
	Aktiviti 1 : Tunjuk cara menggunakan 3H2O dalam menyelesaikan operasi tambah ($a + b = c$) menggunakan permainan SSB.	Lembaran kerja 1 diberikan.
	Aktiviti 2 : Tunjuk cara menggunakan 3H2O dalam menyelesaikan operasi tambah ($? + b = c$) menggunakan permainan SSB.	Lembaran kerja 2 diberikan.
	Aktiviti 3 : Tunjuk cara menggunakan 3H2O dalam menyelesaikan operasi tambah ($a + ? = c$) menggunakan permainan SSB.	Lembaran kerja 3 diberikan
		Lembaran kerja 4 diberikan

Aktiviti 4 : Tunjuk cara menggunakan 3H2O dalam menyelesaikan operasi tambah ($? + ? = c$) menggunakan permainan SSB.		
Tindakan 3	Menjalankan ujian pasca. Set soalan berbeza dengan soalan ujian pra namun dalam aras yang sama.	20 soalan
Tindakan 4	Menjalankan temubual bersama responden.	Murid menjawab 3 soalan

6.0 ANALISIS KAJIAN DAN DAPATAN KAJIAN

Bagi menjawab persoalan kajian, pengkaji telah menggunakan ujian pra dan pasca bagi melihat perbezaan dari segi markah sebelum dan juga selepas penggunaan kit 3H2O dalam menyelesaikan soalan operasi tambah lingkungan 10.

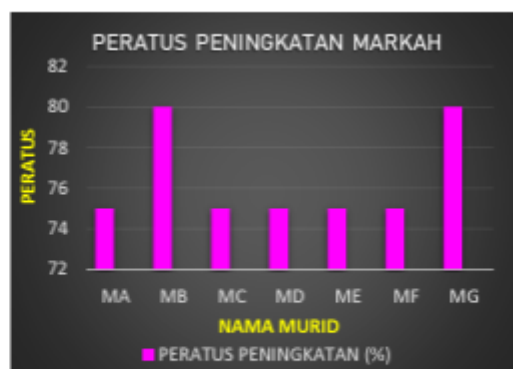
Adakah terdapat perbezaan markah murid prasekolah dalam menyelesaikan operasi tambah lingkungan 10 sebelum dan selepas menggunakan 3H2O dalam permainan SSB?

Jadual 2: Perbandingan Pencapaian Ujian Pra Dan Ujian Pasca.

NAMA MURID	OPERASI TAMBAH					
	Ujian Pra Markah	Ujian Pra %	Ujian Pasca Markah	Ujian Pasca %	Perbezaan Markah	Peratus Peningkatan
MA	5/20	25	20/20	100	+15	75 %
MB	4/20	20	20/20	100	+16	80 %
MC	4/20	20	19/20	95	+15	75 %
MD	3/20	15	18/20	90	+15	75 %
ME	5/20	25	20/20	100	+15	75 %
MF	5/20	25	19/20	95	+15	75 %
MG	4/20	20	20/20	100	+16	80 %

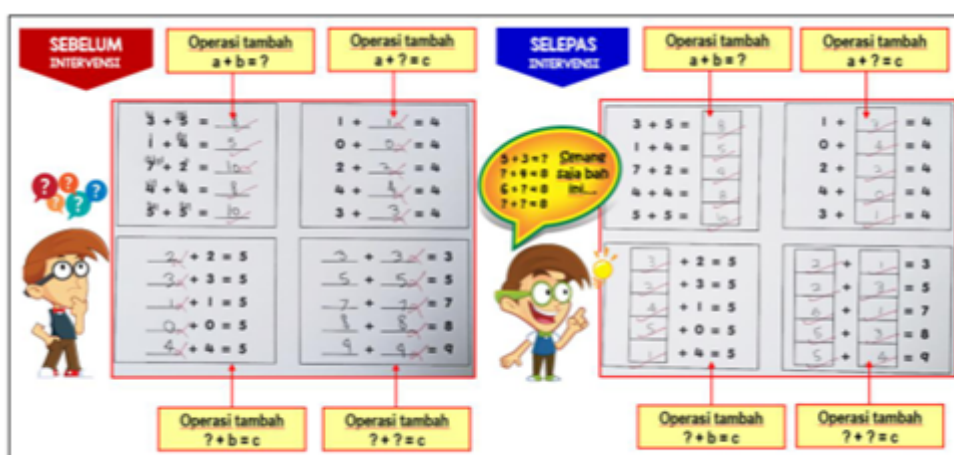


Graf 1 : Perbandingan Markah Ujian Pra Dan Ujian Pasca



Graf 2 : Peratus Peningkatan Markah Responden

Dapatan daripada kajian jelas menunjukkan kesemua 7 orang murid prasekolah telah menunjukkan peningkatan markah dalam ujian pasca yang dijalankan setelah dua minggu menggunakan kit **3H2O** semasa PdP di kelas. Daripada analisis ujian pra, kebanyakan murid hanya dapat menambah terus dari suatu nombor sahaja iaitu $a + b = ?$ dan mereka tidak dapat menjawab soalan yang memerlukan kemahiran berfikir. Namun setelah murid menggunakan kit **3H2O**, kemahiran murid telah meningkat dan murid boleh menyelesaikan masalah operasi tambah yang memerlukan kemahiran berfikir seperti $(? + b = c)$ atau $(a + ? = c)$ atau $(? + ? = c)$ menggunakan teknik *small-small-big*. Semua murid Berjaya mendapat markah 95 % ke atas dan empat daripada tujuh orang murid mendapat markah penuh 100%. Dua orang murid iaitu **MB** dan **MG** telah menunjukkan peningkatan markah paling tinggi iaitu sebanyak **16 markah** yang mewakili peningkatan sebanyak **80%**. Peningkatan ini sangat besar dan ini telah membuktikan keberkesanan kit permainan 3H2O dalam meningkatkan kemahiran operasi tambah murid prasekolah melalui permainan *small-small-big*. Berdasarkan pemerhatian, murid sangat seronok dan teruja semasa belajar menggunakan kit 3H2O ini.



Rajah 2: Ujian Pra dan Ujian Pasca

PERBINCANGAN DAN CADANGAN KAJIAN SETERUSNYA

Pembangunan kit 3H2O dilaksanakan kerana pengkaji percaya bahawa pembelajaran numerasi awal kanak-kanak seharusnya diperolehi melalui pengalaman langsung dan bermakna dalam suasana yang menghiburkan supaya dapat memupuk minat kanak-kanak untuk mempelajari matematik di peringkat yang lebih tinggi. Penggunaan kit permainan 3H2O yang berkonsepkan permainan telah memberikan emosi kegembiraan, keseronokan dan keterujaan kepada murid sepanjang sesi PdP dijalankan. Pendekatan pengajaran yang bersesuaian dengan gaya pembelajaran kanak-kanak supaya pengetahuan yang disampaikan dapat disimpan dengan lebih lama dan kanak-kanak mempunyai sikap yang positif terhadap pembelajaran tersebut (Sloan, 2004; Nor Azan, 2005).

Berdasarkan kepada data yang telah dianalisis dan dibincangkan secara terperinci sebelum ini, dapat dilihat dengan jelas bahawa penggunaan bahan bantu mengajar 3H2O dapat meningkatkan kemahiran murid menyelesaikan masalah operasi tambah menggunakan kemahiran berfikir. Kit ini dibangunkan bertujuan

membantu murid menyelesaikan operasi nombor yang sukar secara *hands-on* menggunakan bahan konkrit supaya murid dapat memahami konsep tambah dengan mudah menggunakan *sebahagian-sebahagian-keseluruhan*. Ini kerana menurut Anik Lestarinigrum (2015) apabila terdapat pelbagai operasi matematik dilakukan menggunakan alat inovasi, secara tidak langsung ianya akan dapat meningkat kemahiran kanak-kanak dalam segala aspek operasi matematik. Pengkaji percaya, sekiranya murid boleh menguasai teknik *small-small-big* atau *sebahagian-sebahagian-keseluruhan*, murid juga boleh menguasai kemahiran operasi tambah, operasi tolak dan pecahan dengan mudah. Di samping itu, ianya akan dapat meningkatkan kemahiran murid mencongak atau aritmetik mental. Teknik sebahagian-sebahagian-keseluruhan (SSK) atau *part-part-whole* penting untuk diajarkan kepada murid di peringkat awal kerana ini akan membantu melengkapkan murid menguasai konsep matematik yang lebih kompleks di kemudian hari (Domoney, 2002; Fisher, 2009; Fisher 1990). Young-Loveridge (2002) menyatakan bahawa kelebihan kepada murid yang mempunyai pemahaman yang baik terhadap konsep SSK akan dapat menguasai konsep matematik seperti penambahan, pengurangan dan pecahan dengan baik.

Penggunaan kit 3H2O yang berasaskan permainan *board game* juga terbukti berkesan dalam meningkatkan minat murid belajar, malah ianya sekaligus dapat mengurangkan tingkah laku pasif dan menggalakkan penglibatan aktif murid sepanjang sesi pembelajaran dan pengajaran berlangsung. Ini bertepatan dengan kenyataan Seefeldt dan Galper (2008), kerana menurut beliau sekiranya kanak-kanak terlibat dalam pengalaman pembelajaran Matematik yang bermakna dan menyeronokkan pada peringkat prasekolah, mereka akan lebih menghargai dan berterusan melibatkan diri dalam pembelajaran matematik di peringkat lebih tinggi. Pemilihan kit permainan ini sangat sinonim dengan dunia kanak-kanak yang memang suka bermain. Kit permainan 3H2O ini telah mengupayakan pengkaji mengaplikasikan pembelajaran abad ke-21 yang menerapkan elemen iaitu kolaborasi, komunikasi, kreatif dan inovatif dan pemikiran kritikal dan penerapan nilai murni. Ini kerana menurut Connie Cassey Ompok (2016), dalam era baharu, Golinkoff (2009) menyifatkan main memenuhi 6C iaitu kreativiti, kandungan, kolaborasi, keyakinan, pemikiran kritikal dan komunikasi yang terdapat dalam pembelajaran abad ke 21 (KPM, 2017). Melalui permainan juga, kanak-kanak dapat merasai pengalaman sebenar yang biasa berlaku dalam kehidupan seharian dan belajar bagaimana menjalin hubungan sosial, bekerjasama dan menyelesaikan masalah (Hughes, 2002).

Untuk kajian akan datang, pengkaji teruja untuk mengkaji sama ada kit permainan 3H2O boleh membantu kanak-kanak menggunakan untuk menyelesaikan operasi tambah dan tolak dalam lingkungan 18 dengan baik. Di samping itu, pengkaji akan menambah baik kit ini supaya ianya signifikan dalam ekosistem pendidikan masa kini yang menggalakkan pembudayaan digital untuk menjadikan sesi PdP lebih menyeronokkan dan bermakna.

RUMUSAN

Kajian ini telah membuktikan keberkesanan penggunaan ABM yang berasaskan permainan dalam menyokong pembelajaran kanak-kanak. Dengan aktiviti permainan 3H2O, kemahiran menyelesaikan masalah operasi tambah murid telah meningkat. Oleh yang demikian, amalan penggunaan ABM yang berasaskan permainan dalam PdP perlulah diteruskan sebagai salah satu aktiviti pembelajaran tidak formal dalam kalangan murid prasekolah. Kit permainan 3H2O adalah platform untuk kanak-kanak mengaplikasikan PdP abad ke 21 yang menekankan pembelajaran secara kolaboratif, konflik, pembuatan keputusan, perbincangan dan penyelesaian masalah. Pembangunan 3H2O dalam kajian ini bolehlah dilihat sebagai platform yang ideal dalam menyediakan peluang dan ruang memahami konsep operasi asas melalui pengalaman *hands on* dan *minds-on*, bermakna dan menyeronokkan. Kanak-kanak juga berpeluang mempelajari satu konsep / idea / pengetahuan baru dalam konteks dan norma yang berbeza dari kebiasaan. Elemen "*fun learning*" dan "*learning by doing*" yang diterapkan dalam permainan ini juga telah menjadikan kanak-kanak merasakan belajar itu satu pengalaman hidup yang mengujakan dan menyeronokkan dan proses ini berlaku secara semulajadi tanpa dipaksa.

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TRACKING TRENDS IN TEACHER AUTONOMY CHALLENGES: A BIBLIOMETRIC PERSPECTIVE

Intan Rafidah Yasin¹, Ahmad Zabidi Abdul Razak^{1*}, Zuraidah Abdullah¹, Noon Ezdiani Yasin²

¹ Faculty of Education, University of Malaya, Kuala Lumpur, Malaysia

² Section of Translation Studies and Interpreting, School of Humanities, Universiti Sains Malaysia, Penang Malaysia

*Corresponding Author: zabidi@um.edu.my

Abstract:

The landscape of education is continually evolving, and teacher autonomy is emerging as a critical factor in shaping educational outcomes. This study presents a comprehensive bibliometric analysis from 2013 to 2023 to shed light on the evolving field of teacher autonomy challenges in education. While teacher autonomy has gained prominence, a comprehensive overview of the research trends, factors driving its growth, and potential future directions is lacking. This study addresses this gap by examining publication trends, pivotal years, and factors contributing to the surge in research in this field. A bibliometric analysis is conducted using Scopus database to identify publication trends and patterns related to teacher autonomy challenges. Key metrics include publication counts by years, publication counts by countries and co-occurrence analysis. This research offers a significant synthesis of the progression within the discipline, establishing a basis for subsequent inquiries and the formulation of policies. Future research should delve into the quality and content of teacher autonomy publications, examining the impact of practical interventions and policy changes. Comparative studies with related fields and international perspectives can provide deeper insights. Furthermore, examining the impact of teacher autonomy research on pedagogical practices and policy formulation represents a significant area for prospective investigation.

Keywords: teacher, autonomy, education, challenges

1.0 Introduction

In the dynamic landscape of contemporary education, the concept of teacher autonomy has emerged as a pivotal factor in shaping the quality and effectiveness of teaching and learning. As educational systems worldwide strive to adapt to evolving pedagogical paradigms, the extent to which teachers can exercise autonomy within their classrooms has become a subject of increasing interest and concern (Fadaee et al., 2021). Teacher autonomy refers to the level of independence and decision-making authority that educators have in their classrooms (Pearson & Moomaw, 2006; Usma-Wilches, 2006), influenced by various factors such as curriculum guidelines, school policies, and government regulations (Toding et al., 2023; Xu & Dellaportas, 2021; Yılmaz, 2021). This autonomy is pivotal for fostering an adaptive learning environment, conducive to the diverse needs and potential of students (Reeve et al., 2004). Autonomy empowers teachers to leverage their professional judgment and expertise, thereby enhancing educational outcomes and fostering innovation within classrooms (Deci et al., 1991). The significance of teacher autonomy extends beyond the confines of individual classrooms, influencing the broader educational ecosystem. Autonomy is intrinsically linked to teacher satisfaction, motivation, and retention, serving as a bulwark against burnout and attrition (Skaalvik & Skaalvik, 2014). Furthermore, autonomous teaching practices are associated with higher levels of student engagement, creativity, and performance, highlighting the critical role of teacher independence in catalyzing student success (Healey, 2014; Jerrim et al., 2023; Ryan & Deci, 2000). Global education trends and international comparisons have influenced discussions about teacher autonomy, highlighting the importance of a supportive and motivating environment for teachers (Elo & Nygren-Landgärds, 2021; Heinrich et al., 2015). The quality of teaching is identified as a primary contributor to student achievement, emphasizing the significance of selecting and training teachers effectively (Xhaferi, 2017).

Despite its recognized importance, teacher autonomy is beset by myriad challenges. Systemic constraints such as standardized curricula (Au, 2007), high-stakes testing (Nichols & Berliner, 2007), and accountability measures often circumscribe teachers' ability to exercise professional discretion (Darling-Aduana & Hemingway, 2022). Other challenges are the constraints and opportunities for teacher discretion in the context of systemic inequities (Darling-Aduana & Hemingway, 2022). The other issue explores upper secondary teachers' creation of discretionary power and the constraints they face (Parding, 2007). Furthermore, there is a study connects discretionary spaces to mathematics teaching practices and how standardization can restrict teachers' professionalism (Berry, 2022). Another issue focuses on teachers' professional discretion and the curricula, suggesting that a better understanding of this could help curriculum developers and policy writers support teachers (Boote, 2006).

The other problem discusses the characteristics of effective teacher professional development, highlighting the substantial constraints teachers face, including systemic bias. Institutional barriers, including rigid school hierarchies and cultures resistant to change, further impede the realization of teacher autonomy (Hargreaves, 2005). Additionally, individual factors such as teachers' self-efficacy, beliefs about teaching, and professional development opportunities play a significant role in shaping the extent of autonomy exercised (Day, 2002; Hargreaves, 2005). The constraints on teacher autonomy have profound implications for the educational landscape. They not only stifle pedagogical innovation but also undermine teacher morale and job satisfaction, potentially exacerbating issues of teacher turnover and shortage (Ingersoll, 2001). The erosion of autonomy can dilute the quality of education, as it limits teachers' capacity to respond to the unique needs and interests of their students, thereby impeding personalized and effective teaching (Niemic & Ryan, 2009). One study that explored the relationship between teacher autonomy and reflectivity in the context of English as a Foreign Language (EFL) in Iran found a strong correlation between these two elements and emphasized their importance in improving EFL learning outcomes (Kruger, 2021).

This bibliometric analysis is poised to investigate the following research questions, aiming to elucidate the contours of teacher autonomy research:

- (a) What are the research trends in teacher autonomy challenges according to the year of publication?
- (b) Which countries consistently rank in the top 10 for publication output?
- (c) What are the popular keywords related to the study

2.0 Methodology

The application of bibliometrics as a methodological approach proves to be advantageous for the presentation of research outcomes derived from data pertinent teacher autonomy challenges. This approach is capable of offering a comprehensive overview of the extensive corpus of existing scholarly literature. The popularity of bibliometric analysis has surged in recent years due to its ability to broadly delineate the characteristics and advancements of research findings within specific domains. Furthermore, the utilization of bibliometric techniques that can accommodate a greater volume of research findings is likely to yield a more substantial research impact (Donthu et al., 2021; Mukherjee et al., 2022). In essence, bibliometric analysis serves as a valuable tool for interpreting and delineating the cumulative scientific knowledge and intricacies associated with the evolution of a well-established discipline, achieved through a rigorous examination of substantial quantities of unstructured data. Consequently, a meticulously executed bibliometric investigation can establish a robust foundation for propelling a field forward in innovative and significant manners; it facilitates the acquisition of a holistic perspective on a study, the identification of knowledge deficiencies, the generation of novel investigative ideas, and the strategic positioning of the intended contribution within the academic discourse (Gureyev & Mazov, 2022; Judijanto & Auliani, 2024).

2.1 Data collection

Bibliometrics is a quantitative approach to analyzing academic literature, and it is especially effective in tracking trends and challenges in specific fields, like teacher autonomy in this research (Jerrim et al., 2023; Lennert da Silva, 2021). It is to start, define clear research questions that focus on specific aspects of teacher autonomy,

considering various factors like timeframes, regions, or educational levels. The methodology involves a systematic data collection from relevant academic databases of Scopus using well-crafted search terms. Notably, Elsevier's Scopus, known for its extensive coverage, facilitated the collection of publications spanning from 2013 to December 2023 for subsequent analysis.

Through the application of bibliometric analysis, this investigation seeks to examine the characteristics inherent to publications and the prevailing research trajectories within the domain of teacher autonomy, with a particular focus on the challenges and issues. The methodology for data collection is predicated upon the utilization of the keywords "teacher, autonomy, education and challenges". The scopus.com platform was selected for the aggregation of pertinent documents. The selection of the Scopus database is justified by its inclusion of esteemed scholarly journals. The specific keywords employed for data procurement are enumerated as follows:

TITLE-ABS-KEY (teacher AND autonomy AND education AND (challenge* OR problem OR issue)) AND (LIMIT-TO (PUBYEAR , 2013) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023)) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (LANGUAGE , "English")).

The final search string refinement included 754 articles which was used for bibliometric analysis. As of 2013 to December 2023, all articles from Scopus database relating to teacher autonomy and focusing on challenges, were incorporated in the study.

Table 1: The selection criterion in searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2013 – 2023	< 2012
Publication Stage	Final	In Press

2.2 Data Analysis

The Scopus analyzer and VOSviewer (version 1.6.19) software were chosen to perform this bibliometric analysis, which can be downloaded for free. In the process of using the data that is already owned, it can be interpreted through data mapping. VOSviewer can display and visualize a network consisting of journal origins, keywords, most-cited citations, and links from the author's bibliography contained in the document (Adrian & Muntazimah, 2023; Nandiyanto & Al Husaeni, 2022; Rosmayati & Maulana, 2023). The results of the visualization of the data entered will display items representing the author's name, country, and keywords. The items that appear will consist of several networks and clusters. Each network and cluster are distinguished by a different color and thickness. The thickness between the lines and colors will show the strength of the items, and then the relationship between these items can be interpreted (Orduña-Malea & Costas, 2021; van Eck & Waltman, 2014; L. Xu et al., 2024; Zahn et al., 2024).

3.0 Result and Finding

3.1 Publications by year

The Scopus line graph illustrates the trends in research publication concerning teacher autonomy challenges over the span from 2013 to 2023. There was a marginal downturn in the number of documents between 2013 and 2014. However, from 2014 onwards, there was a noticeable uptick in scholarly publications each year, reaching a high point in 2019. In 2020, there was a marked decrease in the number of published documents, which may be attributed to unforeseen circumstances affecting the academic sector. The trend made a comeback in 2021, with the volume of publications not only rebounding but surpassing levels seen before 2020 and continuing this upward trajectory into 2022. Although there was a small dip in 2023 compared to the previous year, the publication count was still considerably greater than what was observed at the decade's start, reflecting a persistent scholarly engagement with the topic despite the brief downturn.

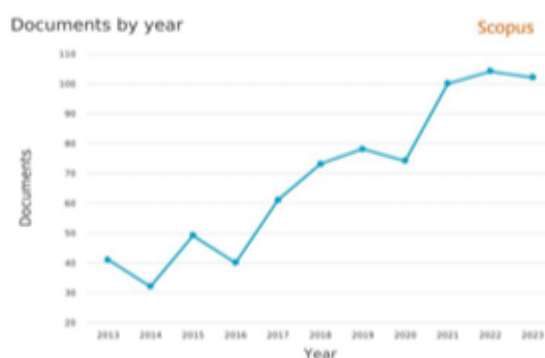


Figure 1. Trend in total publications from 2013 to 2023

3.2 Publications by country

Based on Figure 2 and Table 2, here is an elaboration on the publications by country analysis. The data shows the number of search results for articles matching the specified query terms published between 2013–2023, limited to English language articles in final publication stages. The total number of results is 479 across 53 countries/territories. The top country is the United States with 113 results, making up about 24% of the total. The United Kingdom is second with 90 results (19%), followed by Australia with 57 (12%). After the top three, there is a drop off – Spain has 45, China 44, Netherlands 37, Brazil 31. No other country has more than 30 results. There is then a fairly steady decrease in numbers in the teens (Sweden, Germany), followed by a cluster of countries in the 10 to 15 result range (13 countries with 10 to 15 results each). Finally, there is a long tail of countries with very low numbers of relevant results – 20 countries have 1 to 5 results each, indicating limited research output matching the query terms. There are also 23 "Undefined" results that could not be attributed to a particular country based on the information provided. In summary, research output seems concentrated in the United States, United Kingdom, Australia and a handful of other countries, with limited relevant studies from many other countries, especially less developed nations. The scope for further research in underrepresented countries appears significant.

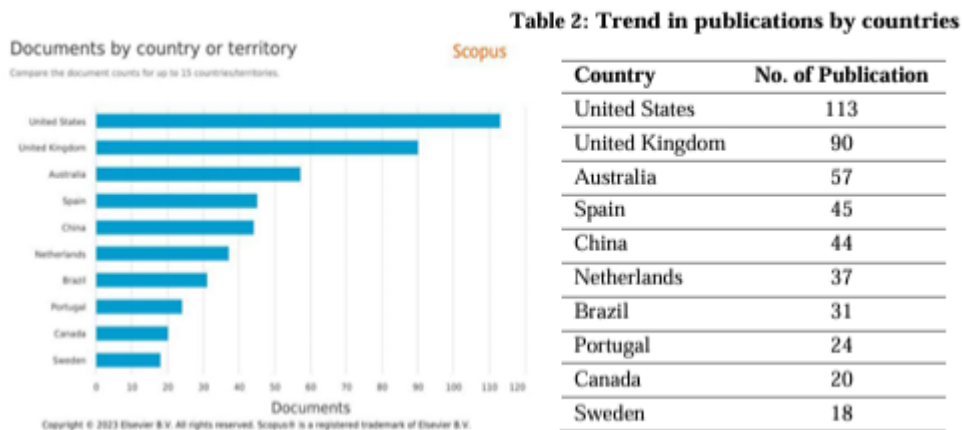


Figure 2. Trend in publications by countries

3.3 The most popular keywords related to the study (Co-occurrence analysis)

The visualization from VOSviewer highlights popular keywords related to educational research, particularly focused on autonomy, self-determination theory, and teacher education. The central theme revolves around "autonomy," linked closely with "self-determination theory" and "motivation," indicating a strong interest in how autonomy influences educational outcomes. Keywords like "teacher autonomy," "teacher education," and "empowerment" suggest a focus on the roles of educators in fostering autonomy within educational settings. The prominence of terms like "covid-19," "distance education," and "blended learning" reflects the impact of the pandemic on educational practices, shifting the emphasis towards remote and flexible learning approaches. Additionally, "inclusion," "social justice," and "critical thinking" highlight ongoing concerns about equity and the development of essential skills in education. The color gradient from 2018 to 2021 suggests these themes' evolution and growing relevance in recent years.

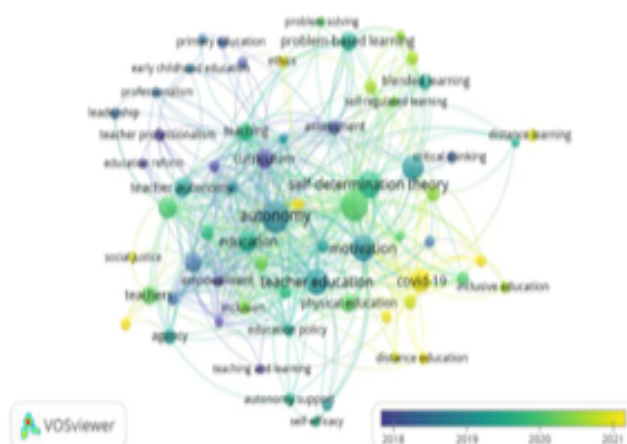


Figure 3. Trend in keywords related to the study

4.0 Discussion and conclusions

Over the past decade, the research on teacher autonomy challenges has experienced a dynamic trajectory. The initial downturn between 2013 and 2014 may have been due to shifts in educational priorities or funding. However, the steady increase in publications from 2014 onwards indicates a growing recognition of the importance of teacher autonomy in educational discourse. The peak in 2019 likely reflects global educational reforms and an increased focus on empowering educators. The significant decline in 2020 is likely correlated with the coronavirus disease 2019 (COVID-19) pandemic, which caused delays in research activities and shifts in focus. However, the robust recovery in 2021 shows that the challenges posed by the pandemic may have further underscored the need for research into teacher autonomy, especially in adapting to new educational environments. The slight dip in 2023 does not detract from the overall upward trend.

Research on teacher autonomy reveals significant geographic disparities, with the United States, United Kingdom, and Australia dominating the field, accounting for over half of total publications. This is due to their robust academic infrastructures, greater research funding, and longstanding traditions of educational research. However, the lower output from less developed nations, such as Asia, Africa, and South America, highlights a significant gap in global discourse. This imbalance suggests a need for more inclusive research efforts that consider diverse educational contexts, particularly in regions where educational reforms and teacher empowerment are crucial for improving educational outcomes. The presence of 23 "Undefined" results also suggests challenges in accurately attributing research to specific countries, possibly due to incomplete metadata or international collaborations.

Research on teacher autonomy over the past decade has primarily focused on autonomy, self-determination theory, and motivation. These keywords highlight the importance of understanding how teacher autonomy influences educational outcomes, particularly in fostering motivation and empowerment among educators. The pandemic has shifted the focus towards remote learning and the challenges of maintaining teacher autonomy in such environments. The research agenda is evolving, considering inclusion, social justice, and critical thinking, reflecting growing concerns about equity in education and the role of autonomy in promoting inclusive and critical pedagogical practices. The temporal evolution of these keywords, particularly from 2018 to 2021, suggests that these themes have gained momentum in recent years, likely influenced by global events and educational priorities. This highlights the dynamic nature of research on teacher autonomy, with ongoing adaptations to new challenges and contexts.

In conclusion, this bibliometric analysis reveals the evolving landscape of research on teacher autonomy over the past decade, marked by a steady increase in scholarly interest despite global challenges like the COVID-19 pandemic. The dominance of research from developed nations highlights the need for more inclusive studies that incorporate diverse educational contexts, particularly from less represented regions. The shifting focus towards remote learning, inclusion, and equity underscores the adaptability of research to contemporary challenges. Moving forward, expanding the global scope of this research will be crucial in fostering a more comprehensive understanding of teacher autonomy.

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INNOVATION IN ARABIC LANGUAGE TEACHING: THE ROLE OF TEACHER COMPETENCY AND INSTRUCTIONAL TECHNOLOGY SKILLS IN ISLAMIC EDUCATION AT PRIMARY SCHOOLS

Widad Ma^{1*}, Azman Che Mat¹, Ghazali Yusri Ab Rahman², Rozaimi Jaafar³

¹ Academy of Language Studies, Dungun Campus, 23000 Dungun, Terengganu, Universiti Teknologi MARA, Malaysia
² Academy of Language Studies, 40450 Shah Alam, Universiti Teknologi MARA, Malaysia
³ Faculty of Islamic Contemporary Studies, Gong Badak Campus, 21300 Gong Badak, Terengganu, University Sultan Zainal Abidin, Malaysia

*Corresponding author: wiema84@gmail.com

Abstract:

The teaching of Arabic language in Islamic primary education has evolved significantly, driven by emphasis on teacher competence and instructional technology integration. This systematic literature review synthesizes current research on innovations in Arabic language teaching, focusing on the interplay between teacher competence and instructional technology skills in Islamic primary education. The study addresses the growing need for teachers to possess linguistic, pedagogical, and technological expertise, particularly in light of global shifts towards technology-enhanced learning accelerated by events like the COVID-19 pandemic.

The research problem centers on the challenges of implementing innovative teaching methods and technologies in Arabic language instruction within Islamic primary education contexts. This review explores the development and application of teacher competencies and the employment of various innovative teaching methods and technologies in Arabic language classrooms. Methodologically, this study analyzes 21 carefully selected studies from Scopus and Web of Science databases, published between 2014 and 2024. The review process followed PRISMA guidelines, involving identification, screening, and eligibility phases. Selected studies cover topics including mobile applications, animated infographics, MOOCs, role-play strategies, gamification, and AI-powered learning tools in Arabic language education. The review concludes that integrating innovative teaching methods, enhancing teacher competence, and adopting instructional technologies are interconnected aspects of the evolving landscape in Arabic language and Islamic education. While these innovations show potential for improving learning outcomes, the field must balance technological and pedagogical advancements with the unique linguistic, cultural, and religious contexts of Arabic and Islamic studies. The study emphasizes the need for an approach that leverages innovations while preserving and respecting the rich cultural heritage they serve to transmit.

Keywords: Arabic Language Teaching, Teacher Competence, Instructional Technology, Islamic Education, School

1.0 Introduction

The teaching of Arabic language, particularly in the context of Islamic education at the primary school level, has undergone significant transformation in recent years. This evolution is driven by two key factors: the growing emphasis on teacher competence and the rapid integration of instructional technology in educational settings (S. W. Chan et al., 2014). As Arabic holds a pivotal role in Islamic education, innovative approaches to its instruction are crucial for ensuring effective learning outcomes among young students.

This Systematic Literature Review (SLR) aims to synthesize and critically analyze current research on innovations in Arabic language teaching, with a specific focus on the interplay between teacher competence and instructional technology skills in Islamic primary education. The importance of this review lies in its potential to inform educational policies, enhance teaching practices, and ultimately improve Arabic language acquisition among primary school students in Islamic educational contexts.

The global shift towards technology-enhanced learning, accelerated by recent global events such as the COVID-19 pandemic, has highlighted the need for teachers to possess not only linguistic and pedagogical expertise but also proficiency in utilizing educational technologies (N. Shaik et al., 2022). This review seeks to explore how these competencies are being developed and applied in the specific context of Arabic language instruction in Islamic primary schools.

Furthermore, this SLR will examine the various innovative teaching methods and technologies being employed in Arabic language classrooms, their effectiveness, and the challenges associated with their implementation. By focusing on primary education, this review acknowledges the critical nature of early language acquisition and the unique opportunities and challenges present at this educational stage.

Through a comprehensive analysis of 21 carefully selected studies, this review aims to address the following key questions:

1. What are the current innovative approaches in Arabic language teaching at the primary school level, particularly in Islamic education contexts?
2. How does teacher competence influence the successful implementation of these innovative approaches?
3. What role does instructional technology play in enhancing Arabic language teaching and learning in primary Islamic education?
4. What are the challenges and opportunities in integrating new teaching methods and technologies in Arabic language instruction?

By addressing these questions, this SLR seeks to provide a comprehensive overview of the current state of innovation in Arabic language teaching, offering valuable insights for educators, policymakers, and researchers in the field of Arabic language education and Islamic studies. The findings of this review will contribute to the ongoing dialogue on best practices in language instruction and the effective integration of technology in educational settings, with a specific focus on the unique context of Arabic language teaching in Islamic primary education.

2.0 Literature Review

The development of teacher competencies in the 21st century is crucial to meeting the evolving demands of education. Studies from various regions have highlighted different approaches and strategies aimed at enhancing teacher skills in diverse educational settings. This review synthesizes findings from a selection of research articles, exploring the intersection of teacher competencies, innovative teaching methods, and the role of professional development programs. By examining these factors, this review seeks to provide a comprehensive understanding of how teacher competencies are being shaped globally to meet contemporary educational challenges.

One of the key strategies for enhancing teacher competencies is the implementation of Professional Learning Communities (PLCs). Vehachart et al. (2022) emphasized the importance of PLCs in developing 21st-century skills among teachers, particularly in the context of science, mathematics, and technology education. The study in Satun Province, Thailand, demonstrated that PLCs could effectively reduce educational inequality and improve teachers' competencies in these critical subject areas. The integration of Learning Management Systems (LMS) further supported these competencies by providing teachers with innovative tools to enhance student learning outcomes. Similarly, Ma et al. (2024) explored the impact of China's "1+X" certificate policy on vocational college teachers, finding that PLCs and targeted training significantly improved teachers' core competencies. These findings underscore the role of collaborative professional development in fostering teacher growth and ensuring that educators are equipped to handle the demands of modern classrooms.

The integration of technology in education has become increasingly essential for developing teacher competencies. Song & Park (2018) investigated the effects of technology-enhanced learning environments, particularly the use of digital textbooks, on primary school teachers. Their findings indicated that teachers' technological proficiency, teaching skills, and understanding of future schools were significantly improved through the use of digital textbooks. This aligns with the results from Meyer & Bo-Kristensen (2012), who discussed the challenges and strategies involved in digitalizing schools. They highlighted that while technology rapidly evolves, continuous professional development and practice-based training are vital for teachers to remain competent. The research by Capay et al. (2022) on the use of programmable hardware like BBC micro:bit also supported the notion that technology can enhance teacher confidence and innovation in the classroom. These studies collectively illustrate the critical role of technology in modernizing education and equipping teachers with the necessary skills to succeed in a digital world.

Professional development programs (PDPs) have been identified as a key factor in advancing teacher competencies. The study by Mak (2019) focused on the impact of a PDP on teachers' assessment knowledge in Hong Kong. The findings revealed that ongoing professional development is essential for teachers to acquire and maintain assessment competencies, which are crucial for student autonomy and critical thinking development. Similarly, the research by (Kulal et al. (2019) highlighted the positive effects of Faculty Development Programs (FDPs) on teachers' attitudes and motivation to integrate modern teaching innovations. These programs not only enhanced teaching methods but also influenced instructors' philosophies and attitudes toward student learning. The importance of PDPs in fostering a culture of continuous learning and adaptation among teachers is evident, reinforcing the need for sustained investment in teacher training initiatives.

While various strategies have proven effective in developing teacher competencies, several challenges persist. Meyer & Bo-Kristensen (2012) identified the rapid evolution of ICT tools as a significant challenge, with teachers often feeling inadequately prepared despite undergoing training. The study suggested that practice-based development and strategic planning are crucial for overcoming these challenges. Ruthanam et al. (2021) further emphasized the importance of resourceful teachers in environmental education, arguing that innovative teaching approaches can compensate for the lack of resources. These findings highlight the need for strategic and adaptive approaches in teacher training, ensuring that educators can effectively navigate the complexities of modern education.

The reviewed studies collectively underscore the importance of innovative teaching processes, technology integration, and professional development in enhancing teacher competencies. Professional Learning Communities, technology-enhanced environments, and strategic professional development programs are critical components in preparing teachers for the demands of 21st-century education. However, challenges such as the rapid pace of technological change and resource constraints must be addressed through strategic planning and continuous support for teachers. By synthesizing these global perspectives, this review provides valuable insights into the ongoing efforts to develop teacher competencies in a rapidly evolving educational landscape.

The document mentions Figure 1 as a diagrammatic representation of Shulman's theory and Palmer's theory used to interpret teachers' pedagogical choices. The figure illustrates the combination of Shulman's Theory of Pedagogical Content Knowledge (PCK) and Palmer's theory of identity to provide a holistic lens for considering the research question on factors influencing pedagogical choices in Environmental Education.

1. Shulman's Theory:

- Pedagogical Knowledge (PK) + Content Knowledge (CK) = Pedagogical Content Knowledge (PCK): This formula represents Shulman's theory, where the combination of pedagogical knowledge and content knowledge results in Pedagogical Content Knowledge (PCK). It emphasizes the importance of teachers having a deep understanding of both the subject matter and effective teaching methods to deliver quality education.

2. Palmer's Theory:

- Identity of the teacher + Integrity = Pedagogical Choice: Palmer's theory focuses on the idea that teaching emerges from the teacher's identity, integrity, and personal experiences. It suggests that good teaching is not solely about techniques but stems from the teacher's inner self and beliefs.

3. Interpretation:

- The figure likely visually represents how the integration of these two theories, Shulman's and Palmer's, provides a comprehensive understanding of the factors influencing teachers' pedagogical choices in Environmental Education.
- By combining the aspects of pedagogical content knowledge and teacher identity, the figure aims to show how these elements interact to shape the decisions teachers make in their teaching practices related to environmental education.

In summary, Figure 1 serves as a visual aid to demonstrate the relationship between Shulman’s Theory of Pedagogical Content Knowledge and Palmer’s theory of identity in the context of understanding teachers’ pedagogical choices in Environmental Education.

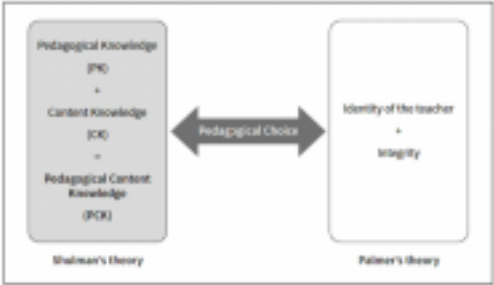


Figure 1: Diagrammatic representation of Shulman’s theory and Palmer’s theory used to interpret teachers’ pedagogical choices (Source: Author)

3.0 Material and methods

3.1 Identification

In selecting the appropriate papers for this report, the systematic review process involved three main phases. The first phase focused on identifying keywords and searching for related and synonymous terms using thesauruses, dictionaries, encyclopedias, and previous studies. Once the relevant keywords were determined, search strings were created for the Scopus and Web of Science databases (see Table 2). In this initial phase of the systematic review, a total of 137 papers were successfully retrieved from both databases.

Table 1: The search string

Scopus	TITLE-ABS-KEY ((innovation OR innovative OR innovating) AND ("Arabic language" OR "Arabic teaching" OR "Arabic education")) AND (LIMIT-TO (SUBJAREA , "SOC")) AND (LIMIT-TO (LANGUAGE , "English") OR LIMIT-TO (LANGUAGE , "Arabic") OR LIMIT-TO (LANGUAGE , "Malay"))
WOS	https://www.webofscience.com/wos/woscc/su/mmary/82bb39e1-3d28-4d4f-9574-hb7f523aeae-01052dfe48/relevance/1

3.2 Screening

During the screening process, 9 duplicate articles were first removed. The second phase of screening involved applying specific inclusion and exclusion criteria to 72 articles. The inclusion criteria focused on selecting research articles that provided practical information. In contrast, the exclusion criteria led to the removal of systematic reviews, meta-analyses, meta syntheses, book series, books, chapters, conference proceedings, and non-English papers. The timeframe considered was from 2014 to 2024, and studies from all countries were included. As a result of this screening, 120 publications were excluded based on these criteria.

3.3 Eligibility

In the third step, referred to as eligibility, a total of 72 articles were initially considered. At this stage, the titles and key content of all articles were thoroughly reviewed to ensure they met the inclusion criteria and aligned with the current research objectives. As a result, 51

reports were excluded for the following reasons: full texts were out of the relevant field (n=20), titles were not significantly aligned (n=15), and abstracts were unrelated to the study's objectives (n=16). Consequently, 21 articles were deemed suitable and are available for review (see Table 2).

Table 2: The selection criterion is searching

Criterion Inclusion Exclusion

Language English, Arabic Non-English, Non-Arabic **Time line** 2014 – 2024 < 2014

Literature type Journal (Article) ~~Conference, Book,~~ Review

Publication Stage Final In Press

Subject Area Social Science Besides Social Science **Country** All countries -

3.4 Data Abstraction and Analysis

The systematic review process comprised three key phases: identification, screening, and eligibility, as detailed in the PRISMA flow diagram (Figure 2). Initially, relevant keywords were identified and search strings were developed to retrieve articles from the Scopus and Web of Science databases, yielding a total of 137 papers. Following this, 9 duplicate articles were removed. The remaining 72 articles were then assessed based on specific inclusion and exclusion criteria. Research articles that provided practical information were included, while systematic reviews, meta-analyses, book series, and non-English papers were excluded. The review focused on studies published between 2014 and 2024, with no geographic restrictions, resulting in the exclusion of 120 publications. Finally, the titles and content of the 72 articles were thoroughly reviewed to ensure they met the inclusion criteria, leading to the exclusion of 51 articles and leaving 21 articles available for the final review.

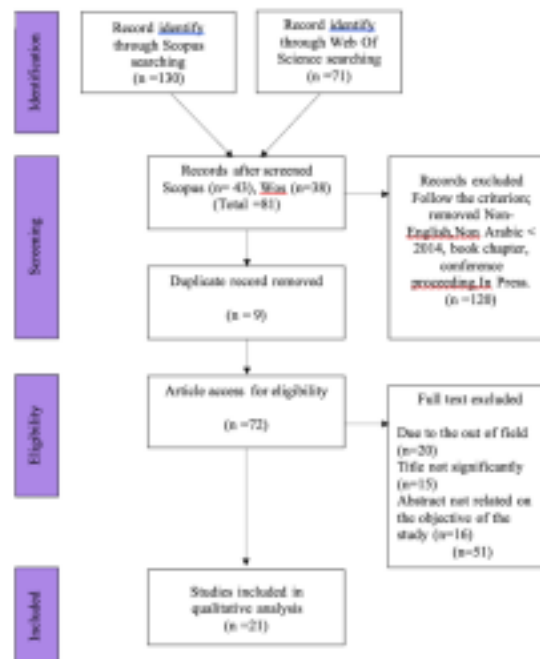


Figure 2. Flow diagram of the proposed searching study (Moher D, Liberati A, Tetzlaff J, 2009)

4.0 Discussion and Conclusion

The field of Arabic language instruction has witnessed significant advancements in recent years, with a variety of innovative teaching methods and technologies being implemented to enhance learning outcomes. This discussion synthesizes the findings from several studies, highlighting the potential impact and implications of these innovations.

Mobile applications have emerged as powerful tools for Arabic language classroom management. The study by Ghani et al. (2024) on the e-Lughatul Fasli mobile application demonstrated high expert agreement on its usability, suggesting that such technologies can effectively support the implementation of new curricula emphasizing classroom language use. This finding aligns with the growing trend of integrating mobile technologies in language education, offering potential solutions to traditional classroom management challenges in Arabic instruction.

In addressing the complexities of Arabic grammar, animated infographics have shown promise. Hamid et al. (2020) revealed a high demand for developing modules using animated infographics, particularly for complex grammatical concepts. This approach represents a significant shift from traditional textbook-based learning towards more visually appealing and comprehensible formats. The potential of this method to improve student engagement and understanding of Arabic grammar warrants further exploration and implementation.

The COVID-19 pandemic has accelerated the adoption of online learning platforms, including Massive Open Online Courses (MOOCs). Zainuddin et al. (2021) found that a significant majority of students (78%) enjoyed using MOOC media for Arabic learning, with notable improvements in student achievement. This suggests that MOOCs can be an effective tool for Arabic language instruction, particularly in challenging circumstances such as global pandemics. The flexibility and accessibility of MOOCs may offer new opportunities for expanding Arabic language education to a broader audience.

While technology plays a crucial role in innovative teaching methods, non-technological approaches also show significant promise. The quasi-experimental study by Daif-Allah & Al Sultan (2023) on role-play demonstrated positive effects on developing various dialogue skills among learners of Arabic as a second language. This finding underscores the importance of incorporating interactive, real-life simulations in language instruction to enhance practical communication skills.

Gamification is emerging as another promising approach in Arabic language education. Ismail et al. (2023) proposed a framework for implementing gamification in Arabic teaching in Malaysia, suggesting its potential to address issues of language proficiency by improving student motivation and engagement. This shift towards more interactive and enjoyable learning experiences aligns with contemporary pedagogical theories emphasizing active learning and student-centered approaches.

The use of online quizzes, as explored by Rezi et al. (2023) using the Quizizz platform, has shown to increase student enthusiasm, active participation, and learning time. This finding highlights the potential of interactive digital tools in making Arabic language learning more engaging and effective, particularly for skills like vocabulary acquisition and reading comprehension.

Smart education initiatives have also demonstrated significant potential, especially in early Arabic language education. El-Mneizel et al. (2023) reported substantial improvements in reading skills, analysis, structure, and concept understanding among kindergarteners participating in the Lughati Smart Education Initiative in the UAE. This suggests that

integrated smart education approaches can have a profound impact on foundational language skills acquisition.

Lastly, the role of language games in enhancing linguistic abilities of young learners, as discussed by Taouririt & Chacha (2023), emphasizes the importance of incorporating playful elements in language instruction. Their argument that language games directly contribute to improving learners' language levels by breaking the monotony of traditional methods aligns with the broader trend towards more engaging and interactive learning experiences.

Collectively, these innovative approaches demonstrate a clear shift in Arabic language instruction towards more interactive, engaging, and technology-enhanced learning experiences. From mobile applications and animated infographics to role-play strategies and gamification, educators are exploring diverse methods to make Arabic language learning more effective and enjoyable. As the field continues to evolve, it is likely that we will see further integration of these innovative approaches, potentially leading to significant improvements in Arabic language education outcomes.

However, it is important to note that while these innovations show promise, their long-term effectiveness and applicability across different learning contexts require further investigation. Future research should focus on longitudinal studies to assess the sustained impact of these methods on language acquisition, as well as their scalability and adaptability to various educational settings and learner demographics.

Moreover, the integration of multiple innovative approaches and their combined effects on different aspects of Arabic language learning presents an interesting avenue for future research. As educators and researchers continue to explore and refine these methods, it is crucial to maintain a balance between technological innovation and pedagogical soundness, ensuring that the core objectives of language education are met while leveraging the benefits of new teaching approaches and technologies. Discussion:

The review of recent studies on teacher competence and professional development in Arabic language teaching reveals several key trends and innovations. Abu-Shanab & Subaih (2019) highlight the importance of knowledge sharing and employee satisfaction in fostering organizational innovation, which is applicable to Arabic language departments. Ahmed et al. (2024) identify trends in higher education, particularly in the GCC region, emphasizing quality, ranking, and professional development, while noting challenges specific to Arabic language in academia.

Thomure & Speaker (2018) demonstrate the positive impact of implementing Arabic Language Arts (ALA) standards on teaching quality and collaboration. Majadly & Massarwa (2020) show the effectiveness of reciprocal teaching strategies in improving students' comprehension skills. Al Farisi et al. (2024) explore the integration of local cultural elements into Arabic language teaching, emphasizing the need for cultural awareness among teachers. Lubis (2013) highlights the need for continuous professional development, particularly in adopting innovative teaching techniques and using instructional technology.

Key recommendations include:

1. Continuous professional development (Lubis, 2013; Al Farisi et al., 2024)
2. Adoption of language standards with appropriate resources (Thomure & Speaker, 2018)
3. Competence in diverse teaching strategies (Majadly & Massarwa, 2020)
4. Cultural integration in language teaching (Al Farisi et al., 2024)
5. Increased use of instructional technology (Lubis, 2013)

6. Fostering a knowledge-sharing culture (Abu-Shanab & Subaih, 019) 7. Addressing region-specific challenges (Ahmed et al., 2024)

These findings indicate a shift towards more adaptive, culturally integrated, and technology enhanced approaches in Arabic language teaching. Future research should focus on longitudinal studies to assess long-term impacts and explore the integration of multiple innovative strategies across diverse educational contexts.

The integration of technology in Arabic language and Islamic education is rapidly evolving, offering innovative solutions to traditional challenges. This discussion synthesizes key findings from recent studies, highlighting their implications for the field.

Gutub & Almeahmadi (2023) propose an advanced digital watermarking method for Arabic text, which, while primarily focused on copyright protection, has potential applications in preserving the integrity of digital Arabic educational resources. This technology's applicability to related scripts like Urdu and Farsi broadens its potential impact in language education technology.

While not directly related to instructional technology, Austin & Wainscott (2021) analyze an Arabic-language book series used in Morocco's Countering Violent Extremism (CVE) program, highlighting how educational materials can address broader societal issues. Their analysis suggests future digital resources should focus more on empowering children rather than emphasizing state intervention.

Cherifi & Guerti (2021) present an innovative approach to Arabic grapheme-to-phoneme conversion, crucial for text-to-speech systems in language learning. Although current results don't surpass baselines, this research points towards future innovations in Arabic TTS technology for education.

Sayed et al. (2019) provide a comprehensive survey of Arabic text classification approaches, relevant to developing intelligent tutoring systems and automated assessment tools. Their study highlights challenges specific to Arabic text processing due to the language's complex morphology.

Moukrim et al. (2021) introduce an innovative approach to autocorrecting grammatical errors in Arabic texts, achieving high precision and recall rates. This technology has significant implications for improving writing skills and understanding complex grammatical structures.

Sibae et al. (2024) investigate hallucination detection in Arabic Language Models, crucial for ensuring reliability in AI-generated content for education. Their work emphasizes the need for sophisticated modeling strategies in morphologically complex languages like Arabic.

These studies collectively point to several key insights and implications:

1. Enhanced digital resources through advanced watermarking (Gutub & Almeahmadi, 2023)
2. Improved speech technology for language learning (Cherifi & Guerti, 2021)
3. Development of intelligent tutoring systems (Sayed et al., 2019)
4. Writing assistance tools for Arabic learners (Moukrim et al., 2021)
5. AI-powered learning with emphasis on accuracy (Sibae et al., 2024)
6. Importance of cultural sensitivity in educational materials (Austin & Wainscott, 2021)

Challenges and future directions include addressing Arabic's linguistic complexity, understanding cultural and religious contexts, considering ethical implications of AI in education, and balancing innovative technologies with traditional teaching methods.

In conclusion, while instructional technology in Arabic language and Islamic education shows significant potential, it's crucial to develop technologies that address both technical aspects of language learning and incorporate rich cultural and religious contexts associated with Arabic and Islamic studies.

Conclusion:

The integration of innovative teaching methods, enhancement of teacher competence, and adoption of instructional technologies in Arabic language and Islamic education represent interconnected facets of a rapidly evolving educational landscape. As demonstrated by the studies of Ghani et al. (2024), Ismail et al. (2023), and Rezi et al. (2023), innovative approaches such as mobile applications, gamification, and online quizzes are transforming the learning experience, making it more engaging and effective. Concurrently, the emphasis on teacher competence and professional development, as highlighted by Abu-Shanab & Subaih (2019), Thomure & Speaker (2018), and Al Farisi et al. (2024), underscores the critical role of educators in successfully implementing these innovations and adapting to changing educational needs. The integration of instructional technologies, from digital watermarking (Gutub & Almekhadi, 2023) to AI-powered learning tools (Sibae et al., 2024), further augments these advancements, offering new possibilities for language acquisition, cultural understanding, and religious education. However, as the field progresses, it faces the dual challenge of harnessing these technological and pedagogical innovations while remaining sensitive to the unique linguistic, cultural, and religious contexts of Arabic and Islamic studies. The future of Arabic language and Islamic education thus lies in a balanced approach that leverages these innovations to enhance learning outcomes while preserving and respecting the rich cultural heritage they serve to transmit.

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ISLAMIC MEDICAL TREATMENT USING PHOENIX DACTYLIFERA TO ALLEVIATE SYMPTOMS OF DIABETES MELLITUS

Nur Sakiinah binti Ab Aziz^{1*}, Berhanundin bin Abdullah², Mohd. Shafiee bin Hamzah, Mohd. Ariff bin Sharifuddin, Wan Razin bin Wan Hassan, Kasimah Kamaruddin

¹ Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin (UniSZA), Kampus Gong Badak, 21300 Kuala Nerus, Terengganu, Malaysia

² Fakulti Pengajian Kontemporari Islam, Universiti Sultan Zainal Abidin (UniSZA), Kampus Gong Badak, 21300 Kuala Nerus, Terengganu, Malaysia

*sakiinahaziz@unisza.edu.my

Abstract:

Diabetes mellitus is one of the most severe and prevalent chronic diseases worldwide, often managed through synthetic medications that may have adverse side effects. This study addresses the need for alternative treatments by exploring the effectiveness of dates (Phoenix dactylifera) in alleviating diabetes symptoms. The objective is to evaluate the potential of dates as a natural remedy within the framework of Islamic medicine. This research uses a qualitative approach; it involves a comprehensive literature review and analysis of clinical responses from diabetic patients. Data were collected through document analysis and expert interviews using thematic analysis to identify patterns and insights. The study also examines traditional Islamic medicinal texts to contextualize the use of dates in historical and cultural practices related to health and healing. Findings indicate that dates can help regulate blood glucose levels, enhance insulin sensitivity, improve pancreatic function, and prevent diabetes-related complications. The high fibre content in dates aids in slowing down the absorption of sugars, while antioxidants like flavonoids and phenolics contribute to reducing oxidative stress, a key factor in diabetes progression. Additionally, minerals such as potassium and magnesium found in dates support overall metabolic health and insulin function. The study contributes to the field by providing a novel perspective on diabetes management, emphasizing the integration of traditional Islamic medicine with modern medical practices. This research underscores the importance of natural and holistic approaches in treating chronic illnesses and suggests that dates could be a valuable complementary therapy in diabetes care. Further clinical studies are recommended to establish standardized dosages and to explore potential synergistic effects with conventional treatments.

Keywords: Islamic medicine, dates, diabetes mellitus, alternative treatment, holistic medicine.

1.0 Introduction

Islamic medicine has a rich and long history in the world's medical tradition, evolving since the early days of Islam and continuing to be influential. Since the time of Prophet Muhammad (peace be upon him), the principles of Islamic medicine have emphasized the importance of maintaining health through balanced nutrition, a healthy lifestyle, and using natural substances as remedies. Early Islamic medical practitioners, such as Ibn Sina and Al-Razi, combined Greek and Arab medical knowledge, creating a holistic and scientific medical approach. To this day, Islamic medicine is appreciated for its holistic approach, which considers individuals' physical, mental, and spiritual well-being.

Diabetes mellitus, more commonly known as diabetes, is one of the most severe and prevalent chronic diseases worldwide. High blood sugar levels characterize this disease due to the body's inability to produce enough insulin or to use it effectively. The management of diabetes often involves the use of synthetic medications, which, although effective in controlling blood sugar levels, may have long-term side effects such as kidney damage, heart problems, and nerve disorders. Therefore, there is an urgent need to find more natural and less invasive alternative treatments that can be used alongside conventional treatments to improve patient's quality of life.

Dates (*Phoenix dactylifera*), frequently mentioned in the Quran and Hadith, are known for their numerous health benefits. In the Quran, dates are referred to as a wholesome and beneficial food, while in Hadith, Prophet Muhammad (peace be upon him) recommended the consumption of dates for health and healing. Dates are rich in various nutrients, including fiber, vitamins, and minerals, and contain potent antioxidants like flavonoids and phenolics. Additionally, dates have a low glycemic index, meaning they do not cause a sudden spike in blood sugar levels after consumption. These properties make dates an attractive option in Islamic medicine for managing diabetes.

This study aims to evaluate the potential of dates as a natural remedy within the framework of Islamic medicine, with the hope of providing a more holistic and complementary alternative to modern treatments. Through a comprehensive literature review and clinical response analysis of diabetic patients, this study will examine how the consumption of dates can help control blood sugar levels, enhance insulin sensitivity, improve pancreatic function, and prevent complications associated with diabetes. The study also reviews traditional Islamic medical texts to contextualize the use of dates in health and healing practices. It integrates modern knowledge with Islamic medical principles to offer a more comprehensive and integrated approach to diabetes management.

2.0 Literature Review

Previous studies have highlighted the potential of dates in mitigating diabetes symptoms through various mechanisms. Abdelaziz et al. (2015) investigated the protective effects of date seeds against early diabetic complications in streptozotocin-induced diabetic rats. They found that oral administration of date seeds significantly improved biochemical parameters and reduced oxidative stress in the liver and kidney tissues of diabetic rats. These studies suggest that dates may potentially mitigate organ damage associated with diabetes.

Furthermore, Maulana (2020) found that the consumption of dates can reduce HbA1c levels in patients with type 2 diabetes mellitus. Maulana (2020) suggests that dates can be used as an adjunctive therapy in diabetes management by helping to control long-term blood glucose levels. Using dates as a dietary supplement may improve patient adherence to treatment and potentially reduce the need for synthetic medications.

Other studies have also demonstrated the benefits of dates in managing diabetes and its complications. Chakroun et al. (2016) found that extracts from *Phoenix dactylifera* leaves have significant antidiabetic and anti-tumoral activity in both in vitro and in vivo studies. These findings indicate that date leaf extracts are not only beneficial in controlling diabetes but may also have the potential to inhibit cancer cell growth. These findings add a new dimension to using dates in medicine, demonstrating their diverse utility in chronic diseases.

The study by Esfandiari et al. (2020) examined the effects of *Phoenix dactylifera* leaf extracts on pancreatic beta cells and diabetes parameters in rats. The results showed a significant reduction in blood glucose levels and an increase in the number of beta cells, indicating improved pancreatic function. This result is substantial because beta cell damage is the primary cause of type 1 diabetes, and improving this function could help manage diabetes more effectively.

Additionally, studies by Hosseinzadeh et al. (2021) and El Abed et al. (2017) support the use of dates as a blood sugar-lowering agent. Hosseinzadeh et al. found that *Phoenix dactylifera* spathe extract can reduce blood sugar levels and improve lipid profiles in diabetic rats. At the same time, El Abed et al. showed that parthenocarpic fruit extract from *Phoenix dactylifera* can lower postprandial plasma glucose levels. Both studies suggest that dates have significant potential as a therapeutic agent for managing diabetes, particularly in controlling blood glucose and preventing complications.

Overall, the evidence from these studies supports the use of dates as a promising adjunct therapy in diabetes management. Dates help control blood glucose levels and enhance pancreatic function, improve lipid profiles, and reduce oxidative stress, all of which are crucial in diabetes management. Therefore, the integration of dates in diabetes treatment aligns with the principles of Islamic medicine, offering a natural and holistic approach that can potentially improve health outcomes for diabetic patients.

Further research is needed to establish the precise dosage and understand the interaction of dates with conventional treatments. However, current findings suggest that dates are a promising option for more effective and holistic diabetes management. A summary of the literature review can be seen in Table 1 below.

Jadual 1: Summary of Literature Review

No.	Author	Discussion
1	Abdelaziz et al. (2015)	Investigated the protective effects of date seeds against early diabetic complications in streptozotocin-induced diabetic rats. The study showed that oral administration of date seeds could improve biochemical parameters and reduce oxidative stress in the liver and kidney tissues of diabetic rats.
2	Maulana (2020)	Examined the effectiveness of dates in reducing HbA1c levels in patients with type 2 diabetes mellitus. The study found that the consumption of dates could lower HbA1c levels in diabetic patients, making it a potential adjunctive therapy for diabetes management.
3	Chakroun et al. (2016)	Evaluated the antidiabetic and anti-tumoral activity of Phoenix dactylifera leaf extracts through in vitro and in vivo approaches. The extracts exhibited significant antidiabetic activity and the potential to inhibit cancer cell growth.
4	Esfandiari et al. (2020)	Investigated the effects of Phoenix dactylifera leaf extracts on pancreatic beta cells and diabetes parameters in streptozotocin-induced diabetic rats. The study results showed reduced blood glucose levels and increased beta cell numbers in diabetic rats treated with the date extract.
5	Hosseinzadeh et al. (2021)	Explored the effects of Phoenix dactylifera spathe extract on streptozotocin-induced diabetic rats. The extract significantly reduced blood sugar levels and improved lipid profiles in diabetic rats.
6	El Abed et al. (2017)	Assessed the postprandial anti-hyperglycemic effects of parthenocarpic fruit extracts from Phoenix dactylifera through in vitro and in vivo studies. The extracts significantly reduced plasma glucose levels after meals.

3.0 Methodology

This study has been conducted since December 2023 and is ongoing. The researchers and the research team employed a qualitative approach to evaluate the potential of dates (Phoenix dactylifera) as an alternative treatment for reducing diabetes symptoms. This approach is based on traditional Islamic medical theories emphasizing natural and holistic methods in managing chronic diseases.

The research methods include a literature review and analysis of clinical responses from diabetes patients. The study design involves a comprehensive review of the effectiveness of dates in medicine and an analysis of documents from traditional Islamic medical texts. The researchers interviewed experts in Islamic medicine and endocrinology to gain deeper insights into using dates as a complementary therapy.

The units of analysis in this study are traditional Islamic medical texts and clinical records of diabetes patients showing responses to the use of dates. Respondents for the interview section consist of Islamic medical experts, endocrinologists, and traditional medicine practitioners in Malaysia.

This study uses thematic analysis to evaluate the data collected, focusing on themes related to blood sugar control, increased insulin sensitivity, and prevention of diabetes complications. The thematic analysis allows the researchers to identify patterns and relationships in the data related to the use of dates in diabetes management, contributing to a deeper understanding of the effectiveness of this therapy.

4.0 Discussion and Conclusion

4.1 Discussion

This study aims to evaluate the effectiveness of dates (*Phoenix dactylifera*) as an alternative treatment for reducing diabetes symptoms through Islamic and traditional Malay medicine. Based on the literature review and clinical analysis conducted, it was found that dates have significant potential in diabetes management. The study results show that the use of dates can help control blood sugar levels, increase insulin sensitivity, improve pancreatic function, and prevent complications related to diabetes.

These findings are supported by an indirect interview with Prof. Dr. Wan Mohd Azizi bin Wan Sulaiman on June 24, 2024, who stated that dates are a natural substance with very beneficial sugar content. According to him, God specifically created dates to manage excess glucose in the body. This perspective adds a spiritual and scientific dimension to using dates as a therapeutic agent, demonstrating that dates meet physical needs and align with Islamic medicine's health principles.

Furthermore, Prof. Dr. Wan Mohd Azizi also mentioned that, based on his observations, the systematic consumption of dates in specific amounts can ensure bodily health. This observation indicates the importance of balanced and regulated nutrition as a natural therapy in the intake of dates. This systematic approach underscores the need for further research to establish precise protocols regarding the dosage and schedule of date consumption for diabetic patients to ensure maximum effectiveness and safety in its use.

The results of this study are consistent with previous findings that show that date seeds and leaves have significant antidiabetic properties. For instance, Abdelaziz et al. (2015) and Esfandiari et al. (2020) reported that date seeds and leaf extracts could improve biochemical parameters and reduce oxidative stress in organs involved in blood sugar management, such as the liver and pancreas. Their reports confirm that the bioactive components in dates, such as flavonoids, phenolics, potassium, and magnesium, play a crucial role in enhancing metabolic health and insulin function.

The findings also suggest that dates can be an effective complementary therapy for patients with type 2 diabetes mellitus. For example, Maulana (2020) found that the consumption of dates can reduce HbA1c levels in diabetic patients, indicating the potential of this fruit in long-term blood glucose control. These findings suggest that incorporating dates into the daily diet of diabetic patients can help in disease management without total reliance on synthetic medications, which often have side effects.

Moreover, this study reinforces the importance of a holistic approach to diabetes management. By integrating Islamic and traditional Malay medicine principles, which emphasize natural substances and a comprehensive approach to health, this study offers a new perspective on how dates can be utilized in treating chronic diseases like diabetes. This integration can improve patient's quality of life and support their overall well-being through a more natural and practical approach.

4.2 Conclusion

In conclusion, this study finds that dates (*Phoenix dactylifera*) have significant potential as an alternative treatment in diabetes management, in line with Islamic and traditional Malay medicine principles. The findings indicate that dates can help control blood sugar levels, increase insulin sensitivity, improve pancreatic function, and prevent diabetes complications, making them a promising complementary therapy in managing type 2 diabetes mellitus.

The interview with Prof. Dr. Wan Mohd Azizi bin Wan Sulaiman provided additional insights into the benefits of dates as a natural substance with beneficial sugar content created to manage excess glucose in the body. He also emphasized that the systematic consumption of dates in the right amounts can ensure bodily health, highlighting the need for more research to establish optimal intake protocols.

These findings contribute to the field of medicine by providing evidence of the effectiveness of natural and holistic approaches in managing chronic diseases such as diabetes. This study also emphasizes the importance of

integrating traditional Islamic medicine with modern medical practices, which can enhance the quality of life for patients through a more natural and comprehensive approach.

Although the findings of this study are very positive, further clinical research is needed to determine the exact dosage and explore potential synergistic effects with conventional treatments. Additional studies are also recommended to investigate the potential of dates in managing other diseases that may benefit from their antioxidant and antidiabetic properties. With a more in-depth and comprehensive approach, dates can be utilized more effectively in future medical treatments.

Acknowledgments

We are deeply grateful for the invaluable support provided by the Center for Research Excellence & Incubation Management (CREIM) and the Faculty of Islamic Contemporary Studies at Universiti Sultan Zainal Abidin, which has been instrumental in supporting the publication of this paper. This paper forms part of a research project titled 'Kajian Keberkesanan Pemakanan Kurma Mariami Sebagai Rawatan Sokongan Diabetes Di Pusat Rawatan Darul Syifa, Kuala Nerus, Terengganu.' (UniSZA/2023/GPK/06 – RK063). This project is also supported by the Research Grant for Strengthening International Research Collaboration – FKI (RU005).

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USE OF MUMAT KIT INCREASES EARLY MATHEMATICS MASTERY AMONG SK TOBOBON PRESCHOOL STUDENTS

Nur Syahda Binti Abd Karim
Rosemilah Binti Hj. Tahir
SK Tobobon

Abstract This study aims to improve early mathematics proficiency among SK Tobobon preschool students. This study involves 34 students who are 5 years old from six preschool classes of SK Tobobon. The focus of this study is the improvement of preschool students' early mathematics mastery involving content standards (MA 1.4) Building Patterns, (MA 2.1) Understanding numbers 1 to 10, (MA 2.3) MA 2.3 Understanding numbers 11 to 20, (MA 3.1) Solve addition operation problems in the range of 18 and (MA 3.2) Solve subtraction operation problems in the range of 18. The problem survey was carried out through the implementation of the pre-test and observation of the study participants who selected. The results of the pre-test found that the number of students who did not master the content standard, (MA 1.4) Building Patterns was 30 student, (MA 2.1) Understanding numbers 1 to 10 totaling 25 student, (MA 2.3) Understanding numbers 11 to 20 totaling 31 student. (MA 3.1) Solve addition operation problems within 18 and (MA 3.2) Solve subtraction operation problems within 18 for 32 student. Meanwhile, the results of observation using a checklist document found that students showed a passive attitude, lacked confidence and were not interested in participating in the early math activities carried out in the classroom. The researcher found that this factor caused the mastery of students to be at a weak level. In relation to that, the researcher has built an early mathematics learning kit which is the MuMat Kit (Mathematics Easy Kit) which has the concept of an early mathematics game kit and includes six games to help improve the mastery of early mathematics. The post-test results showed a very progressive improvement (MA 1.4: 94.1%), (MA 2.1: 97%), (MA 2.3: 94.1%), (MA 3.1-79%) and (MA 3.2:76%) Thus, the use The MuMat Kit has succeeded in creating an active learning atmosphere and improving early math mastery among preschool students.

Keywords: MuMat Kit. Early Math Mastery, Preschool Student Learning Kit

1.0 Reflection

Starting in March until the month of May 2023, the researcher has carried out observations on the early mathematics mastery of 34 students aged 5 years old from six preschool classes of SK Tobobon. The researcher found that students facing problems in mastering early math skills such as completing patterns, recognizing numbers, completing addition and subtraction operations. In fact, students are less interested in participating in early math PdPc activities that have been implemented. Student's involvement is also quite sad because students show a passive response when learning activities are carried out. When the teacher conducts a question and answer session related to early mathematics, only a few students responded. This situation creates a sense of apprehension among SK Tobobon preschool teachers because this situation will have a negative impact on the early mathematics development process of students.

In the month of May, a pre-test was conducted to review the level of mastery of Science and Technology Pillar (Early Mathematics) among 34 5-year-old students of SK Tobobon preschool. The results of the test showed a very disappointing results when less than 10 students achieved a satisfactory level of mastery in the early mathematics learning standard that was surveyed by teacher. After carrying out a discussion with the SK Tobobon Preschool class teacher, the researcher got the idea to produce the "MuMat Kit" innovation to help SK Tobobon preschool students improve their early math skills. This innovative idea also aims to create a sense of interest and increase student's involvement in early preschool mathematics PdPc.

2.0 Issue/Focus of the Study

The main focus of the study is to increase the mastery of preschool students of SK Tobobon in the pre-number experience of number concepts and number operations. The issue of students' early math mastery can be detected when the teacher conducts a pre-test to review the level of student mastery of several early math content standards, namely:

- i. MA 1.4 Recognizing and building patterns
- ii. MA 2.1 Understanding the numbers 1 to 10
- iii. MA 2.3 Understanding the numbers 11 to 20
- iv. MA 3.1 Solve addition operation problems within range of 18
- v. MA 3.2 Solve subtraction operation problems within range of 18

The results of the diagnosis test found that only 11.7% of SK Tobobon preschool students managed to achieve a satisfactory score for the pre-number test, 26.4% for the concept of numbers one to 10, 8.8% for the concept of numbers 11 to 20 and number operations and only 5.8% for the addition operation and 5.89% for subtraction operations. The result of the observation found that the main cause of this problem was the students were less interested in participating in early mathematics pdpc activities. The researcher also found that students were less focused during the early math PdPC activities and less actively involved throughout the activities. As a result, the goal of not being able to achieve mastery of early mathematics is even more worrying with the existence of a large gap in the early mathematics process among the 5-year-olds and 6-year-olds of SK Tobobon preschool.

3.0 Research Objectives and Research Questions

3.1 General objective

This study aims is to improve the mastery of Early Mathematics among preschool students of SK Tobobon using the "MuMat Kit".

3.2 Specific Objectives

- i. Increase the mastery of SK Tobobon preschool students in the Early Mathematics content standard using the "MuMat Kit".

3.3 Study Questions

- i. Is there an increase in early math mastery among preschool students who are 5 years old by using the "MuMat Kit"?

4.0 Target Group

The target group for this innovation are 34 students who are 5 years old from 6 preschool classes of SK Tobobon.

The students involved are 19 male students and 15 female students.

5.0 Implementation of the Study

5.1 Problem Overview

5.1.1 Observation

Make observations on the involvement of target students during the Early Mathematics PdPc process before and after the study.

5.1.2 Test

The pre-test was given to the study participants to detect the students' level of mastery of the related early mathematics content standards and the post-test was tested after the use of the MuMat Kit in the early preschool mathematics PdPC session.

5.2 Problem Survey Analysis

5.2.1 Analysis of observations

After the study was carried out and the MuMat Kit was used in early preschool mathematics PdPc activities, students showed very active involvement in early mathematics learning activities. In fact, students showed a very positive change when they voluntarily came to the front of the class to perform early math activities using the MuMat Kit. In addition, two-way interaction between teachers and students becomes more active and students are also more responsive. As a result, the classroom atmosphere is also more encouraging and students' mastery of early mathematics learning standards is increased compared to before the study was carried out.

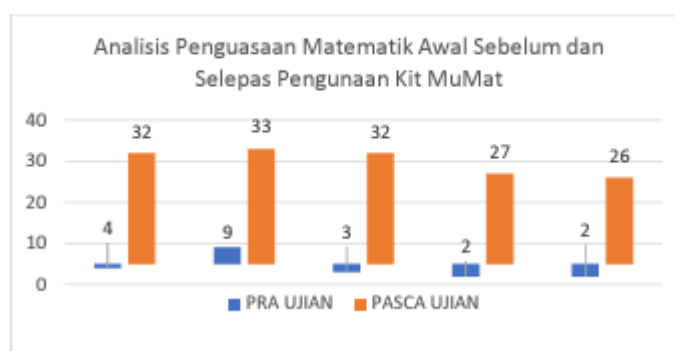
5.2.2 Pre and Post Test Analysis

Table 1 *Pre and Post Tests*

STANDARD CONTENTS	NUMBER OF STUDENTS		IMPROVEMENT PERCENTAGE
	PRE	POST	
MA 1.4 Recognizing and building patterns	4	32	94.1%
MA 2.1 Understand numbers 1 to 10	9	33	97%
MA 2.3 Memahami nombor 11 hingga 20	3	32	94.1%
MA 3.1 Solve addition operation problems with range of 18	2	27	79%

MA 3.2 Solve subtraction operation problems within range of 18	2	26	76%
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Figure 1
Comparison of Pre and Post Test Achievement



Based on Table 1, it was found that there was an increase in student's mastery in the early math content standard of preschool when the number of students who mastered the experience content standard MA number 1.4 increased by 32 people from 4 students. Meanwhile, the number of students who mastered the MA 2.1 number concept content standard also increased from 9 to 33 students and MA 2.3 from 3 students to 32 students. Finally, for the MA 3.1 operation the number increased from 2 students to 27 students and MA 3.2 from 2 students to 26 students.

5.3 Actions Taken

MuMat Kit stands for Easy Math Kit. The MuMat Kit combines learning methods through play, hands-on learning, fun learning and applying elements of exploration for students. The researcher combined some of these methods to produce a learning kit with the concept of math games to help the target group increase their interest in early math learning.

The MuMat Kit includes several early math games such as patterns, Number Cards, Number Counting Wheel, Number Train, Lego TamTo and Marble Run. All these games are created according to the standard content found in the focus of the study. This game is able to strengthen the level of concrete operations in children's early mathematical knowledge with the use of material found in the MuMat Kit. The researcher also provides math games from easy to hard level to help the target group build their early math skills.

Figure 2
Pictures of the Games found in the MuMat Kit



The following are the steps or the implementation process of using the MuMat Kit in an effort to improve the early mathematics mastery of target students..

Step 1:

The teacher starts the PdPC session by using the MuMat Kit as an induction set and the students will guess the games found in the MuMat Kit. Then, the teacher will use it as a teaching aid (BBM) and the students will also use the MuMat Kit together with the teacher. In this phase, students will be guided to use and play the games found on the MuMat Kit. The method is very effective in attracting students to participate in early mathematics PdPC. This process is carried out repeatedly over a period of 3 weeks until students consistently show active and responsive involvement in early math learning sessions.

Figure 3
Use of MuMat Kit in Early Mathematics PdPC Session with guidance teacher.





Step 2:

Teachers will give students the opportunity to use the MuMat Kit on their own during the initial PdPC Mathematics. Students will be monitored by the teacher from time to time. This phase is implemented to create a sense of fun in the students during the initial math learning session because they can use the games available on the MuMat Kit to solve the math problems they face.

Figure 4

Students use the MuMat Kit themselves during PdPC Early Mathematic



Step 3:

Pupils will use the MuMat Kit at the Science and Mathematics Learning Center during learning activities (AP) or free play. In this phase, students will use the MuMat Kit independently. They can play individually, in pairs or in groups. Pupils will explore the game themselves on the MuMat Kit. For example, students solve the addition operation game on Lego TamTo and Marble run by themselves. Exploration will further strengthen the construction of early mathematical knowledge in children's minds.

Figure 5

Students use the MuMat kit independently in the Learning Center



5.4 Execution of Actions

This Action Study was carried out over a period of two months including the process of preparing materials and applying the study materials with the students. The teacher allocates three PdPc hours a week which also involve learning activities in the learning center to guide students in using the MuMat Kit. The post-test was carried out using an early math diagnosis test to see changes in the early math mastery of SK Tobobon preschool students. Based on observations, this Kit successfully increased the level of early mathematics mastery and students' interest in early mathematics PdPc in preschool.

5.5 Study Reflection

The results of the pre- and post-tests show that students' mastery of the early mathematics content standard that is focused on is at a very good level. In fact, the achievements displayed on the post-test proved that the development of student's mastery are very rapid. The results of the observation showed that the use of the MuMat Kit helps to create active involvement among the target students throughout the Early Mathematics PdPc. As a result, the learning process becomes more enjoyable and the learning objectives can be fully achieved.

6.0 Suggestions for Further Study

In the future, the researcher plans to improve the functionality of the MuMat Kit by creating all the activities related to the early mathematical content standards found in KSPK such as shape and space, the concept of time and time and the value of money.

Next, the researcher plans to insert technology elements that can be accessed directly through the MuMat Kit such as online games related to the MuMat Kit (Patterns, number matching, addition and subtraction quizzes).

Researchers believe that the MuMat Kit has the potential to improve preschool students' early math skills because this kit is very interesting and fun. The use of the MuMat Kit has also been proven to improve early mastery among SK Tobobon preschool students. The researcher hopes that this study can continue to help students and improve teachers' teaching practices in the PdPc process of early preschool mathematics.

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NAVIGATING THE DIGITAL LANDSCAPE: UNRAVELLING THE CHALLENGES ON DIGITAL LEADERSHIP OF UNDERPRIVILEGED SCHOOL LEADERS IN COMMUNICATION

Robit bin Yusie Fus Han

robit@iab.moe.gov.my

Abdul Said bin Ambotang, PHD
Ghazali@Hassan bin Sulaiman, PHD
Abdullah bin Mohammad@Mamat
Kasmah binti Abdullah

Abstract: *Digital leadership in exemplary schools plays a crucial role in shaping the future of education. School leaders spearhead this transformative journey, with communication being the key to effective leadership in the digital world. They must master various communication channels to ensure clear, timely, and impactful interactions with all stakeholders. From communicating a clear vision for digital advancements to collaborating with teachers and engaging with parents and the community, school leaders strive to create a cohesive narrative that aligns with the school's objectives. This article explores the challenges exemplary school leaders face in digital leadership and communication. In particular, it focuses on the limitations of lack of connectivity, geographical distance, lack of technical knowledge, lack of resources and communication barriers. Limited connectivity poses a significant challenge for school leaders, as it hampers the implementation of effective digital communication strategies. Challenges such as poor internet infrastructure or low access to technology and geographic distance adds another layer of complexity to digital leadership. This requires the use of virtual collaboration tools and platforms to facilitate seamless communication and collaboration across distances. Lack of technical expertise presents a significant hurdle for school leaders in effectively utilizing digital tools and platforms, and limited resources pose constraints on school leaders seeking to implement robust digital communication strategies. Communication barriers, such as language differences or accessibility issues, further complicate the digital leadership landscape. Exemplary school leaders recognize the importance of inclusive communication strategies, such as multilingual support and accessible communication channels, to ensure effective and meaningful engagement with all stakeholders. In conclusion, this abstract highlights the challenges faced by exemplary school leaders in the realm of digital leadership and communication. Limited connectivity, geographic distance, lack of technical expertise, limited resources, and communication barriers all present significant hurdles that school leaders must navigate. By understanding these challenges and exploring strategies to address them, school leaders can enhance their digital leadership practices and foster effective communication in the digital age.*

Keywords : *Digital Leadership, Exemplary School, Communication Challenges*

1.0 Introduction:

In an era defined by rapid technological advances, schools are forced to embrace digital tools and platforms to enhance the educational experience. In an era of relentless march of technological advancement, educational institutions are at the forefront of the digital transformation. The need to embrace digital tools and platforms as enablers of educational experiences is clearer than ever. In this rapidly changing environment, exemplary schools stand out as pioneers, often redefining educational paradigms and quickly adopting cutting-edge technologies but the transition to a digitally driven educational environment is not without its challenges, especially for those who

have been entrusted with leadership roles in this model school. Exemplary schools, often cutting-edge technology startups, offer a unique case for understanding the challenges leaders face in navigating this digital transformation. Digital leadership in a model school presents a unique set of challenges that require further examination. This article examines barriers to digital leadership in a model school, with a particular focus on the communication strategies used by school leaders. By delving into the experiences of school leaders, this study seeks to reveal the challenges and barriers faced in guiding model schools to effective digital leadership.

2.0 Digital Leadership in Exemplary Schools.

Digital leadership in the education sector is crucial for successful digital transformation. School leaders play a pivotal role in driving this transformation by providing access to digital technologies, promoting digital competence among teachers, and fostering a shared culture of collaboration and communication (Nuryadin et al 2023). However, school leaders also face challenges such as limited resources, negative attitudes towards technology, and the digital divide among teachers and students (Reis-Andersson, 2024). For exemplary schools, digital leadership emerges as a unique issue, requiring nuanced examination of the multifaceted challenges prevalent in this journey of transformation. As education leaders address the challenges of navigating the digital landscape, they face a unique set of obstacles that must be scrutinised. This article aims to serve as a compass, guiding our leaders in model schools through the complex challenges of dynamic digital transformation. At the heart of this insight is an in-depth look at the communication strategies used by school leaders. Communication, the cornerstone of effective leadership in any era, takes on a whole new dimension in the digital age. Exemplary, innovation-minded schools are an interesting case study in extracting digital leadership communication complexities.

By engaging with the experiences of school leaders, this study seeks to identify the challenges and barriers faced in guiding model schools to effective digital leadership. The communication strategies used by these leaders are a key focus, as they meet the demands of a digital environment that blurs traditional boundaries. Barriers to digital leadership in exemplary schools vary. From adopting new technologies to developing tech-savvy leadership teams, school leaders find themselves at the centre of a wave of change that requires expert guidance. Issues of community engagement, stakeholder collaboration, and fostering a culture of innovation all present challenges unique to the digital landscape.

This article seeks to shed light on the complexities of digital leadership in model schools. It seeks to provide valuable insights into what strategies have proven effective, as well as what stumbles. In doing so, the study aims to equip educational leaders with the knowledge and understanding necessary to successfully navigate the digital landscape. As we embark on this experimental journey, we recognize the importance of digital leadership in shaping the future of education. Experiences of exemplary schools are not only case studies but a beacon shining in the direction of leaders in educational institutions around the world. Through careful research and thoughtful reflection, we hope to contribute to an ongoing conversation about digital leadership, providing a compass that guides leadership in uncharted territories within the digital education landscape.

3.0 Role of School Leaders in Communication

Digital leadership extends beyond mere technological literacy; it demands a comprehensive understanding of the digital landscape and the ability to leverage technology to drive educational innovation. This section explores how school leaders must evolve to meet the demands of the digital age, becoming visionary strategists capable of steering their institutions through the challenges and opportunities presented by digitalization. Effective

communication in the digital realm is crucial for successful leadership (Fayed 2011). School leaders use various channels and platforms to communicate, which impacts interpersonal relationships, community engagement, and stakeholder collaboration (Musid et al., 2023). Digital leadership emphasizes the importance of communication in sharing expertise, improving communication with students, and solving problems in the online teaching and learning process (De Lange & Mulder, 2017). Communication in leadership is a socially constructed and relational concept that should endorse meaning-making in specific contexts (Miller et al, 2023). School leaders can build collective efficacy among their peers and embrace the use of technology through online communities, which can support them in their challenging work (Lee 2022). Effective communication skills of leaders can foster positive relationships, engage with the community, and collaborate with stakeholders .

4.0 Challenges of Digital Leadership

Exemplary schools face unique challenges in adopting and implementing digital leadership practices to enhance educational experiences. These schools need to carefully examine their diverse characteristics and understand the hurdles they face in leveraging technology. School leaders play a crucial role in this transformative journey, requiring digital competence and the ability to provide clear guidelines, collaboration opportunities, and sufficient time for digitalization in education (Fengchao & Mingchib, 2023). Access to digital technologies and resources, along with a shared culture, are essential for successful digitalization (Reis-Andersson, 2024). Additionally, school leaders should promote the integration of information technology and education, encourage the use of diverse digital teaching resources, and foster students' autonomous learning and innovative thinking abilities (Quaicoe et al, 2023). By actively carrying out digital transformation, exploring educational innovation, and optimizing educational management, school leaders can better adapt to the digital era and enhance the competitiveness of their schools (Atasoy, 2023).

Exemplary schools facing resource constraints prioritize maintaining high standards and strategically integrating technology in education (PALOMA 2023). The scarcity of resources amplifies the need for a strategic approach to technology integration, as cutting-edge technologies can be both a beacon of progress and a potential source of inequities. These schools recognize the benefits of digital transformation, such as more efficient and collaborative classrooms with features like student performance tracking, limitless resources, and data analytics . However, they also acknowledge the challenges and barriers that need to be overcome, including the need for all stakeholders to respond to the demands of digital transformation (Atasoy, 2023). To ensure meaningful and equitable change, educational institutions must address these challenges by implementing sustainable and continuous changes at all levels of the school system (Kučera 2023). By prioritizing effective use of technology, providing professional development opportunities, and ensuring equitable access to technological tools and resources, schools can navigate the complexities of digital leadership and maintain high standards. Exemplary schools must navigate the integration of technology with precision to enhance the learning environment. This process requires a nuanced understanding of how technology tools can be effectively utilized. Digital leadership practices should align seamlessly with the school's commitment to excellence (PALOMA 2023 : Thapa 2022)

5.0 Challenges of Digital Leadership in Communication

Effective communication plays a crucial role in the successful implementation of digital leadership in schools (Musid et al., 2023). School leaders need to effectively communicate the vision, benefits, and strategies associated with digital integration to overcome resistance and ensure successful technological implementation (Dongo 2021). In environments characterized by diversity and resource constraints, communication becomes even more important as it becomes a linchpin for overcoming challenges (Torrato et al 2021). By effectively communicating, school

leaders can ensure that all stakeholders understand the importance and value of digital leadership, leading to increased buy-in and support for the implementation process (Raman & Thannimalai, 2019). Additionally, effective communication enables the sharing of expertise, improves communication with students, and helps solve problems in the teaching and learning process (Christensen et al 2018). Therefore, school leaders must prioritize and invest in developing strong communication skills to drive successful digital integration in schools .

School leaders face numerous challenges in digital leadership, particularly in the complex area of communication strategies. They must articulate a vision for digital transformation and create a culture of adaptability within their organizations (Monteiro et al., 2023). This involves navigating difficult terrain and finding new solutions to respond to the demands of increasingly digitalized schools. The Covid-19 pandemic has further highlighted the importance of effective communication in managing crises and optimizing the use of digital technologies in schools (El Akid 2023). School leaders play a crucial role in digitalizing education and ensuring access to digital technologies and digital competence for teachers (Reis-Andersson, 2024). They also need to address challenges such as lack of training, lack of resources, widening inequalities, and communication issues.

School leaders facing the delicate balance between innovation and resource constraints can navigate this challenge by drawing from the experiences and insights of exemplary institutions (Torrance et al 2023 : Canatan et al 2023) . Communication strategies that are likely to be most effective in getting buy-in from different stakeholders include building relationships with wider communities and external stakeholders, involving community leaders in decision-making processes, and creating open spaces for other community leaders to actively participate in the running of institutions (Röhl et al 2022 : Abidin et al 2023). By delving into the experiences, successes, and setbacks of school leaders in exemplary schools, this research aims to provide valuable insights that can inform and empower educational leaders facing similar challenges .

Effective communication, open discussion, and peer tutoring are some strategies employed by school leaders to overcome these challenges (Ventura & Yango, 2023). By understanding the unique interplay between the characteristics of exemplary schools, limited resources, and the imperative of effective communication, educators and policymakers can glean valuable lessons for steering their institutions toward successful digital transformation. As we embark on this exploration, we recognize the pivotal role that exemplary schools play in shaping the future of education, and it is our hope that this research will serve as a roadmap for navigating the complexities of digital leadership in diverse educational settings.

6.0 Challenges Facing Digital Leadership Communication in exemplary Schools

This article identifies several challenges that school leaders face in their communication and collaboration efforts within exemplary schools:

6.1 Limited Connectivity:

In an era dominated by digital transformation, school leaders face the challenge of poor or unreliable internet connectivity, which hinders their ability to effectively lead and communicate (Fengchaoa & Mingchib, 2023). This technological limitation poses a significant obstacle for exemplary schools striving for academic excellence and innovation (Mu-azu 2019). The integration of information technology and education is crucial, as it enables teachers to use diverse digital teaching resources and tools to improve teaching efficiency and quality (Louro et al 2023). Additionally, school leaders must pay attention to innovative education management mechanisms to enhance the efficiency and service level of school operations (Schrum & Levin, 2016). By embracing technology

and addressing the challenges of poor internet connectivity, school leaders can better adapt to the demands of the digital age and achieve their educational goals .

Robust internet connectivity is crucial for educational institutions, as it enables the effective utilization of digital resources and facilitates collaboration and information exchange. However, many schools face challenges with inconsistent access to the digital realm, which compromises the benefits of adopting cutting-edge technologies. This issue affects school leadership in various ways, casting a shadow over their ability to promote collaboration, provide access to digital resources, and ensure a seamless integration of technology in education (Reis-Andersson, 2024 : Timotheou et al 2023) . The consequences of poor internet connectivity permeate every aspect of school leadership, hindering the potential for enhanced educational experiences and limiting the opportunities for students and teachers to fully leverage digital technologies (Fengchao & Mingchib, 2023). It is essential for educational institutions to address this issue and prioritize the development of robust internet infrastructure to support effective digital transformation in education.

Effective communication between school leaders is crucial for the success of educational institutions. However, poor or unreliable Internet connectivity can compromise this important aspect of leadership (Reis-Andersson, 2024). It can hinder the timely sharing of critical information and undermine decision-making processes (Miller et al 2023). Additionally, the unpredictable use of the Internet can hamper cross-functional collaboration, which is essential for driving innovation and achieving organizational goals. To address these challenges, it is important for school leaders to have access to digital technologies and develop digital competence (Harsono et al 2023). School leaders play a crucial role in the digitalization of education, providing clear guidelines, fostering collaboration, and ensuring sufficient time for digitalization efforts . By creating easily accessible online communities, school leaders can engage confidentially with colleagues and receive support on work-related issues . This collaborative and innovative approach to leadership can help overcome the limitations imposed by poor Internet connectivity and foster effective communication and collaboration among school leaders .

The limitation in internet connectivity can create a digital divide within the school community, impeding equitable access to digital resources and hindering interactive and engaging learning experiences for students. This can also impact teachers' ability to effectively plan and deliver lessons, affecting the overall quality of education (Afzal et al 2023). In the context of exemplary schools, which are often tasked with setting benchmarks for educational best practices, the challenge of poor internet connectivity becomes all the more pronounced. The very institutions striving to provide innovative and technology-enhanced learning experiences find themselves constrained by an infrastructure that does not match the visionary goals set by their leadership.

The struggle with poor or unreliable internet connectivity in exemplary schools underscores the pressing need for a concerted effort to bridge the digital divide within educational institutions. As we navigate the complexities of the digital age, it is imperative that the very institutions championing educational excellence are equipped with the tools and resources necessary to fulfil their visionary missions. By addressing the challenges associated with internet connectivity, exemplary schools can unlock the full potential of digital leadership and pave the way for a more inclusive and technologically empowered educational landscape

6.2 Geographic Distance:

These schools in remote locations face unique challenges that set them apart from their urban counterparts. The physical distance poses a challenge to traditional communication and collaboration methods, requiring a shift towards more complex digital communication channels to bridge the spatial gaps (Abdallah & Abdallah, 2023). These schools often rely on partnerships with local organizations to provide specialized knowledge and learning

opportunities outside of the school environment (Gallego 2022). Teacher development and training sessions play a vital role in refining the education sector and improving education standards (Knudsen & Gjessing, 2022). School heads in remote areas face physical and emotional discomforts, as well as teaching and community adjustments, but they develop coping mechanisms and a sense of commitment towards their vocation. The quality of education in remote areas can be a concern, and there is a need for policies and procedures to ensure school functions are aligned with educational standards (Palmaymesa & Bakker 2022 : Nugroho & Hartanto, 2023).

The geographic isolation of schools poses challenges for school leaders in terms of communication and cooperation. The distance between leaders makes frequent face-to-face meetings impractical, requiring the adoption of new communication strategies (Curran & Kitchin, 2021: Al Shebli 2023). In such remote settings, the reliance on digital communication channels becomes not just a convenience but a strategic imperative. The advent of technology provides a lifeline for school leaders navigating the vast expanses that separate them. Digital platforms, ranging from video conferencing tools to collaborative project management software, offer a virtual bridge, connecting leaders despite the geographic distances that would otherwise impede direct communication.

The geographic distances that often define the locations of exemplary schools underscore the pivotal role of digital communication channels in modern educational leadership. The challenges posed by physical remoteness are transformed into opportunities for innovative and effective collaboration through the strategic integration of digital platforms. By leveraging technology to bridge the spatial gap, exemplary schools can not only overcome the challenges of their remote locations but also emerge as trailblazers in demonstrating how digital communication can enhance and redefine the landscape of educational leadership.

6.3 Lack of Technical Expertise:

Exemplary schools often struggle with a lack of technical expertise among school leaders in effectively utilizing digital communication platforms, hindering meaningful communication and collaboration (Kampylis & Sala, 2023: Rosare 2023). School leaders' proficiency in online tools and digital platforms is crucial for successful integration of technology in teaching and learning practices (Lazar 2023). The need for improvement in schools' digital infrastructure and teachers' training on embedding technology in their teaching practices has been identified (Monteiro et al, 2023). Additionally, the study highlights the importance of continuous training for school leaders in managing crises and optimizing the use of digital technologies in schools . Collaborative efforts and networking, along with capitalizing on internal and external partnerships, can help overcome the lack of resources, social needs, and inequalities.

The integration of digital communication platforms in educational settings has indeed changed the way teachers communicate, collaborate, and share information (Reis-Andersson, 2024 : Fretzie 2023). Limited knowledge about online tools and digital platforms can undermine the real potential of technology to improve communication and collaboration in schools (Kadijevich et al 2023). Technological shift demands a certain level of technical expertise that, if lacking, can pose significant obstacles for school leaders. Limited knowledge of online tools and digital platforms can impede the seamless integration of technology into the educational environment, undermining the very potential it holds for enhancing communication and collaboration.

The challenges arising from a lack of technical expertise in school leadership are evident in various aspects. School leaders need to possess the skills to effectively navigate and utilize digital communication platforms. This includes being aware of the range of tools available and having the proficiency to leverage them optimally. Without technical proficiency, school leaders may struggle to effectively utilize resources such as video conferencing tools for virtual meetings and collaborative platforms for document sharing (Reis-Andersson, 2024). School leaders need

a nuanced understanding of digital platforms to avoid miscommunication and inefficient collaboration. Without this understanding, there is a risk of misunderstandings, delayed decision-making processes, and a lack of cohesion among leadership teams (Reis-Andersson 2024 : Fretzie 2023 : Monteiro et al 2023). Effective communication is central to leadership success, and leveraging the full spectrum of digital tools is essential in achieving this (GOGO & FOMSI,2023).

The fast-paced nature of technological advancements poses a challenge for school leaders, as they need to continuously learn and adapt to stay updated with the latest tools and platforms. The lack of technical expertise can hinder the adoption of innovative solutions and create a gap between the leadership's capabilities and the evolving technological landscape (Yusof et al 2023: Reis-Andersson 2024). Addressing the issue of technical proficiency among school leaders in exemplary schools demands a proactive and comprehensive approach. Professional development programs tailored to enhance digital literacy should be implemented, ensuring that school leaders receive ongoing training in the effective use of digital communication platforms (Rosare 2023: Reis-Andersson 2024). Collaborative efforts with educational technology experts can provide targeted guidance, allowing school leaders to navigate the digital landscape with confidence (Ahmad & Husnin, 2022).

6.4 Limited Resources:

The challenge of limited resources for digital communication infrastructure, which hinders effective communication and collaboration among school leaders. The scarcity of financial investment for technologies like video conferencing tools and collaborative platforms poses a substantial impediment. These schools celebrated for their commitment to excellence and innovation, often face limitations imposed by budgetary restrictions, creating a paradox. These schools find themselves constrained in their ability to invest in the tools that could propel them forward (Dadvand 2023: Yurkofsky & Peurach, 2023). The tensions arising from this paradox result in unresolved conflicts and compromises, perpetuating a cycle of compliance and contestation (Kuzich et al, 2015).

In Reis-Andersson (2024), limited resources for digital communication infrastructure can hinder effective communication among school leaders, as it restricts their ability to utilize video conferencing tools for virtual face-to-face interactions. These tools are invaluable for facilitating collaborative discussions, sharing insights, and making important decisions without the constraints of physical presence. Without adequate investment in such tools, the communication landscape becomes fragmented, relying on less efficient and time-consuming methods (Kampylis & Sala, 2023). Limited resources may curtail the adoption of such platforms, depriving school leaders of streamlined and efficient collaboration mechanisms. Exemplary schools are lauded for their commitment to academic excellence, the constraint of limited resources for digital communication infrastructure unveils a critical challenge that requires thoughtful consideration. By addressing this issue head-on, through strategic allocation of resources, innovative solutions, and advocacy for increased investment, exemplary schools can fortify their leadership teams with the tools necessary to thrive in the digital age.

6.5 Communication Barriers:

Effective communication among school leaders is crucial for navigating challenges and achieving educational excellence. However, language barriers, varying levels of digital literacy, and the absence of clear communication protocols can hinder the seamless exchange of ideas and information (Fayed 2011: Al Shebli 2023). These challenges have significant repercussions on collaborative efforts, decision-making processes, and the overall cohesion of leadership teams within educational institutions (Canatan et al 2023). Language barriers present a multifaceted challenge, particularly in schools where leaders, educators, and stakeholders may hail from diverse

linguistic backgrounds. The nuanced nature of educational discourse requires precise and unambiguous communication to ensure shared understanding. When leaders encounter language barriers, the potential for misunderstandings and misinterpretations escalates, leading to a breakdown in effective communication. Educational leaders need to be aware of the complexity of multi-ethnic/racial identities and positionality to foster solidarity building within educative spaces (Stohry & Aronson, 2021)

Language barriers can have a significant impact on communication in schools, leading to conflicts, misunderstandings, and wrong decision making. In the digital realm, reliance on written communication can exacerbate these barriers, as nuances and cultural differences may be easily misinterpreted (Gómez-Camacho et al 2023). This can hinder the clarity of messages and impede the development of a shared vision among school leaders, which is essential for cohesive decision-making. The use of textisms in digital writing systems further complicates the issue, as they deviate from academic norms and can be seen as intentional discrepancies (Mangal & Farmer, 2023; Owens & Nzumba, 2021).

Varying levels of digital literacy among school leaders can indeed pose challenges for effective communication in the digital era. With the increasing use of digital tools and platforms, leaders need to have a certain degree of technological proficiency to fully utilize these resources. Disparities in digital literacy can hinder leaders' ability to actively participate in virtual meetings, collaborate on projects, and make use of digital resources (Reis-Andersson 2024; Musid et al., 2023). This can result in difficulties navigating platforms and limited engagement in digital communication, impacting their overall effectiveness as leaders. It is crucial for school leaders to receive adequate training and support to enhance their digital competence, ensuring they can effectively utilize communication tools and platforms in their roles (Monteiro et al 2023). The lack of clear communication protocols further complicates the scenario. In the absence of established guidelines for communication, leaders may resort to disparate methods, leading to inconsistency and confusion. Ambiguous communication channels can exacerbate language barriers and digital literacy challenges, creating an environment where misunderstandings become more likely, and the potential for miscommunication is heightened.

The consequences of language barriers and digital literacy disparities among school leaders can lead to communication breakdowns and hinder collaborative efforts within leadership teams. This can result in less informed decision-making and potentially impact the effectiveness of educational strategies (Gcelu 2022). Additionally, the lack of cohesive communication may create a sense of disconnect among school leaders, making it difficult to develop a unified vision for the institution (Taufik & Istiarsono, 2020). By recognizing these obstacles and implementing targeted strategies to address them, schools can fortify their leadership teams with the skills and frameworks necessary for effective communication. The result is a more cohesive, informed, and visionary leadership that can navigate the complexities of education in the 21st century with clarity and purpose.

7.0 Conclusion

The challenges facing digital leadership in exemplary schools, as highlighted in this article, underscore the importance of effective communication strategies employed by school leaders. The challenges highlighted include limited connectivity, geographic distance, lack of technical expertise, limited resources, and communication barriers. The piece delves into the complexities arising from these obstacles, emphasizing the need for strategic solutions and innovative approaches to overcome the hurdles in communication and collaboration within the digital landscape. The overarching goal is to shed light on how exemplary school leaders grapple with these challenges and to offer insights that can inform effective digital leadership strategies in education. This article contributes to a deeper understanding of the complexities inherent in digital leadership and provides valuable insights for educators and policymakers seeking to navigate the digital landscape in diverse educational settings.

Effective communication among school leaders is vital for successful digital leadership in exemplary schools. By understanding and addressing the specific challenges faced in communication and collaboration, policymakers, educators, and stakeholders can develop strategies to bridge the communication gap and foster effective digital leadership practices. Improving connectivity, providing digital literacy training, and implementing accessible communication platforms are crucial steps in overcoming communication barriers. By strengthening communication among school leaders, exemplary schools can enhance collaboration, share best practices, and collectively work towards providing quality education opportunities to all students, regardless of their geographical location or socio-economic background.

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SMART DOOR LOCK USING THE ESP8266 MICROCONTROLLER AND CONTROLLING A SERVO MOTOR USING THE BLYNK

Zuraini Gani¹

Politeknik Ungku Omar, Perak, Malaysia

zurainigani@puo.edu.my

,Alias Omar²

Politeknik Ungku Omar, Perak, Malaysia

alias.umar@puo.edu.my

Nazihah Mohd. Noor³

Politeknik Ungku Omar, Perak, Malaysia

mnazihah@puo.edu.my

*Corresponding Author: zurainigani@puo.edu.my

Abstract: *This project is to develop a smart door lock system that allows users of the Blynk application to remotely control the door locking and unlocking mechanism. The objective of this project is to allow Blynk application users to operate the physical key and create a secure Wi-Fi connection with the application. This project combines an ESP8266 and a servo motor. This is achieved by integrating an ESP8266 WiFi module and a servo motor that operates the physical lock. The Blynk application implements when a user registration and login process to ensure that only authorized individual can operate the door lock. A robust authentication system is created to secure connection between the application and the ESP8266 module. This system ensures that only authorized users can access and control the smart door lock. The goal of the project is to combine these elements to provide a practical and safe solution for remote door access control using the Blynk application to improve security for homes and premises.*

Keywords: Blynk App., lock, unlocking, ESP8266 module

1. Introduction

Smart locks allow homeowners to enter their home or provide access to others without requiring a standard (physical) key to enter the smart home. Instead, the user wirelessly authenticates and mechanically unlocks the door using a smartphone or key fob. Smart locks combine home automation and security. Smart locks can be seen as a component of the Internet of things (IoT) as they are connected devices (Ho, G., Leung et al., 2016). The SMART DOOR LOCK project using ESP8266 and servo motor control with BLYNK via WI-FI is an innovative solution that brings automation and remote control capabilities to traditional door locks by combining the power of ESP8266, a microcontroller board with built-in WI-FI, the servo motor can be controlled and monitored from anywhere using the BLYNK mobile app (Arman, S. M. S. 2023). This project leverages the ESP8266's WI-FI capability to connect to a home or business premises network and enable it to communicate with the BLYNK cloud platform. BLYNK provides an easy-to-use interface for building IoT applications and allows creating custom mobile applications to control door locks (Sharma, M. A., Kumar, V., & Verma, M. V. 2021).

The servo motor works as a mechanism to physically lock and unlock the door. By rotating the servo motor, it can engage or disengage the locking mechanism. The ESP8266 board receives commands from the BLYNK app via WI-FI and controls the servo motors accordingly (Mandal, D., Hassan, M. S., & Joydhar, J. S. 2018). Integration with BLYNK enables remote control of the door lock, providing features such as unlocking the door remotely,

monitoring whether the door is locked or unlocked. This adds convenience, security and peace of mind when at home or in the office. Overall, the smart door lock project using ESP8266, servo motor control and BLYNK shows the capabilities of IOT and home automation. By leveraging this technology, it can improve the security and accessibility of traditional door locks and make life easier and safer.

Smart door locks are becoming increasingly popular due to their high-tech security features, practicality and the ability to be controlled remotely (Sovacool, B. K., & Del Rio, D. D. F. 2020). Starting from traditional mechanical locks to electronic locks to smart door locks, this technology has evolved. Smart door locks allow remote access control via a smartphone, tablet or online interface, allowing users to lock or unlock your door from anywhere. They often have dedicated smartphone apps that facilitate management and control. Smart locks offer multiple access options, including PIN numbers, keycards, biometric scans and voice commands (Lee, K. T. 2023). It can be integrated with other smart home systems and devices for complete security and automation. Encryption, physical security, secure communication and regular firmware updates are security elements (Burg, A., Chattopadhyay, A., & Lam, K. Y. 2017). User experience, security factors and competitive prices are the main factors that influence user usage. Standardization, energy management and user training are difficult. The results of this study can contribute to the development and popularization of smart door locking systems.

2.0 Literature Review

The current system has a little digital approach to the security key, so this smart locking system can replace the normal locking method or traditional locking. Modern life depends very much on modern technology to open and close doors, control the climate for modern farming, control security through cctv and so on (Ande, R., Adebisi, B., Hammoudeh, M., & Saleem, J. 2020). People want to feel safe at home and also at work. So the main purpose of building a smart key is to meet the needs of society. The method of detecting early-stage dementia based on the speed of walking in the building and its ability to use the PIR sensor placed vertically in the intersection has been suggested by Akl et al. [5]. Dawadi et al. [15] has developed an automatic machine learning algorithm that does not interfere with assessing someone's cognitive health by assessing the perfection of the tasks given using binary sensors in a smart home. Currently, dementia is not invasive without the device is a rather new area of investigation (Teipel, S. et.,al, 2018). Some recent studies suggest such a scheme for daily life activities including walking speed, the perfection of the work done and the time out of the house are also recorded using anonymous binary sensors.

The door lock system suggested by YT Park et. Al, (2009), consists of an RFID reader for user authentication, a touch LCD, a motor module to open and close the door, a sensor module to detect conditions inside the house, a communication module and a control module to control other modules. Sensor nodes for environmental sensing are deployed in suitable places in the home. The status of individual ZigBee modules can be monitored and controlled by a centralized controller, a digital door lock (Han, D. M., & Lim, J. H. 2010). Since the door lock is the first and last thing people see when entering and leaving their home, the home automation function in the digital door lock system allows users to easily control and monitor the environment and condition of the home before entering or leaving the home.

According to Malekian, A., Hayati, D., & Aarts, N. (2017), in terms Homeland security, there are some security issues going on, which are problems the safety of individuals, the safety of property and the safety of building structures. Holt, T., & Bossler, A. (2015) also defined safety as no danger, no space pushing for an atmosphere of danger, a level of protection and a situation that is not involves risks. In dealing with security problems and preventing the prevalence of house burglaries, there are now many home security systems that have been upgraded from conventional lock systems to automatic lock systems and are safer to use. RFID is one of the wireless technologies that can identify the identity of individuals or objects automatically using electromagnetic fields or radio waves to transfer data over a short distance (Ratta, P., 2021). Based on history, wireless technology has existed since 1896. This wireless technology has developed with various applications and is widely used everywhere, regardless of whether it is in fast-paced cities or rural areas. RFID technology is not only focused on applications in home security systems but covers a variety of applications that can solve human problems in everyday life. Door Security System using RFID and Arduino Microcontroller The RFID technology that was built is suitable for use at the user's entrance of a premises or residence by identifying the user's RFID tag(Okafor, C. S., et.,al, 2022). This project has applied RFID technology to replace the existing lock system with a more

stringent, safe and easy-to-use security system in our homes. This RFID system will monitor every movement of an individual when entering the door at home. Every resident of the home will use an RFID tag as an identity card or better known as a smart card.

RFID can also be used to develop access control systems. Previous studies have revealed the use of this technology to automate various processes starting from the industrial sector to home control (Lu, Y. 2017). Yan & Lee (2009) have reported the use of RFID technology to automate ticket management systems.

3.0 Methodology

Smart door lock system will be developed using fabrication based methodology. This requires several steps starting with design and planning. Then select the requirements, supplies, parts and equipment needed for the project. The next phase is prototyping, where a basic prototype will be built to assess the viability of the design. Next is the fabrication stage and the final product will be built according to the design parameters, after the prototype has been improved and accepted and involves the process of emptying the project body and assembling the components and connecting the direct location detection using the ESP 8266 and integrating it with the Blynk application for the purpose of sending direct location automatically in the Bot Telegram channel to each group member. Finally, testing and evaluating the product's performance and making the necessary adjustments to the product.

3.1 Fabrication Method

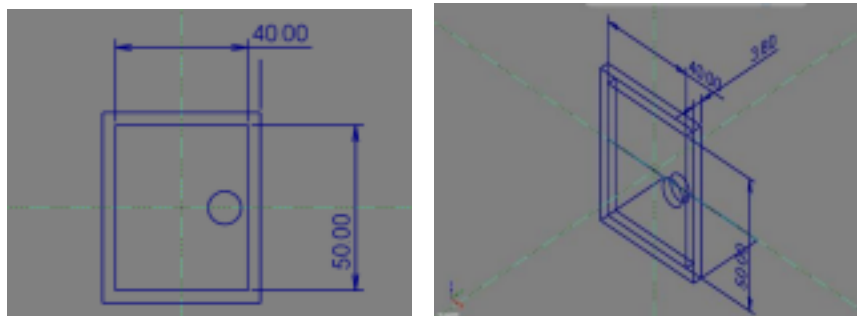


Figure 1: Door Drawing

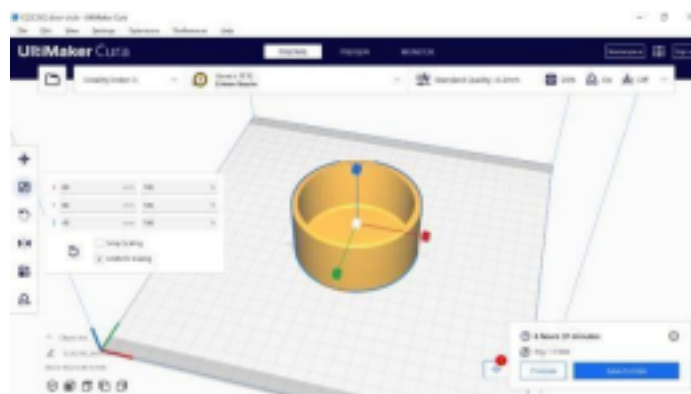


Figure 2: 3d printing model sketch



Figure 3: Smart door lock wire connection

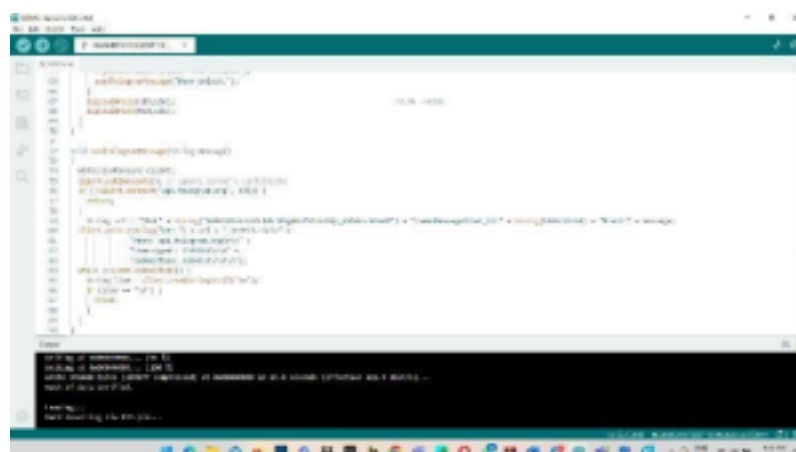


Figure 6 : Programming for Telegram Message

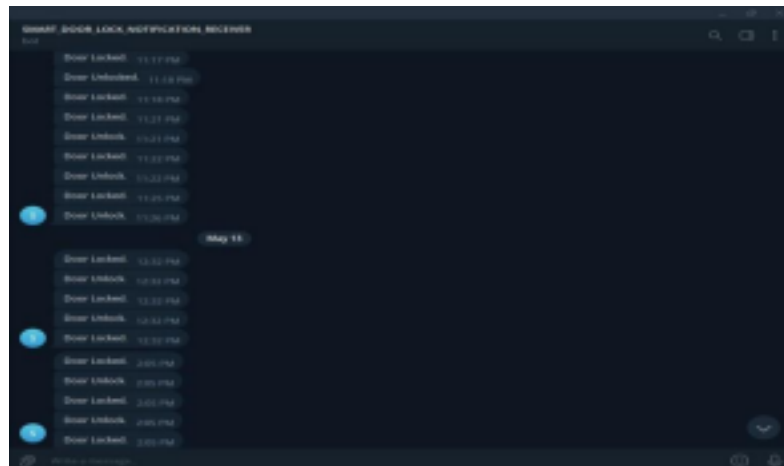


Figure 7: Blynk Notification

3.2 Wiring process

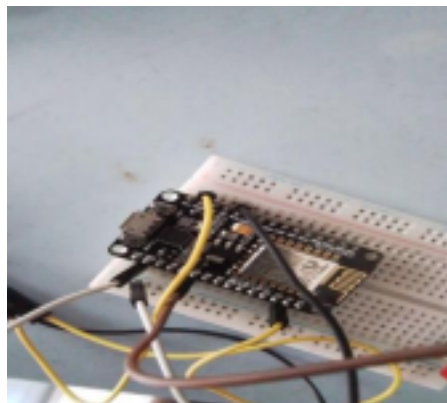


Figure 8: Wiring Process for esp8266

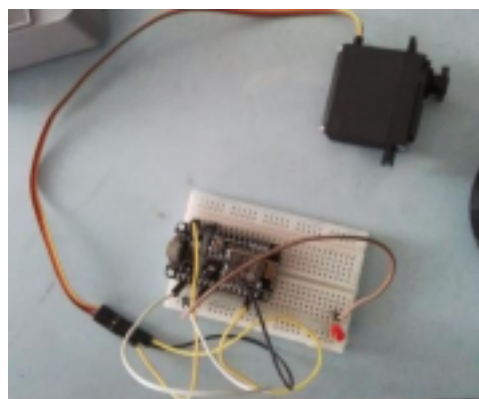


Figure 9: Wiring process for servo motor

3.3 Fabrication Process



Figure 10 : Sketching door knob holder

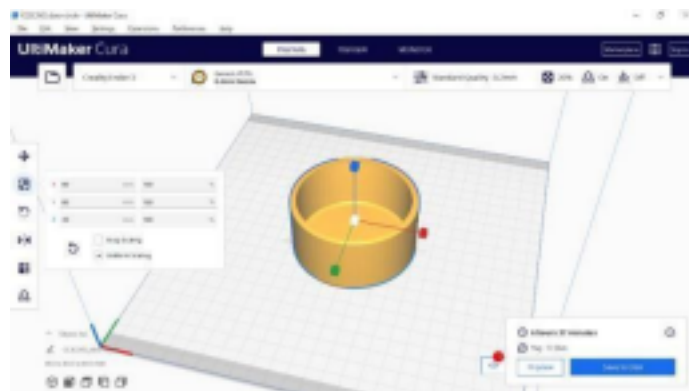


Figure 11 : Servo handle sketching



Figure 12 : Smart door lock

4.0 Result and discussion

This section is about the servo used to turn the deadbolt lock. The smart door lock offers keyless entry and enhanced control for door access purposes by combining an ESP8266 microprocessor with a servo motor. Proper hardware integration allows the ESP8266 to function as a master controller, communicating with a mobile device or web interface via Wi-Fi, and a servo motor to efficiently control the lock mechanism. Access control has been enhanced with security measures through user authentication. The ESP8266 is an energy efficient choice due to its low power consumption, which reduces the frequency of battery replacement. Future improvements may focus on improving the user experience, continuing authentication options and exploring potential integration and adjustment opportunities for smart door lock systems to ensure these smart doors are the choice for contemporary door access control.

The ESP8266 microcontroller and servo motor have been successfully used in the wiring procedure for the smart door lock. The required parts have been installed on the ESP8266 and the servo motor is properly connected to the device. Both the ESP8266 and the servo motor voltage requirements have been taken into account when setting up the power supply. Component compatibility, stability and effective communication are all made possible by the wiring arrangement. Precautions and safety measures have been taken into account to avoid electrical risks. Future modifications and connections will be easier because of the scalability and flexibility of the wiring design. In general a good smart door lock system wiring process is important to ensure reliable operation and allow for potential future improvements.

5.0 Conclusion

The completed circuit requires some testing to see the standard operation procedures required for the project. This test procedure aims to see if the components produced by the project work well and must meet the objectives of the project that have been set.

Acknowledgement

Thank you to my Politeknik Ungku Omar, Ipoh, Perak in general and the head of Mechanical Engineering department for giving me the opportunity to complete my research.

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STUDY THE USAGE OF SUGARCANE BAGASSE AS A RAW MATERIAL IN MANUFACTURING PRODUCT: A SHORT REVIEW

Nor Hamidah Yatim¹,
Mohd Azamri Kandari²,
Noraini Mohd Baidui³,
Muhammad Israff Sabarudin⁴

¹Department of Mechanical Engineering, Polytechnic Merlimau, 77300 Merlimau, Melaka, Malaysia

²Department of Mechanical Engineering, Polytechnic Merlimau, 77300 Merlimau, Melaka, Malaysia

³Department of Mechanical Engineering, Polytechnic Merlimau, 77300 Merlimau, Melaka, Malaysia

⁴Department of Mechanical Engineering, Polytechnic Merlimau, 77300 Merlimau, Melaka, Malaysia

ABSTRACT

Abstract: Sugarcane bagasse, the fibrous filtrate left subsequently sugarcane refuses are pressed to excerpt extract, is a versatile raw material used in several manufacturing, with paper and pulp, biofuel manufacture, also the industrial of biodegradable plastics. Examining the feasibility of using sugarcane bagasse for manufacturing product as a raw material innovative approach with potential environmental benefits. Being abundant and renewable, bagasse holds promise as a sustainable solution. In Malaysia, the substantial amount of sugarcane waste, especially bagasse, presents significant environmental challenges, contributing significantly to the total waste produced during sugar manufacture. This material can be seen as either a waste, affecting the environment, or as a very useful resource when appropriate valorisation techniques are implemented. Improper handling of this residue results in eco-friendly effluence and disrupts ecosystems. Furthermore, the widespread use of plastics exacerbates ocean pollution, posing a threat to marine natural life. To discourse these matters, this study aims to evaluate the feasibility of using sugarcane bagasse in manufacturing. Investigation attentions on refining mechanical properties, and improving performance for various applications. By reviewing existing literature, this study aims to assess the feasibility of sugarcane waste as a raw material with a particular emphasis on design and manufacturing improvements. By provided that supportable replacements to predictable materials, this initiative underwrites to modifying ecological degradation and endorsing eco-conscious performs in building. This paper specifically investigates the potential of sugarcane bagasse as a raw material in manufacturing application.

Keywords: sugarcane waste, sugarcane bagasse, manufacturing applications.

INTRODUCTION

Around 115 countries produce over 1,850 million tons of sugarcane each year, supplying sugar, alcohol, and paper to global markets (Mulye, P., 2021). In the 2017–2018 period, sugarcane was ranked as the world's second-largest crop production industry (Pandraj, S., et al., 2021). The global sugar industry is primarily led by countries such as Brazil, India, China, and Thailand. In 2019, Brazil, the top producer of sugarcane bagasse, generated over 700 million tons, representing about 40% of global production. India and China are the next largest contributors to global sugarcane production (Sousa, L. N., et al., 2022). Major sugar-producing nations have been producing significant amounts of sugarcane bagasse ash (SCBA) as a by-product (Prabhath, N., et al., 2022).

Sugarcane bagasse, a by-product of the sugar industry, emerges as a promising alternative. This fibrous residue, typically discarded after sugar extraction, has shown potential in various applications due to its abundance and sustainability benefits. Recent research highlights the feasibility of using sugarcane bagasse, leveraging its properties to enhance environmental performance (Hiranobe, C.T, et al., 2024). Especially, the integration of

bagasse into composite materials has demonstrated improved mechanical and thermal properties, making it a viable candidate for sustainable construction applications (Orhon, A.V & Altin, M. 2020; Zafeer, M.K et al., 2024).

The literature review indicates a growing interest in using sugarcane bagasse for manufacturing composite materials, driven by its abundant availability and low pre-processing costs. Furthermore, sugarcane bagasse is well-suited for composites due to its easy accessibility, as extensive sugarcane cultivation ensures a consistent and stable supply. This study aimed to investigate how incorporating sugarcane bagasse affects the physical and mechanical properties of composites that could potentially as a raw material in manufacturing applications.

LITERATURE REVIEW

The utilization of sugarcane bagasse as a raw material in manufacturing presents significant opportunities for sustainability and resource efficiency. Its applications in biofuels, building materials, paper production, and other industrial sectors underscore its versatility. Ongoing research and technological advancements will be crucial in overcoming existing challenges and realizing the full potential of sugarcane bagasse in various manufacturing contexts.

Orhon, A. V., & Altin, M. (2020) provide a comprehensive overview of alternative building materials, including those derived from agricultural by products like sugarcane bagasse. Their work underscores the importance of integrating sustainable materials to mitigate environmental impacts associated with traditional construction practices. Sugarcane bagasse fits well within this context, offering both environmental and functional advantages.

Sugarcane bagasse, the fibrous residue from sugarcane processing, has emerged as a promising alternative material. Hiranobe, C.T et.al. (2024) detail the challenges and opportunities associated with recycling sugarcane bagasse, emphasizing its potential for use in various applications, including construction. Bagasse's environmental benefits stem from its abundant availability and its ability to reduce waste from the sugar industry. Research on sugarcane bagasse-based composites indicates strong potential for use in construction materials. Further studies, such as those by Zafeer, M.K et.al. (2024), have explored the use of sugarcane bagasse-based biochar, highlighting its potential applications and benefits in construction and other fields. Its environmental benefits, combined with its mechanical properties, make it a compelling candidate for further research and development.

This literature review aims to provide a comprehensive overview of the current research on the utilization of sugarcane bagasse in manufacturing. It will explore various applications of bagasse, including its conversion into biofuels, use in construction materials, and its role in paper and packaging industries. Additionally, the review will address the environmental and economic impacts of these applications, identifying both the benefits and challenges associated with the use of sugarcane bagasse as a raw material. By examining the existing body of knowledge, this review seeks to underscore the potential of sugarcane bagasse to contribute to sustainable manufacturing performs and highlight areas for future research and development.

Sugarcane Bagasse Composite

Sugarcane, known scientifically as *Saccharum spp.*, is widely grown, with global production reaching 1.7 billion tons in 2011. After processing the cane stalk in sugar or alcohol mills, bagasse, which constitutes about 30% of the remaining material, is obtained. Bagasse consists of both the crushed inner pith and the outer rind of the cane stalk. It is composed of 45% fiber, including 45% cellulose, 33% hemicelluloses, and 20% lignin (Abedom, F., et al., 2021). The fiber extricated operation is shown in Figure 1.



Figure 1: Sugarcane bagasse fiber extraction (Abedom, F., et al., 2021).

The substantial cellulose content in sugarcane bagasse makes it an excellent candidate for composite manufacturing, given its widespread availability and low processing costs. Composites made from sugarcane bagasse provide numerous advantages, such as enhanced flexibility, high strength, excellent tensile properties, ease of shaping and modification, and cost efficiency. (Kusuma, H. S., et al., 2023). Bagasse, the fibrous by product remaining after sugarcane juice extraction, is often utilized for electricity generation in thermal power plants. Unfortunately, this process significantly contributes to carbon dioxide emissions, causing environmental pollution. To improve both the ecological and economic value of sugarcane bagasse, research has increasingly concentrated on transforming it into valuable products, drawing substantial interest from researchers. According to Ouedraogo, M, et al. (2023), The sugarcane bagasse sample shown in Figure 2, rich in plant fibers and with a high cellulose content (~45 wt.%), exhibits excellent thermal insulation properties. This makes it a promising option for repurposing in construction materials.



Figure 2: Sugarcane bagasse sample (Ouedraogo, M, et al., 2023)

Cellulose is widely present in plants, as it is a fundamental component of all woody plants, alongside lignin, hemicellulose, and water (Vaneewari, N., & Saranya, D. V., 2023). Sugarcane bagasse is a readily available yet frequently underutilized source of cellulose. The high cellulose content in its fibers makes them particularly effective as a filler matrix in composite materials (Asrofi, M., et al, 2021). The chemical composition of sugarcane bagasse fiber, by weight, is as follows: 45% cellulose, 21.7% lignin, 22% hemicellulose (primarily pentosan), and 2.1% ash (Madhoushi, M., et al, 2021). Sugarcane bagasse varies in particle size and shape and has a moisture content of 48-50% (Dussan, K. J., at al., 2014). This sugarcane fiber holds significant potential as a valuable raw material for composites in industrial applications. Moreover, as a biopolymer, sugarcane bagasse is environmentally friendly.

Bagasse is the dry, fibrous residue remaining after extracting juice from sugarcane. In addition to sugarcane, bagasse can also be obtained from other plants like cassava, agave, and guayule. (Zhu, J., et al., 2019). The study utilized four different varieties of sugarcane fiber, as demonstrated in the research were used shown in Table 1 (Prasad, L., et al., 2020).

Table 1. Properties of different varieties of sugarcane bagasse fibre obtained from sugarcane (Prasad, L., et al., 2020).

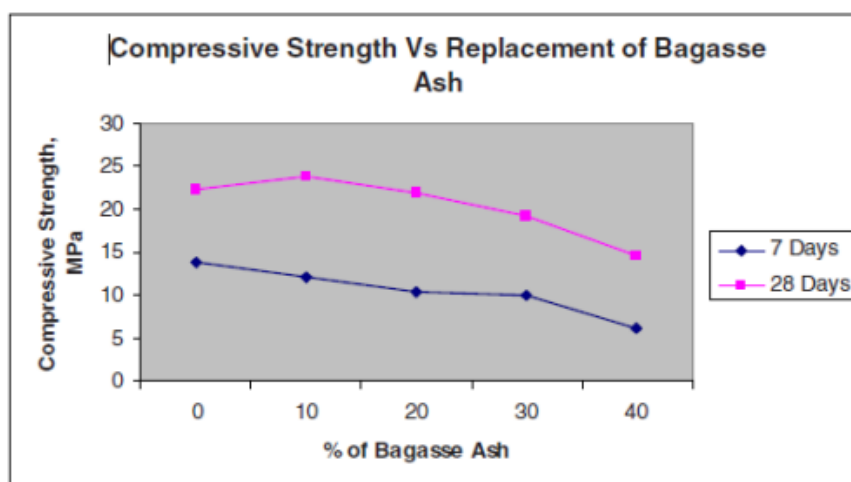
Sugarcane Variety *	Physical Bending (Hard/Soft)	Cellulose Content (%) **	Hemicellulose Content (%) **	Lignin Content (%) **
Cos 8436	Soft	49.54	26.52	21.25
Cos 767	Hard	47.79	27.92	20.98
Coj 88	Hard	48.45	27.39	21.11
Co 0239	Soft	47.86	28.25	19.81

Mechanical Properties of Sugarcane Bagasse

Sugarcane bagasse has significant mechanical properties, including compressive strength, tensile strength, flexural strength, and impact resistance, making it a valuable material for diverse applications. Ongoing innovations and research continue to enhance its properties and expand its potential uses, contributing to more sustainable and efficient manufacturing practices. Future studies should focus on addressing these challenges, exploring new applications, and further optimizing the mechanical properties of sugarcane bagasse to fully realize its potential in various industries. Sugarcane bagasse, the fibrous residue left after the extraction of juice from sugarcane, is a notable agricultural by-product with a range of mechanical applications. Traditionally regarded as waste, bagasse has garnered attention for its potential in various industries due to its rich cellulose content and structural properties. This outline explores the mechanical properties of sugarcane bagasse, emphasizing its significance and potential uses.

Compressive Strength and Flexural Strength

One of the important properties of concrete is its compressive strength, which determines its load-bearing capacity and resistance to failure (Mangi, S.A, et al., 2017). According to Mulye,P (2021), the enhancement of compressive strength can be achieved with up to a 15% partial replacement of SCBA (Sugar Cane Bagasse Ash). Research by Prabhat,N, et al. (2022) indicates that incorporating SCBA improves the compressive strength of concrete, with greater benefits observed over extended periods. Modani, P.O, et al. (2013) investigated concrete samples with 0%, 10%, 20%, 30%, and 40% SCBA replacement and found that samples with 10% SCBA replacement exhibited the highest compressive strength after 28 days of curing, as illustrated in Figure 3.

**Figure 3: Compressive strength characteristic (Modani, P.O, et al., 2013)**

Mangi, S.A., (2017) demonstrated that introducing Sugar Cane Bagasse Ash (SCBA) by replacing 5% and 10% of Ordinary Portland Cement (OPC) leads to an increase in compressive strength. Ganesan, K., et al. (2003) found that replacing Ordinary Portland Cement (OPC) with Sugar Cane Bagasse Ash (SCBA) within the range of 5% to 20% can enhance the compressive strength of concrete. Data collected over a 90-day curing period indicated that

while compressive strength increased with curing time, the relative improvement compared to the control specimen diminished for the 20% SCBA sample (see Figure 4).

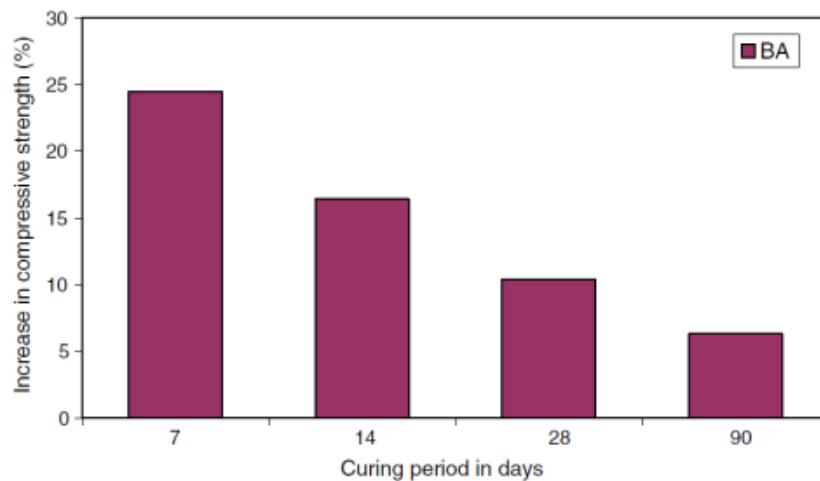


Figure 4: Relative increase in compressive strength of 20% SCBA blended concrete (Ganesan, K, et al., 2003)

The addition of SCBA had increasing the compressive strength without causing a significant effect on water absorption, porosity and bulk density (Sousa, L. N., 2022). Ouedraogo, M., (2023) stated the compressive strength of adobes increases with sugarcane bagasse additions up to 4 wt.% and decreases for higher sugarcane bagasse contents. This result can be explained by the good adhesion of sugarcane bagasse to the clay matrix. The improvement of such mechanical characteristics is mainly due to the high tensile strength of sugarcane bagasse, provided by the crystalline cellulose molecules it contains. The increase in flexural strength is also due to the presence of an acceptable amount of lignin in sugarcane bagasse, which brings stiffness to the fibres. The compressive strength and flexural strength reinforced with sugarcane bagasse are presented in Figure 5.

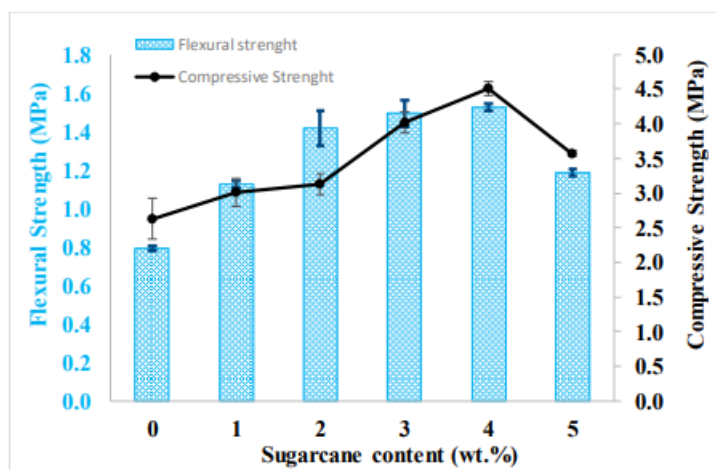


Figure 5: Compressive and flexural strengths of adobes reinforces with sugarcane bagasse (Ouedraogo, M., 2023)

Tensile Strength

The fabricated fiber reinforced hybrid composites are cut to the required dimensions using a saw cutter, and edge preparation is performed with an emery sheet prior to tensile testing. The test specimens are prepared in accordance with ASTM D 3039 standards (Abedom, F., 2021). Tensile strength measures the maximum stress a material can endure while being stretched or pulled before it breaks. It is an essential property in engineering and materials science, reflecting how much tensile (pulling) stress a material can withstand. Research by Ganesan, K., et al. (2003) showed that incorporating Sugar Cane Bagasse Ash (SCBA) into concrete mix designs can enhance its slit

tensile strength. They found that replacing 15% of Ordinary Portland Cement (OPC) with SCBA optimized the tensile strength of the concrete, although adding SCBA up to 20% can still improve the tensile strength as illustrated in Figure 6.

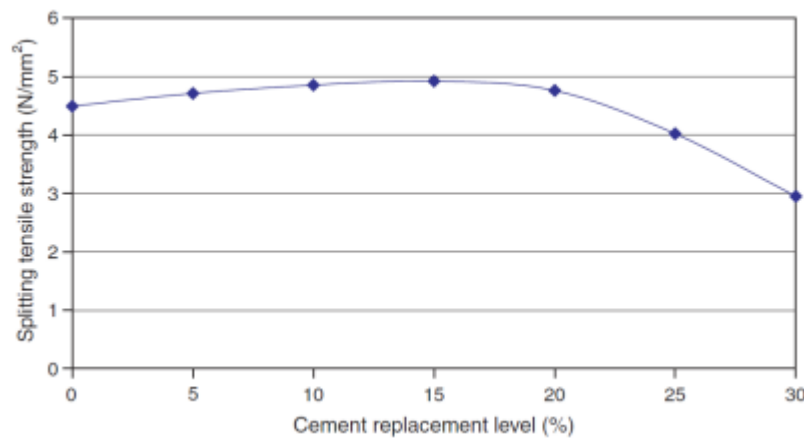


Figure 6: Splitting tensile strength of SCBA blended concretes (Ganesan, K, et al., 2003)

The tensile strength of concrete incorporating 20% Sugar Cane Bagasse Ash (SCBA) increased to 4.81 MPa. However, when the SCBA content exceeded 25%, the tensile strength decreased to 3 MPa (Ali, N., et al., 2017). Madurwar, M.V., (2013) conducted a comprehensive study on the split tensile strength of mortars with varying SCBA contents (0–25%). Testing of eleven sets of cylindrical and cubic samples revealed similar tensile strength characteristics for both shapes. While some data indicated improvements in tensile strength with SCBA, a clear relationship between the percentage of SCBA and tensile strength was not established.

Applications and Innovations in Sugarcane Bagasse

Kusuma, H.S, et.al. (2023) highlight the potential of sugarcane bagasse as an environmentally friendly composite material. The study emphasizes that bagasse, a by-product of sugarcane processing, can be utilized to produce sustainable composites. These materials are beneficial for reducing waste and promoting environmental sustainability. The research showcases how bagasse composites can be applied in various industries, contributing to a circular economy and addressing the challenges of sustainable development. De Almeida, M. A., & Colombo, R. (2023) examine the production chain of first-generation sugarcane bioethanol, focusing on the characterization and value-added applications of associated wastes. Their study demonstrates that besides producing bioethanol, sugarcane processing generates significant waste, including bagasse. This waste can be repurposed into valuable by products, thus enhancing the overall sustainability of bioethanol production. The research highlights strategies for improving waste management and creating additional value from sugarcane by products.

Mahmud, M.A, et al. (2023) explore the development of bio composite materials using sugarcane bagasse combined with modified starch. This study focuses on creating packaging materials that are both environmentally friendly and functional. The bio composites developed exhibit properties suitable for packaging applications, offering a sustainable alternative to traditional plastic materials. The research underscores the potential of sugarcane bagasse in producing high-performance, biodegradable packaging solutions. Kabeyi, M. J. B., & Olanrewaju, O. A. (2023) investigate the electricity generation potential of bagasse in conventional sugarcane factories. Their research assesses the feasibility of using bagasse as a biomass fuel for generating electricity. The study finds that bagasse has substantial potential for energy production, which can reduce reliance on fossil fuels and contribute to renewable energy initiatives. This application of bagasse aligns with sustainability goals by turning a waste product into a valuable energy resource.

The use of sugarcane bagasse ash as a partial replacement for cement in concrete presents a viable and sustainable option for enhancing concrete properties while managing waste. SCBA offers benefits such as improved durability and reduced environmental impact. According to the tests performed, it is shown a significant improvement in the properties of concrete when cement is replaced with sugarcane bagasse ash (Mulye, P., 2021). However, challenges related to variability in SCBA properties and optimal replacement levels must be addressed. Ongoing research and

development are essential for maximizing the potential of SCBA in concrete applications and promoting sustainable construction practices. Natural rubber has emerged as a promising alternative for creating biocomposites due to its ease of processing, low density, and cost-effectiveness. Paiva, F.F.G., et al. (2019) developed a prototype using sand combined with natural rubber reinforced by sugarcane bagasse fibers (see Figure 7). The hydrophilic nature of natural fibers, which is attributed to their strongly polarized hydroxyl groups, necessitates alkaline treatment (NaOH, 24 hours) to enhance the interfacial adhesion between the fiber and matrix. This treatment increased the fiber's surface roughness, likely due to the removal of surface impurities and reduction in lignin/hemicellulose. The improved contact area and better dispersion of the treated fibers contributed to increased abrasion resistance and enhanced mechanical properties.



Figure 7: Sandals prepared using sugarcane bagasse residues (Paiva, F.F.G., et al., 2019)

METHODOLOGY

Methodology for this study used systematic literature review (SLR) to identifying, evaluating, and synthesizing all available research on a specific topic. Systematic Literature Review (SLR) studies are designed to identify pertinent primary research papers, extract necessary data, analyse it, and synthesize the findings to achieve a deeper and more comprehensive understanding of the subject area. Numerous SLRs have been performed across various fields, including software engineering, medicine, and pharmacy. However, conducting an SLR is often time-consuming, labour intensive, and expensive. Consequently, researchers have developed various techniques to automate and streamline the SLR process. Kitchenham and Charters proposed a Systematic Literature Review (SLR) method for the software engineering domain in 2007 (Van Dinter, R., et al., 2021).

Research questions

This research question and its sub-questions are designed to examine different facets of utilizing sugarcane bagasse in manufacturing, such as its practical applications, benefits, limitations, and the latest technological developments. When developing a text classification model, it is essential for developers to clearly understand its objectives and application domain. To guide the systematic literature review, we have created a table of research questions that the review should address. Research Questions are given in Table 2.

Table 2: Research Question	
	Research Question
1	How does the use of sugarcane bagasse compare to traditional raw materials in terms of cost, efficiency, and environmental impact?
2	What are the properties and characteristics of sugarcane bagasse that make it suitable for manufacturing processes?
3	What are the current applications of sugarcane bagasse in manufacturing industries?

Search strategy

The goal of this review is to gather a comprehensive set of relevant primary studies on sugarcane bagasse for systematic literature reviews while excluding irrelevant studies. Achieving both high recall and high precision requires a well-crafted search strategy. This section details the review’s search strategy, including the scope (such as publication period and venues), the search method (automatic or manual), and the search string.

Search scope

The scope of this systematic literature review includes two dimensions: publication period and publication venues. Regarding the publication period, the review includes papers published from 2000 to 2024, starting from 2020 due to the flow in text mining research from that year onward. We conducted the literature search in 2020, including only studies available up to that time. As for publication venues, we searched for relevant studies in the following databases: Google Scholar, ScienceDirect, PubMed, ICI Virtual Library, IEEE Xplore, Wiley Online Library, and Springer Link.

Search method

For this systematic study, we employed an automated literature search method. This approach involves scanning electronic databases using predefined search strings. We conducted automated searches for each publication venue. To locate relevant articles on the automation of SLR studies often related to text or data mining we developed a specific search string. These search strings were refined iteratively through multiple pilot searches to enhance the precision and recall of the literature search. Additionally, the search strings were tailored to align with the requirements of each database. Van Dinter, R., et al., (2021) acknowledged the relevant studies using the study selection criteria provided in Table 3.

Table 3: Study Selection Criteria (Van Dinter, R., et al., 2021).

No.	Criterion
EC1	Papers without full text available
EC2	Duplicate publications
EC3	Papers not written in English
EC4	Papers that do not relate to the automation of systematic literature reviews
EC5	Papers that do not discuss the automation of systematic literature reviews Machine Learning and/or Natural Language Processing techniques
EC6	Studies that do not present any empirical result

DISCUSSION

Sugarcane bagasse composite leverages the high cellulose content of bagasse to create materials with remarkable strength and flexibility. According Abedom, F., et al., (2021) sugarcane is composed of 45% fiber, including 45% cellulose, 33% hemicelluloses, and 20% lignin. The cellulose fibers in bagasse enhance the mechanical properties of the composites, making them suitable for various applications, from construction materials to packaging. The ultimate advantage of using bagasse in composites is its ability to be shaped and modified easily, coupled with its cost efficiency due to the widespread availability and low processing costs. However, while bagasse composites offer promising benefits, addressing the environmental impact of the associated carbon dioxide emissions from its traditional use in power plants is crucial. Researchers are focusing on optimizing the transformation processes to maximize ecological and economic value, making bagasse an increasingly attractive material for sustainable development.

The mechanical properties of sugarcane bagasse are a focal point in its utilization for composite materials, thanks to its high cellulose content and inherent fibrous structure. Tensile strength is a critical property of sugarcane bagasse composites, indicating their ability to withstand stretching forces without breaking. Bagasse’s high cellulose content, with fibers forming a substantial part of its composition, contributes significantly to its tensile strength. These fibers are known for their strong intermolecular bonds, which enhance the material’s resistance to tensile stress. Composites made from sugarcane bagasse demonstrate considerable tensile strength, making them

suitable for applications requiring durability under pulling forces, such as structural reinforcements and flexible components.

Flexural strength measures a material's ability to resist bending forces, reflecting its performance under load when subjected to bending or flexing. Sugarcane bagasse composites exhibit notable flexural strength due to the alignment and bonding of cellulose fibers within the matrix. The fibrous structure provides resistance against bending, allowing the composites to maintain their shape and integrity under load. This property is particularly advantageous in construction and packaging applications where materials need to support loads without excessive deformation. Impact resistance refers to a material's ability to absorb and withstand sudden, forceful impacts without failing. Sugarcane bagasse composites show good impact resistance thanks to the tough, fibrous nature of the bagasse. The cellulose fibers help distribute the impact energy across the material, reducing the likelihood of cracks or fractures. This quality makes bagasse composites suitable for applications where the material may experience sudden or high-impact forces, such as in protective packaging or construction elements exposed to dynamic loads. Overall, sugarcane bagasse's tensile strength, flexural strength, and impact resistance make it a versatile and robust material for various applications, with ongoing research aimed at enhancing and refining its performance in composite materials.

Sugarcane bagasse, the fibrous residue left after extracting juice from sugarcane, has garnered significant attention for its potential in various applications due to its high cellulose content and sustainability. The exploration of applications and innovations in sugarcane bagasse reflects a growing interest in utilizing this by-product more efficiently and sustainably. According to Mulye, P., (2021) the tests performed, it is shown a significant improvement in the properties of concrete when cement is replaced with sugarcane bagasse ash. Sugarcane bagasse's thermal insulation properties make it an excellent candidate for use in construction materials. Its high cellulose content provides effective thermal resistance, which can be used in insulation boards and panels to improve energy efficiency in buildings. Innovations in processing techniques are enhancing the performance of bagasse-based insulation materials, making them more competitive with traditional options.

Bagasse is used to manufacture composite panels that can replace wood and other materials in construction. These panels exhibit good mechanical properties, including tensile and flexural strength, making them suitable for use in furniture, wall panels, and flooring. Research into optimizing the composition and bonding agents in these composites is ongoing to improve their performance and durability. Given the global push towards reducing plastic waste, sugarcane bagasse is increasingly used in eco-friendly packaging solutions. Bagasse-based packaging materials offer a biodegradable alternative to conventional plastics. They can be moulded into various forms, such as trays, boxes, and cups, providing a sustainable option for food and beverage packaging. Bagasse is also used in the production of paper and cardboard. Its high cellulose content makes it an effective raw material for creating high-quality paper products. Innovations in processing techniques are enhancing the quality and efficiency of bagasse paper production, contributing to reduced deforestation and a more sustainable paper industry.

Traditionally, bagasse has been used for energy generation in sugarcane mills through combustion. Innovations in technology are focusing on improving the efficiency of this process, such as advanced combustion techniques and the integration of bagasse with other biomass sources. Enhanced energy recovery methods are reducing emissions and increasing the sustainability of bagasse-based power generation. Research is exploring the conversion of bagasse into biofuels, such as ethanol and biogas. These processes involve breaking down the cellulose and hemicellulose components of bagasse to produce renewable energy sources. Advances in enzymatic hydrolysis and fermentation technologies are improving the efficiency and economic viability of these biofuel production methods.

CONCLUSION

This study concludes that sugarcane bagasse, a by-product of sugar production, is a promising raw material for various manufacturing applications due to its abundance, low cost, and environmental benefits. The utilization of sugarcane bagasse can significantly reduce waste, lower environmental impact, and contribute to sustainable practices across multiple industries, including biofuel production, construction materials, packaging, and paper manufacturing.

The review demonstrates that sugarcane bagasse high cellulose content and unique mechanical properties, such as compressive, tensile, and flexural strength, make it suitable for developing composite materials. These materials offer competitive advantages, including enhanced durability, strength, flexibility, and thermal insulation, which are

crucial for applications in construction, packaging, and other industrial sectors. However, challenges remain, such as optimizing the mechanical properties, ensuring consistent quality, and managing variability in raw material characteristics. Future research should focus on improving processing techniques, developing innovative applications, and exploring new technologies to maximize the potential of sugarcane bagasse in sustainable manufacturing. By addressing these areas, future research can help fully realize the potential of sugarcane bagasse as a sustainable material in various manufacturing sectors.

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IMPROVE INSTALLATION WORK BY DESIGNING AND DEVELOPING WELDING FIXTURES AS AN INSTALLATION TOOL.

Mohd Amiruddin Abd. Aziz¹

M. Hamdi Khosran²

Mohd Bukhari Md. Jahi³

¹Mechanical Engineering department, Politeknik Sultan Ahmad Shah (POLISAS), Malaysia,
(Email: amiruddin@polisas.edu.my)

²Mechanical Engineering department, Politeknik Merlimau Melaka (PMM), Malaysia,
(Email: hamdi@pmm.edu.my) ³ Mechanical Engineering department, Politeknik Sultan Azlan Shah (PSAS),
Malaysia, (Email: mohd_bukhari@psas.edu.my)

Abstract: - Metal work commonly used in residential, commercial, and industrial buildings includes the main gate, door and window grille which are typically metals that are installed to the building structure for privacy, security, and aesthetic appeal. The process starts with measuring, design, welding and assembly parts, installation, and finishing. Installing a gate or door grille can present several challenges and some common problems and considerations to be aware of are incorrect sizing, improper placement compatibility issues, structural integrity, aesthetic concerns, security concerns, noise transmission, and maintenance access. Tools, skills, installation method, weather and moisture exposure, and regulatory compliance are the things that should be considered. Welding fixtures for gate or door grille installation are critical tools designed to enhance the precision, stability, and efficiency of the installation process. These fixtures ensure accurate alignment and secure positioning of gate components, leading to consistent and high-quality welds. The design process involves identifying specific requirements, such as gate dimensions and material properties, followed by creating detailed models using Computer Aided design (CAD) software. Essential components of the fixtures include adjustable clamps, locating pins, and supports, which hold parts in place securely. Constructed from durable materials, these fixtures are built to withstand the welding environment. Prototyping and testing are conducted to validate the design, with final adjustments made for optimal performance. By improving accuracy, reducing setup time, and enhancing safety, welding fixtures for gate installation significantly improve the efficiency and quality of the installation.

Keywords – Welding tools; Welding fixtures; Residential metal work.

Introduction

Metal base products are a versatile and reliable choice for various applications in home construction and interior design. Their durability, low maintenance, and aesthetic options make them a valuable addition to any home, ensuring both functionality and style. Whether used in structural components, roofing, interior design, or furniture, metal base products offer a range of benefits that enhance the quality and longevity of residential spaces. The benefits of using them include strength and stability, low maintenance, energy efficiency and design flexibility.

In Malaysia, products made from metal bases that are commonly used in houses are structural steel beams, such as I-beams or H-beams, provide critical support in residential construction. They are made from high-strength steel and are used in the framework of buildings. These beams support roofs, floors, and walls, allowing for open floor plans and larger spans between supports. They are essential in ensuring the structural integrity of a home. Metal roofing materials, often made from wood, steel or aluminium are designed to protect homes from weather elements. They come in various styles, including corrugated panels and shingles. Metal roofs are highly resistant to weather conditions, fire, and pests. They are also energy-efficient, reflecting heat from the sun, which helps in reducing cooling costs. Metal frames, commonly made from aluminium or steel, are used in windows and doors

for their durability and strength. These frames provide excellent support and resistance to warping and weather-related damage. They can be designed for enhanced security and energy efficiency by incorporating thermal breaks.

Metal frame such as door and window grilles are typically metal that are installed into doors to increased privacy and security is common especially in our country. They are durable and require low maintenance and it is often used in indoor settings due to less resistance to weather and corrosion. Most of the houses in a residential area installed door and window grilles as a privacy, security, and decorative purposes by enhancing the overall look of a home. In areas with higher crime rates or even the residential area is guarded, door or window grilles might be installed to add an extra layer of security.

The process of producing the grilles can be broken down into several stages includes measuring, design, welding and assembly parts, installation, and finishing. Every stage has their own challenges and installing a grille can present several challenges. The challenges vary widely based on type and materials, tools, incorrect sizing, improper placement, compatibility, structural integrity, aesthetic, security concerns, noise transmission and maintenance access including the worker's skill level. The basic installation steps including positioning, securing and finishing touches the grilles. Place the grille into the door or windows and verify the fit. Make any necessary adjustments to ensure a perfect fit. After positioning, the grille secured using screws or welding to ensure its does not rattle or move. Once the grille is installed, inspect the door for any rough edges or gaps. Apply additional sanding or adjustments as needed. Clean the area around the installation to remove any debris or dust.

It's important to be aware of the potential challenges and address them proactively. Installation might require specific tools and skills, such as cutting precise openings in the door. Ensure you have the right tools such as jigsaw, drill and are comfortable using them. Incorrect installation methods can lead to poor fit or damage to the door or grille. Install carefully and secure the grilles firmly to avoid rattling or coming loose over time. In areas with high humidity or direct weather exposure, grilles can corrode or degrade if made from unsuitable materials. It is important to choose weather-resistant materials, such as stainless steel or aluminium for installations in these environments. Some buildings may have regulations regarding modifications to doors, especially fire doors. It is necessary to check local building codes and regulations to ensure compliance before installing a grille, particularly in commercial or multi unit residential buildings.

Literature Review

Jigs and fixtures are essential tools in the production of vehicles, contributing significantly to production efficiency, quality, and consistency. These tools are designed to hold, support, and locate parts during manufacturing processes such as machining, assembly, and welding, ensuring that every part is produced within the specified tolerances (Kalpakjian and Schmid, 2014) to ensure the components such as panels, chassis parts, and engine mounts are precisely aligned, resulting in high-quality welds and improved vehicle safety and performance. Custom made welding jigs were incorporated into the production line by the manufacturer. A 20% increase in production efficiency and a significant reduction in weld defects were achieved as a result of the flexible design of these jigs, which also reduced setup times to accommodate a variety of vehicle types.

The aerospace industry demands the highest levels of precision and reliability. Jigs and fixtures are used to assemble aircraft components, ensuring that critical parts such as fuselage sections and wing assemblies are accurately positioned and securely welded. The company developed advanced welding fixtures for the assembly of aircraft fuselage sections. These fixtures were equipped with precision alignment tools and real-time monitoring systems, ensuring the highest levels of accuracy. This led to a 15% improvement in production speed and a reduction in rework costs. In construction, jigs and fixtures are used in the fabrication of steel structures such as beams, columns, and trusses. They ensure that components are accurately aligned and welded, contributing to the overall strength and stability of the structures. According to Groover (2016), the use of jigs and fixtures significantly enhances the repeatability and accuracy of manufacturing operations

In the manufacturing, particularly in welding processes, the utilization of jigs and fixtures has become paramount for enhancing productivity, accuracy, and quality. Jigs and fixtures serve as tools to hold and support workpieces during operations, ensuring that the components are correctly aligned, and stable while being welded. This is important to make sure the product is welded as perfect as can and no required rework. Chen et al. (2019) presented a study on rapid change fixtures that cut setup time by 30%, which resulted in increased throughput. Consistent application of well-designed jigs and fixtures ensures better alignment and repeatability, thus improving weld quality. For improved accuracy and precision, Jigs and fixtures are designed to hold components in precise positions, minimizing human error and ensuring that welds are accurate and consistent. This precision is particularly important in industries where tight tolerances are required. Kumar and Sharma (2022) investigated the effect of precision fixtures on weld quality. Their research showed that high-precision fixtures significantly reduced the occurrence of weld defects by ensuring proper alignment and positioning of workpieces.

Ahmed et al. (2024) highlighted the development of self-calibrating fixtures that automatically adjust to maintain high precision over time. These fixtures contributed to consistent weld quality by minimizing deviations caused by wear or misalignment.

In term of efficiency enhancement, by securely holding components in place, jigs and fixtures reduce the time spent on aligning and repositioning parts during the welding process. This leads to faster production times and increased throughput. Using jigs and fixtures enhances the safety of welding operations by providing a stable platform that minimizes the risk of accidents. A research article by Wang and Zhang (2021) demonstrated how automated welding fixtures, combined with robotic systems, could significantly decrease cycle times and improve weld quality. The integration of automation with jigs and fixtures has been explored to enhance precision and reduce manual intervention. Their findings indicated that automation can cut setup times by up to 50%. Effective jig and fixture design has been shown to reduce setup times, leading to improved overall production efficiency. This is especially important when welding large or heavy components. The use of jigs and fixtures can lead to cost savings by reducing the amount of rework and scrap produced. Consistent and accurate welds result in fewer defects and higher-quality products. A review by Patel et al. (2023) discussed cost effective solutions and design modifications to make advanced fixtures more accessible. Regular maintenance and calibration are essential for optimal performance.

The use of jigs and fixtures in the welding process is indispensable for manufacturers aiming to produce high-quality and cost-effective products. By enhancing accuracy, improving production efficiency, ensuring safety, and reducing welding distortions, jigs and fixtures play a crucial role in modern manufacturing operations. As technology advances, the development of innovative jigs and fixtures will further revolutionize the welding industry, enabling more complex and precise welding processes. A study by Liu et al. (2020) introduced modular and adjustable jigs allow for rapid reconfiguration, improving flexibility in production lines with varying workpieces which significantly reduces setup time. The jig can be reconfigured quickly to accommodate different welding tasks. This adaptability led to a reduction in setup times by approximately 40%, enhancing overall production efficiency. A review by Yang et al. (2024) predicted future research is likely to focus on smart fixtures equipped with sensors and data analytics to further enhance production efficiency and quality control. The literature indicates that the application of advanced jigs and fixtures in welding significantly improves production efficiency, weld quality, and flexibility.

Door grilles, also known as door vents, are essential components in modern buildings, providing both functional and aesthetic benefits. They allow for air circulation between rooms while maintaining privacy and security. There are several steps need to be taken to install the grille including measurement and marking, cutting and finishing. Some of the steps are quite challenging especially if the product is large and heavy. Installation might require specific tools and skills, such as cutting precise openings in the door. Ensure the right tools and are comfortable using them should be considered. Incorrect installation methods can lead to poor fit or damage to the door. So, it is important to follow the installation steps carefully. In areas with high humidity or direct weather exposure, grilles can corrode or degrade if made from unsuitable materials. Choose weather-resistant materials, such as stainless steel or treated aluminium are more suitable in these environments. Some buildings may have regulations regarding modifications to doors, especially fire doors. Check local building codes and regulations to ensure compliance before installing a grille.

Methodology.

The design and development of the welding fixtures as installation tools is done using the design thinking methodology. To make the procedure less complex, a few changes were made. This strategy is used because the technique places an elevated importance on helping people understand their problems, encouraging innovation, and employing an iterative process to create creative and useful solutions. **Figure 1** illustrates the stages of design thinking:



Figure 1: *Design Thinking Process*

i. Empathize.

At this stage, it's critical to have an in-depth understanding of the user's requirements, background, and difficulties. Workers were interviewed to gather information about their viewpoints and experiences, and their interactions and behaviour were observed by observing them in their natural environment. A comprehensive and deep comprehension of the users and their requirements was established. Common issues during the process include weather, reworks, special tools, client wants and satisfaction, task completion time, and special tools.

ii. Define.

The he information gathered based on empathy was analysed to define a clear and actionable problem statement. A well-defined problem statement or design challenge that provides a focus for generating solutions. The installation process is one of the challenging tasks for them since they want to complete as fast as possible. Working in residential areas needs to be fast because they don't want to disturb the residents. Furthermore, the weather is not convenient for work, it is too hot, and suddenly raining is an issue. In this case, the installation duration was longer than it should have been.

iii. Ideate.

In this stage, ideas and potential solutions are generated. Free thinking and generating diverse ideas are encouraged during brainstorming, as are visual representations of ideas to explore their feasibility. The knowledge of jigs and fixtures, and connections between different concepts and ideas is explored until the best idea and solution is found. The best idea for a solution is then represented in sketching and CAD drafting, as shown in **Figure 2** and **Figure 3**.

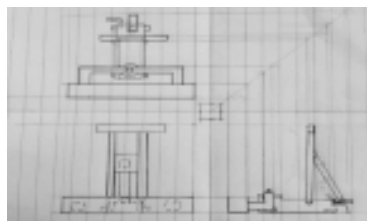


Figure 2: *Sketching*

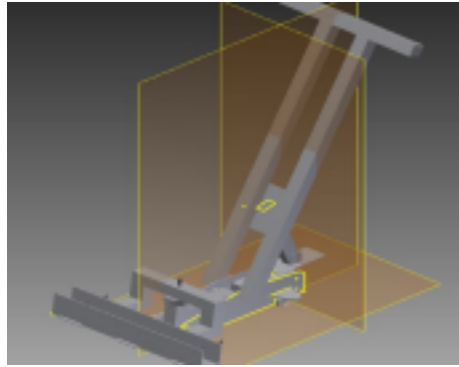


Figure 3: CAD Drafting.

iv. Prototype.

The tool is to build representations of ideas to explore their viability and gather feedback. The modification for this stage has been done where the real tool was developed. The performance of the tool in real-world working conditions will be tested. The tool as shown in **Figure 4**.



Figure 4: The Installation Tools.

v. Test.

In this stage, the tool is evaluated with users to gather feedback and refine solutions. How users interact with the tool, the strengths and weaknesses of the tool, and areas for improvement are very important inputs to make necessary adjustments that are improved and aligned with user needs. The steps to use the tool are shown in **Figure 5**, and the real working conditions using the tool are shown in **Figure 6**.

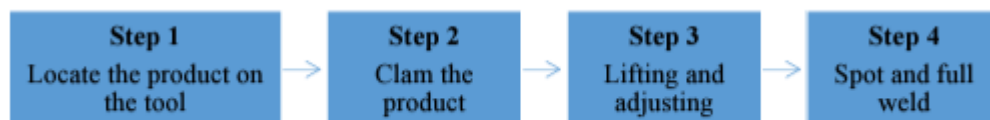


Figure 5: Steps to use the tool.



Figure 6: *Installation work using tools.*

Result and Discussion

In manufacturing engineering, designing and creating welding fixtures as an installation tool is a necessary field of study. To ensure accuracy, stability, and repeatability during the welding process, specialized tools called welding fixtures are used to hold components in place. The quality, productivity, and safety of the welding process are all directly impacted by the capability of welding fixtures.

These fixtures are mainly used to hold the grille in place in the proper orientation so that the welds are properly and precisely placed. This is crucial because even small variations in the placement of the welds can result in serious structural failures or weaknesses. Fixtures minimize distortion from heat during welding, lower worker error, and decrease installation time overall.

There are several challenges in designing welding fixtures. Making sure the fixture is adjustable to various part geometries and welding positions, as well as strong enough to endure the forces applied during welding, including thermal expansion and contraction, is one of the main challenges. The fixture must also permit the welder adequate access to the weld joints and not obstruct the welding procedure itself.

Another important consideration in fixture design is the selection of materials. In addition to being strong and resistant to the high temperatures generated during welding, the materials must be lightweight enough to be easily handled and positioned. Fixture designs are often created and analyzed using computer-aided design (CAD) and simulation tools before any physical manufacturing. With the aid of this software, engineers can simulate the performance of the fixture in different scenarios, spot possible flaws, and maximize the design's reliability, stability, and usability.

Industrial applications will be greatly impacted by the study and development of advanced welding fixtures. Well-designed fixtures have a significant positive impact on production efficiency, waste reduction, and product quality in high-volume manufacturing settings.

Real-world work experience is used to evaluate the tools. During the installation process, the workers used the tools to assess their performance. The primary indicators of a tool's performance are the amount of time it takes to set up, how simple and helpful the installation process is, and how quickly the job is completed.

Conclusion

The quality of the grille and installation timelines are directly impacted by the accuracy, consistency, and efficiency of the welding process, all of which are ensured by welding fixtures. The purpose of this tool is to locate, hold, and support the product while installation work is being done. With this tool, installation work can be completed in a shorter amount of time because it makes the task easier and quicker in terms of setup time. Other benefits include lower labor costs and skill requirements, as well as higher productivity and quality maintenance. Fixture design presents several challenges, including those related to durability, adaptability, and material selection, which highlight how difficult the work is. To overcome these challenges, Inventor uses a computer-aided design tool to create fixtures that are more complex, versatile, and dependable.

The installation tools can, as shown by the results, increase the installation process, ensure quality, and minimize

installation time. The development of advanced welding fixtures will continue to be a key area of focus as manufacturing and technology advance, in part due to the adoption of automated systems and the need for increased flexibility. Future studies should push the boundaries of what these tools can accomplish, resulting in more advancements in manufacturing or production processes. The enhancement of welding fixtures is crucial for boosting productivity, cutting expenses, and upholding the exacting standards needed for current industrial manufacturing.

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MULTICULTURAL MOTIVES FOR INVOLVEMENT IN SPORT AMONG MALAYSIANS

Vincent Parnabas¹, Julinamary Parnabas², Antoinette Mary Parnabas³, Nagoor Meera Abdullah¹, Mohamad Nizam Mohamed Shapie¹, Mohamad Rahizam Abdul Rahim¹

¹Faculty of Sport Science and Recreation, Universiti Teknologi MARA (UiTM), Shah Alam, 40450 Selangor, Malaysia. vincentbarnabas@yahoo.com or vincent@uitm.edu.my

²SMK King Edward VII Taiping, Perak, Malaysia.

³Medical Unit, Hospital Taiping, Taiping, Perak, Malaysia.

Abstract

Malaysia is a very unique country in the world, consisting of people from different cultures, ethnic background and religion. Therefore, it can be considered as a multiracial or multicultural nation consisting of Malays, Chinese, Indians and others. Even though, they inherited different diversity of cultural background but live together in peace and harmony since independence from British colonist. Additionally, sports act as a multicultural event, which is capable to build good relationship, tolerance and understanding among people from different races. Since they belong to various ethnic, it can influence their motives of taking part in sports differently. According to psychologist, motives can be defined as the intentions that cause a person to move, act or to behave in a certain way. It is important to understand how culture and ethnicity play an important role in participating in sports. Psychologist categorized motivation into Intrinsic motivation and Extrinsic motivation. Intrinsic motivation refers to benefits, happiness and satisfactions, while extrinsic motivation determined by external rewards. Both types of motivation can determine one's involvement in sports. Moreover, according to personality theories, personality trait that inherited by certain ethnic can also influence people's participation in sports. Past studies showed that people who took part in sports for pleasure, friendship, fun, healthy lifestyle, status, learning new skills, challenges and to enhances self esteem. However, research comparing these motives on different ethnic taking part in sports, is very limited. Therefore, the objective of this study is to explore the motives for participating in sports among different ethnics in Malaysia. Three hundred student-athletes consisting of Malays (N=160), Chinese (N=80), Indians (N=40) and others (N=20) as a multicultural sample were selected to participate in this study, in a sport competition between universities or Malaysian University Sports Council (MASUM). A 46-item questionnaire called Purpose of Sport Questionnaire designed by Duda's (1989), was used in this research. The result showed that the highest motive for a Chinese ethnic participating in sport venture physically active lifestyle. Meanwhile, Malays ethnic for mastery or cooperation and Indians for high status career. While other races indicated self-esteem, as their main motives in sports. Sports psychologists, coaches or sport officers might use this research to develop appropriate sport environment and opportunity for each ethnicity, to maintain their cultural background, which might influence their motives in sport involvement. This will also encourage sports as a multicultural event with the participation of all races in Malaysia.

Key Words: Multicultural, Motives, Malay, Chinese, Indian.

Background

Malaysia is one of the most diverse countries in the world, home to individuals from various cultures, ethnic backgrounds and religious beliefs. Therefore, it can be considered as a multiracial or multicultural nation consisting of Malays, Chinese, Indians and others.

The Malaysian population consists of people from different races and religions. The three main races that make up the majority of Malaysians are Malays, Chinese, and Indians. Sabah's population consists of 32 ethnic groups and the major ethnic is Kadazan Dusun while Sarawak population consists of 27 ethnic groups and Iban is the major ethnic group. In 2015, the prefix data of Malaysian population is 30,995,700 and the divisions by ethnics are as follow: Bumiputera - 19,150,900 (61.8%); Chinese - 6,620,300 (21.4%); Indian - 1,988,600 (6.4%); Others - 270,700 (0.9%) and Non-Malaysian Resident - 2,965,300 (9.6%) (Malaysia 2016).

Despite having inherited a diverse range of cultural backgrounds, Malaysians have coexisted peacefully and harmoniously since gaining independence from British colonial rule. However, no one can argue that sport as a powerful activity, that can break barriers and bring people from diverse backgrounds together regardless of their skin colour, biological trait, ethnic, race, culture and religion. Additionally, sports act as a multicultural event in Malaysia, which is capable to build good relationship, platform of interactions, tolerance and understanding among people from different races. Since people belong to various ethnic, it can influence their motives of taking part in sports differently.

Motives can be defined as the intentions that cause a person to move, act or to behave in a certain way (Brehm, 2004). In other words, it's a goal-oriented behavior, which initiated a person to act. Taking part in sports could be due to various reasons. Past studies, showed that the major motives student-athletes have for their participation in sports are enjoying, arousal, thrills, excitement, achievement, fitness, energy release, skill development, friendship, fun, to become physically fit and healthy lifestyle (Kovacs, Kovacs, Szabo, Dan, Szakal, Moravec, Szabo, Olajos, Csukonyi, Papp, Orsi & Pusztai, 2022; Bennett, Mousley, Kitchin & Ali Choudhury, 2007; Devine & Lepisto, 2005; White & Duda, 1994; Gill, Gross & Hudleston, 1983).

Motivation can be divided into two categories, namely intrinsic and extrinsic motivation. Intrinsic motivation is taking part in sport for pleasure, curiosity, interest and for fun. While extrinsic motivation oriented by external factors such as money, material factors, public recognition, prizes, medals or certificates (Kovacs, Kovacs, Szabo, Dan, Szakal, Moravec, Szabo, Olajos, Csukonyi, Papp, Orsi & Pusztai, 2022).

Additionally, according to Personality theories, biological traits in particular may be crucial for participation in sports. In other words, personality trait that inherited by certain ethnic can also influence people's participation in sports. According to Leonard (1998), there are two ways to classify races biologically: (a) a scheme based on observable physical characteristics (example skin colour, hair texture, eye shaped, lip thickness) called phenotypes, and (b) a scheme based on unobservable genetic features (example blood type) called genotypes. Individuals, who belonging to certain race are united by their shared genes, culture, religion, beliefs and traditions, are genetically more similar to one another than to those of different races.

A variety of cultural comparative studies have been conducted in the field of sport psychology. Student-athletes from different cultural background showed different motives for taking part in sports. Some progress has been made in addressing this problem in developed countries but a similar research is yet to be conducted in Malaysia. For example, research of Rosenthal and Smith (1996), showed that health-promoting behaviors as the main factor of Australian high school students' taking part in sports. Since lack of research in this area, there is still uncertain on motives of different cultural groups in Malaysia.

There is a need to plan and attract people to participate in sports, but this will depend on their sport participation motives. Understanding the motives of athletes can help coaches, teachers and individuals to improve coaching, maintain motivation, prevent burn out and reduce dropout rates in sport.

Furthermore, research comparing different ethnic athletes directly are very limited. Comparing motives of different races on taking part in sports, can bring a lot of new knowledge for cultural studies. The present research

will evaluate the motives that encourage different ethnics, especially Malay, Chinese and Indians, taking part in sports. Three major ethnics in Malaysia took part in this study are Malays, Chinese and Indians. Motives for taking part in sports include the following: Mastery or cooperation, physically active lifestyle, good citizen, competitiveness, high status career, enhance self-esteem and social status or getting ahead.

Research Methodology

The respondent consisted of 300 student-athletes, Malay ethnic (N=160), Chinese (N=80), Indian (N=40) and others (N=20) as a multicultural sample. They were selected to participate in this study, in a sport competition between universities or Malaysian University Sports Council (MASUM). The Participants' in this study were identified and grouped according to their race such as as 'Malay', 'Chinese', 'Indians' or others in the demographic questionnaire.

A 46-item questionnaire called Purpose of Sport Questionnaire designed by Duda's (1989) was used. Students will indicate their responses to Duda's (1989) questionnaire using Likert-typed scale ranging from strongly agree (5) to strongly disagree (1). Seven factors were derived from the questionnaire. They are Mastery or Cooperation, Physically Active lifestyle, Good Citizen, Competitiveness, High Status Career, Enhance Self-Esteem, and Social Status or Getting Ahead.

Findings

Motives of Student-athletes of Malay ethnic

The results showed that the motive of Malay ethnic respondents participated in sports were highest in Mastery or Cooperation (mean= 4.67), followed by Enhance Self Esteem (mean= 4.40), Physically Active Lifestyle (mean= 4.18), Good Citizen (mean= 3.91), Social Status or Getting Ahead (mean= 3.55), Competitiveness (mean= 3.21) and High-Status Career (mean= 2.95). The results are indicated at Table 1.

Table 1: Motives of Student-athletes of Malay ethnic (n=160)

Motives	Mean
Mastery of Cooperation	4.67
Enhance Self Esteem	4.40
Physically Active Lifestyle	4.18
Good Citizen	3.91
Social Status or Getting Ahead	3.55
Competitiveness	3.21
High Status Career	2.95

Motives of Student-athletes of Chinese ethnic

The results showed that the motive of Chinese respondents participated in sports were highest in Physically Active Lifestyle (mean= 4.56), followed by Competitiveness (mean= 4.33), Enhance Self Esteem (mean= 4.10), Mastery or Cooperation (mean= 3.88), Social Status or Getting Ahead (mean= 3.59). High Status Career (mean= 3.44) and Good Citizen (mean= 2.78). The result shown in Table 2.

Table 2: Motives of Chinese Student-athletes (n=80)

Motives	Mean
Physically Active Lifestyle	4.56
Competitiveness	4.33
Enhance Self Esteem	4.10
Mastery of Cooperation	3.88
Social Status or Getting Ahead	3.59
High Status Career	3.44
Good Citizen	2.78

Motives of Student-athletes of Indian ethnic

The results showed that the motive of Indian respondents participated in sports were highest in High Status Career (mean= 4.75), followed by Social Status or Getting Ahead (mean= 4.62), Physically Active Lifestyle (mean= 4.36), Enhance Self Esteem (mean= 2.99), Good Citizen (mean= 2.84), Mastery or Cooperation (mean= 2.45) and Competitiveness (mean= 2.13). Table 3 below showed motives of student-athletes of Indians.

Table 3: Motives of Student-athletes of Indian (n=40)

Motives	Mean
High Status Career	4.75
Social Status or Getting Ahead	4.62
Physically Active Lifestyle	4.36
Enhance Self Esteem	2.99
Good Citizen	2.84
Mastery of Cooperation	2.45
Competitiveness	2.13

Motives of Student-athletes of Others ethnic

Other ethnic of student-athletes in this study are included Sabahan, Sarawakian and foreigners. The results showed that the motive of others ethnic respondents participated in sports were highest in Enhance Self Esteem (mean= 4.81), followed by High Status Career (mean= 4.67), Physically Active Lifestyle (mean= 4.25), Competitiveness (mean= 3.77), Good Citizen (mean= 3.63), Mastery or Cooperation (mean= 3.27) and Social Status or Getting Ahead (mean= 2.93). Table 4 below showed motives of student-athletes of others ethnic.

Table 4: Motives of Student-athletes of Others ethnic (n=20)

Motives	Mean
Enhance Self Esteem	4.81
High Status Career	4.67
Physically Active Lifestyle	4.25
Competitiveness	3.77
Good Citizen	3.63
Mastery of Cooperation	3.27
Social Status or Getting Ahead	4.62

Discussions

Motives of Malay Student-athletes

The results showed that the motive of Malay respondents participated in sports were highest in Mastery or Cooperation. Mastery, which included as intrinsic motivation, will encourage student-athletes emphasis on their competency and work hard to perform their skills. According to the competence motivation theory people engage in sports as a means of mastering their surroundings (Cox, 2011). This is achieved through the learning of sports-skills (Anshel, 2011). The successful mastery of sport skills resulted in the experiencing pleasant emotions and increased self-confidence.

Motives of Chinese Student-athletes

The results showed that the motive of Chinese respondents participated in sports were highest in Physically Active Lifestyle. Physically active lifestyle is the motive to take part in sports for physical reasons, notably health, weight or keeping fit (Kilpatrick, Hebert & Bartholomew 2005; Wann, 1997). Taking part in physical activity are important to reduce the risk of coronary heart disease, cancers, obesity and many other health related problems (Adair, 2008; Allender, Cowburn, & Foster, 2006). Taking part in sports can increase the level of physical activity, as an ideal way to reduce health problems. Taking part in sport as a physically active lifestyle enhances the fitness level, improves the immune system, mental health, maintaining healthy bones and increases the effective functioning of the body organ. Taking part in sport can reduce health problems like cardiovascular diseases, cancer, diabetes and depression. In other words, engaging in sports can improves overall well-being, physically and psychologically.

Motives of Indian Student-athletes

The results showed that the motive of Indian respondents participated in sports were highest in High Status Career. Participation and winning in mega sporting events by a large number of talented and professional athletes along with awards, endorsements and government services motivated youngsters to build a career in physical education and sports (Gulia, 2017). There are many career opportunities in the sports world. Excellency in sports can provide a wide range of job opportunities such as coach, personal trainer, sports marketer, sports administration and so on. Besides that, they also possess high skill or experience in certain sports which can be considered as a plus point to get a job.

Motives of Student-athletes of Other ethnic

The results showed that the motive of other ethnics' respondents participated in sports were highest in Self-esteem. Self-esteem reflects how people feel about themselves and is a multifaceted construct related to other psychological constructs such as self-image, self concept, self-perception, self-confidence, self-acceptance, self-respect and self-worth (Hagen, Havnen, Hjemdal, Kennair, Ryum & Solem, 2020). There are many

advantages of positive self-esteem on student-athletes which can benefit overall well-being and boost abilities. Well being has been defined as the combination of feeling good and functioning well, the experience of positive emotions such as happiness and contentment as well as the development of one's potential, having some control over one's life, having a sense of purpose and experiencing positive relationships (Huppert, 2009).

Conclusion and Recommendations

This research showed that the motive of taking part in sports among different ethnic groups is various. A Malay respondent group taking part in sport for mastery or cooperation, Chinese for physically active lifestyle, Indians for High Status Career, while other ethnics for Self-esteem.

Sports psychologists, coaches or sport officers might use this research to develop appropriate sport environment and opportunity for each ethnicity, to maintain their cultural background, which might influence their motives in sport involvement. This will also encourage sports as a multicultural event with the participation of all races in Malaysia.

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FAKTOR PENDORONG BUDAYA KONSUMERISME GOLONGAN MILLENNIAL LUAR BANDAR TERHADAP PEMBELIAN PRODUK BERASASKAN PERTANIAN SECARA ATAS TALIAN

Syahrul Nizam Salam^{1*}, Ghazali Sulaiman², Abdul Said Ambotang³, Muhammad Asyraf Che Amat⁴, Syafiqah Nadzirah Salam⁵

¹ Pusat Penataran Ilmu dan Bahasa, Universiti Malaysia Sabah, Kampus Antarabangsa Labuan, W.P Labuan, Malaysia

² Institut Aminuddin Baki Cawangan Sabah, Kementerian Pendidikan Malaysia, Kota Kinabalu, Malaysia

³ Fakulti Psikologi dan Pendidikan, Universiti Malaysia Sabah, Kota Kinabalu, Malaysia

⁴ Fakulti Pengajian Pendidikan, Nama Universiti Putera Malaysia, Serdang, Selangor, Malaysia

⁵ SK Metalun, Kementerian Pendidikan Malaysia, Belaga Sarawak, Malaysia

*Koresponden: syahrulnizam.salam@ums.edu.my

Abstrak:

Transformasi digital yang berlaku pada masa kini telah memberikan kesan yang signifikan sebagai faktor pendorong yang menggalakkan aktiviti golongan millennial termasuk yang berada di luar bandar untuk melakukan pembelian secara dalam talian. Meskipun demikian, masih terdapat syarikat-syarikat baharu dan lama, masih gagal mendapatkan prospek untuk barangan yang mereka pasarkan terutama berasaskan pertanian. Maka dengan itu, kajian berkenaan gelagat yang menjadi faktor pendorong budaya konsumerisme golongan belia luar bandar perlu dikaji daripada pelbagai lapisan masyarakat secara dalam talian. Dalam usaha untuk merealisasikan, kajian ini dilakukan dengan menggunakan reka bentuk kajian Mixed Method. Kaedah temu bual dan pemerhatian dilakukan sebagai kaedah kutipan data. Dapatan kajian ini menunjukkan terdapat dua bentuk faktor yang menjadi faktor pendorong budaya konsumerisme golongan millennial luar bandar iaitu faktor dalaman dan luaran. Antara faktor dalaman ialah persepsi, pengalaman dan ilmu pengetahuan. Manakala, faktor luaran ialah pengaruh rakan sekerja, rakan sebaya dan strategi promosi. Dapatan kajian ini membantu memberikan maklumat berkenaan dengan strategi pemasaran produk berasaskan pertanian secara dalam talian khususnya luar bandar yang mempunyai akses internet yang baik. Sumbangan kajian ini juga dapat menjadi perintis kepada para pengkaji akan datang untuk meneroka dan memahami dunia digital luar bandar dan kepentingannya dalam memperkasakan sistem ekonomi luar bandar berteraskan penjualan produk pertanian dalam talian..

Kata kunci: Budaya Konsumerisme, Golongan Millennial, Luar Bandar, Produk Berasaskan Pertanian, Dalam Talian

1.0 Pengenalan

Pengaruh digital memberikan kesan yang signifikan terhadap kehidupan manusia pada hari ini, yang mana kehidupan di alam digital menjadi budaya kehidupan generasi millennial hari ini yang dianggap sebagai pelengkap sistem sosial kehidupan manusia (Ratnasari, 2023). Sehubungan itu, dalam aspek ekonomi pengaruh digital menjadi salah satu pilihan penting bagi generasi ini untuk melakukan aktiviti harian. Dalam aspek suatu perniagaan kajian terhadap prospek jualan merupakan perkara terpenting yang perlu dilakukan oleh seseorang itu dalam usaha untuk memastikan barangan jualan yang dibuat mendapat sumber pasaran (Shen & Yuan, 2020).

Budaya dan pembudayaan penggunaan digital dalam kehidupan masyarakat hari ini bukan lagi dianggap sebagai perkara baharu tetapi telah wujud sejak zaman millennial. Corak dan pola kehidupan manusia banyak dipengaruhi oleh elemen digital yang berkembang dengan pesat sejak beberapa dekad lalu (Zaharia & Bălăcescu, 2020). Apatah lagi kini, kesan penggunaan digital iaitu menerusi sistem sosial manusia secara dalam talian memang tidak dapat dinafikan sudah semakin rancak. Amalan dan pembudayaan digital ini mengundang kepada budaya konsumerisme iaitu budaya yang mana keinginan untuk membeli sesuatu barangan daripada golongan millennial itu sendiri.

Perkara ini berlaku kerana berlaku pendedahan aktif menerusi perkongsian iklan dan maklumat produk secara dalam talian sama ada secara langsung dan tidak langsung menggalakkan aktiviti pembelian dalam kalangan pengguna berlaku dengan aktif dan dinamik (Zhu et al., 2021).

2.0 Tinjauan Literatur

Kajian Lepas

Terdapat banyak kajian-kajian membicarakan tentang perniagaan secara digital yang dilakukan dalam dan luar negara. Namun, tidak dapat dinafikan masih terdapat ketirisan kajian yang masih memerlukan kajian secara mendalam. Kajian berkait dengan perniagaan digital menunjukkan jurang yang ketara dalam pemahaman tentang tingkah laku pembelian golongan millennial belia luar bandar, khususnya berkaitan dengan produk berasaskan pertanian. Golongan ini, terutamanya di kawasan luar bandar, menghadapi cabaran unik dalam melibatkan diri dengan perdagangan digital, yang memerlukan penelitian lanjut dalam aktiviti perniagaan. Kajian terdahulu, seperti yang dikemukakan oleh Anderson dan Kumar (2019), menunjukkan bahawa literasi digital dan akses kepada teknologi merupakan halangan utama bagi belia luar bandar, yang boleh memberi kesan terhadap keupayaan mereka untuk terlibat dalam perdagangan atas talian. Selain itu, kajian oleh Tandon et al. (2020) menekankan kepentingan memahami keutamaan pengguna, khususnya dalam konteks kemampanan dan sumber tempatan, yang semakin penting dalam Keputusan untuk membuat pembelian oleh belia luar bandar. Penemuan ini menggariskan keperluan untuk membangunkan strategi pemasaran yang disasarkan yang bertepatan dengan pengguna millennial luar bandar, khususnya dalam produk berasaskan sektor pertanian.

Dalam konteks ini, beberapa isu yang relevan perlu dibangkitkan apabila mempertimbangkan sesuatu yang berkait dengan tingkah laku pembelian golongan belia secara atas talian luar bandar. Kajian oleh Ramayah et al. (2018) menunjukkan bahawa alat digital yang digunakan boleh meningkatkan hasil jualan dengan baik, terutamanya bagi produk yang memerlukan tahap kepercayaan pengguna yang tinggi, seperti produk berasaskan pertanian. Walau bagaimanapun, seperti dalam kajian Sharma dan Gupta (2021), banyak syarikat tidak sepenuhnya memanfaatkan peluang digital yang ada, terutamanya di pasaran luar bandar. Kajian mereka menunjukkan bahawa strategi pemasaran pasif, yang biasa di pasaran digital luar bandar, gagal melibatkan pengguna dengan berkesan. Ini menjadi masalah besar bagi produk pertanian, di mana kepercayaan, ketelusan, dan kekayaan maklumat adalah penting. Oleh itu, strategi pemasaran perlu disesuaikan dengan realiti teknologi di kawasan luar bandar, yang mana salah satu perkara yang ditekankan oleh Akhtar et al. (2019) dalam kajian mereka mengenai tingkah laku pengguna luar bandar dan pemasaran digital.

Selain itu, cabaran yang berkaitan dengan tindakan dalam membuat keputusan dan pemilihan pembelian produk berasaskan pertanian dalam kalangan belia luar bandar ketika membeli produk pertanian secara atas talian telah dibincangkan oleh beberapa kajian lepas. Sebagai contoh, kajian oleh Nair dan Menon (2020) menunjukkan kerumitan dalam pengambilan keputusan atas talian bagi pengguna luar bandar, yang sering menghadapi masalah dari segi kriteria untuk membuat keputusan menyukarkan yang menunjukkan perbezaan yang ketara berbanding belia bandar. Kajian mereka mencadangkan bahawa faktor seperti ketersediaan produk, kepekaan harga, dan sumber tempatan lebih penting bagi belia luar bandar. Selain itu, Kumar dan Kashyap (2019) mendapati bahawa faktor dalaman dan luaran yang memberi motivasi, seperti pengaruh komuniti dan keadaan ekonomi tempatan, memainkan peranan penting dalam membentuk tingkah laku pembelian atas talian belia luar bandar. Kajian-kajian ini menggariskan kepentingan dalam membangunkan strategi pemasaran yang disasarkan yang menangani keperluan dan keutamaan khusus golongan millennial luar bandar.

Kajian mengenai strategi pemasaran yang sesuai untuk belia luar bandar dalam era digital adalah penting, terutamanya dalam sektor pertanian. Kajian seperti yang dilakukan oleh Singh dan Sahu (2019) menekankan keperluan bagi syarikat untuk merancang dan mengurus operasi perniagaan mereka dengan berkesan untuk memenuhi keperluan pasaran luar bandar. Kajian mereka menunjukkan bahawa usaha promosi yang bersifat tradisional sering gagal mencapai apa yang diinginkan oleh belia luar bandar, mengakibatkan prestasi jualan yang lemah. Begitu juga, kajian Patel dan Rathod (2021) menunjukkan bahawa strategi pemasaran digital di kawasan luar bandar harus memberi tumpuan kepada menyampaikan atribut seperti kesegaran, asal usul, dan kemampanan yang melibatkan sumber produk yang dijual serta faktor-faktor yang sangat menarik perhatian pengguna luar bandar. Kajian-kajian ini menonjolkan keperluan syarikat untuk menyesuaikan strategi pemasaran mereka dengan nilai dan jangkaan belia luar bandar bagi meningkatkan penglibatan dan prestasi jualan.

Kajian oleh Zhang dan Liu (2019) menunjukkan potensi transformasi digital dalam mengaktifkan aktiviti pasaran dengan berkesan, terutamanya dalam sektor pertanian. Penemuan mereka mencadangkan bahawa platform digital yang menyediakan maklumat terperinci dan setempat tentang asal usul produk dan amalan pertanian boleh meningkatkan minat dan motivasi pengguna dengan ketara. Selain itu, kajian oleh Banerjee dan Dey (2020) menyokong pandangan bahawa transformasi digital boleh memainkan peranan penting dalam meningkatkan penglibatan belia luar bandar dalam pasaran pertanian atas talian dengan menangani keperluan dan keutamaan mereka. Kajian-kajian ini menekankan kepentingan membangunkan alat digital yang disesuaikan dengan pengguna luar bandar, bagi memudahkan penglibatan dan tingkah laku pembelian yang lebih berkesan.

Justeru terdapat perkaitan kajian ini dengan kemahiran, teknologi, dan pengetahuan yang relevan bagi belia luar bandar yang penting untuk mempertimbangkan bagaimana literasi digital dan akses kepada teknologi mempengaruhi keputusan pembelian mereka. Kajian seperti yang dilakukan oleh Ahmad dan Rafiq (2018) menunjukkan bahawa belia luar bandar sering menghadapi cabaran dalam mengakses platform digital disebabkan keterbatasan infrastruktur, yang menghalang keupayaan mereka untuk terlibat dengan e-dagang pertanian secara berkesan. Tambahan pula, kajian oleh Gupta dan Kaur (2019) menekankan kepentingan faktor budaya dalam membentuk tingkah laku pengguna luar bandar, terutamanya dalam konteks pembelian produk pertanian. Kajian-kajian ini menggariskan keperluan untuk alat digital yang mesra pengguna, setempat, dan mudah diakses, bagi memastikan belia luar bandar boleh terlibat dengan pasaran pertanian atas talian dengan berkesan. Dengan menangani faktor-faktor ini, syarikat dapat membangunkan strategi yang selaras dengan realiti belia luar bandar, yang akhirnya akan meningkatkan jualan produk pertanian.

3.0 Objektif Kajian

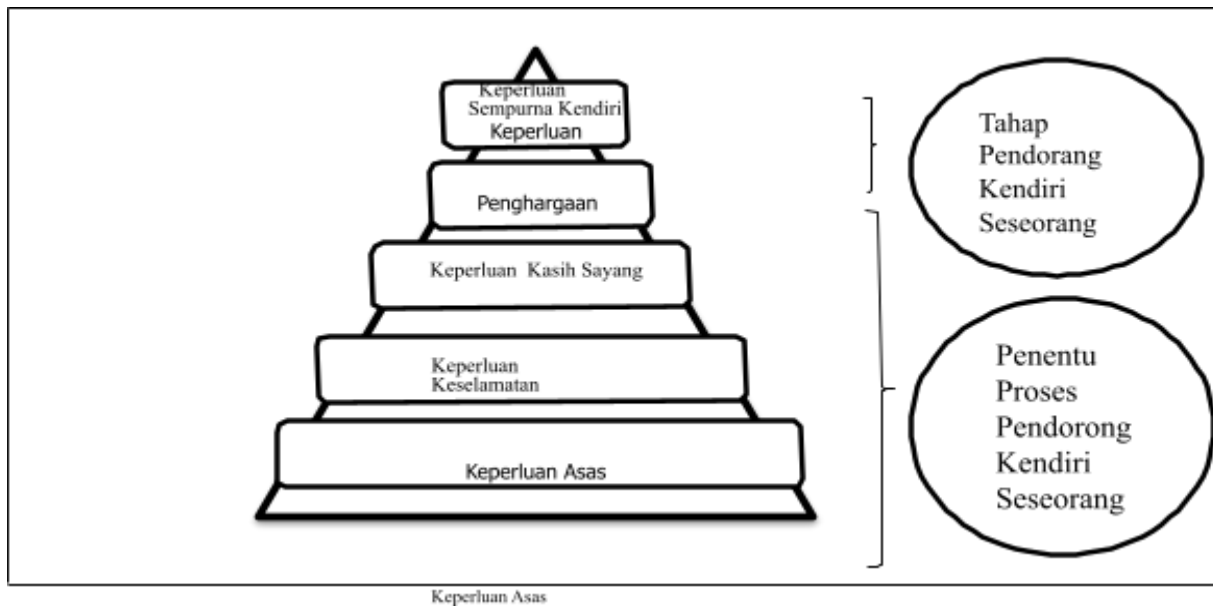
- i) Mengetahui tahap Pengetahuan belia (PB), Kemahiran teknologi (KT) dan Cabaran belia (CB) generasi millennial dalam pembelian produk berasaskan pertanian.
- ii) Mengetahui bentuk pengetahuan dan Kemahiran, serta adaptasi teknologi secara talian dalam kalangan generasi millennial.
- iii) Meneliti faktor pendorong yang menggalakkan budaya konsumerisme dalam kalangan generasi millennial.

4.0 Soalan Kajian

- i) Apakah tahap pengetahuan belia (PB), Kemahiran Teknologi (KT) dan Cabaran belia (CB) generasi millennial.
- ii) Apakah bentuk pengetahuan belia (PB), Kemahiran teknologi (KT) dan cabaran belia (CB) secara talian dalam kalangan generasi millennial?
- iii) Apakah faktor pendorong yang menggalakkan budaya konsumerisme dalam generasi millennial?

5.0 Kerangka Kajian

Dalam menganalisis kajian telah dilakukan dengan membangunkan kerangka kajian, kerana kajian ini merupakan kajian yang berbentuk kajian kes. Sehubungan itu, pembangunan metod atau kaedah analisis data dilakukan dengan membangunkan sendiri kerangka kajian daripada konsep yang terkandung dalam topik kajian. Oleh itu, kajian ini telah menggunakan teori Hierarki Keperluan Maslow.



Rajah 1: Teori Hieraki Keperluan Maslow

Berdasarkan Rajah 1, konsep dalam model hierarki keperluan Maslow ini sangat penting kerana menceritakan tentang beberapa aspek diantaranya keperluan seseorang untuk berjaya dari segi mencapai tahap yang diperlukan dalam hidup seseorang seperti menguasai ilmu pengetahuan, mempunyai kemahiran yang relevan serta mampu menghadapi pelbagai cabaran dalam hidup dalam mencapai matlamat atau kejayaan bagi memenuhi keperluan serta kehendak yang semakin bertambah melalui faktor-faktor pendorong. Faktor-faktor pendorong dalaman dan luaran seseorang yang pelbagai, menyebabkan seseorang individu perlu membezakan antara keperluan atau kehendak dalam mencapai tingkat keperluan dalam hidup.

Hal ini turut di sokong oleh Marsh, H. W., dan Martin, A. J. (2011) yang menunjukkan bahawa keperluan individu dapat mempengaruhi pencapaian dan pemilihan seseorang dalam hidup. Justeru, dalam konteks kajian ini dapat dinyatakan bahawa faktor pendorong sama ada secara dalaman atau luaran berkait dengan keperluan yang mana dalam kajian ini budaya konsumerisme boleh menjadi penyebab yang kuat dalam kalangan golongan millennial luar bandar untuk melibatkan diri dalam proses pembelian dan penawaran berkait dengan produk berasaskan pertanian secara dalam talian. Dalam hal ini, transformasi digital merupakan antara kunci penting bagi golongan millennial untuk mempunyai keinginan meneroka dan kemudiannya membuat keputusan untuk membeli sesuatu barangan secara dalam talian. Dalam mekanisme transformasi digital juga terdapat pelbagai faktor pendorong yang terbentuk.

6.0 Metodologi

Metodologi dalam kajian merupakan proses penting dalam menjelaskan proses pelaksanaan kajian daripada peringkat awal sehingga ke peringkat akhir kajian dilakukan (Creswell et.al, 2007). Dalam kajian ini dilakukan dengan menggunakan rekabentuk deskriptif serta menggunakan kaedah kajian kes melalui pendekatan kualitatif. Sehubungan itu, dalam melaksanakan pendekatan kualitatif maka kaedah kajian secara kajian kes berbilang digunakan sebagai kaedah dalam kajian ini untuk meneroka suatu fenomena secara lebih mendalam (Yin, 1994). Dalam kaedah kajian ini juga, hanya menggunakan temu bual dan pemerhatian (Flick, 1998).

Pada dasarnya lokasi kajian dilakukan di daerah Kota Kinabalu, Sabah dan hanya menggunakan tiga peserta kajian daripada latar belakang dan jenis pekerjaan antaranya pekerja sektor kerajaan, pekerja swasta dan pekerja yang bekerja sendiri. Justifikasi pemilihan tiga peserta kajian ini adalah untuk mengkaji tiga kes kajian untuk mewujudkan dapatan kajian berbeza daripada pengalaman demografi yang mereka lalui (Merriam, 2009). Tujuannya untuk membentuk sebuah dapatan kajian yang baharu berkenaan dengan faktor pendorong budaya

konsumerisme. Dalam proses analisis kajian pula dilakukan dengan menggunakan analisis secara manual dengan kaedah secara triangulasi daripada data temu bual dan pemerhatian yang dilakukan oleh penyelidik.

6.1 Tahap Pengetahuan Belia (PB), Kemahiran Teknologi (KT) dan Cabaran Belia (CB) dalam kalangan generasi millennial.

a) Apakah tahap Pengetahuan Belia (PB) generasi millennial luar bandar terhadap pembelian produk berasaskan pertanian atas talian di Sabah?

Jadual 1: Tahap Pengetahuan Belia (PB)					
	N	Minimum	Maximum	Mean	Std. Deviation
Asas	361	2.30	5.00	3.0659	.77549
Sumber Produk	361	2.70	5.00	3.5032	.68570
Valid N (listwise)	361				

Jadual 1 menunjukkan penerimaan keseluruhan responden terhadap pengetahuan belia (PB) milenium luar bandar terhadap pembelian produk berasaskan pertanian luar bandar. Konstruk pengetahuan asas (3.0659) adalah rendah. Begitu juga, pengetahuan yang berkaitan dengan sumber produk (3.5032) juga rendah. Ini mencadangkan bahawa generasi millennial luar bandar menganggap pemahaman mereka tentang sumber produk pertanian yang dibeli lebih tinggi berbanding dengan pengetahuan asas mereka dalam pengurusan pembelian produk atas talian. Skor min yang lebih tinggi untuk pengetahuan tentang sumber produk menunjukkan bahawa belia luar bandar mengiktiraf kepentingan mengakses sumber produk sebelum membeli produk berasaskan pertanian.

b) Apakah tahap Kemahiran Teknologi (KT) generasi millennial luar bandar terhadap pembelian produk berasaskan pertanian atas talian di Sabah?

Jadual 2: Tahap Kemahiran Teknologi(KT)					
	N	Minimum	Maximum	Mean	Std. Deviation
Komunikasi	361	2.00	5.00	3.9319	.78549
Penggunaan	361	2.33	5.00	3.5768	.47918
Valid N (listwise)	361				

Jadual 4.2 menunjukkan penerimaan keseluruhan responden terhadap adaptasi teknologi (AT) luar bandar. Konstruk adaptasi teknologi dari segi teknologi luar bandar dalam aspek komunikasi (3.9319) adalah sederhana tinggi, manakala konstruk penggunaan teknologi ialah dalam (3.5768) adalah sedikit lebih rendah. Ini

mencadangkan bahawa adaptasi komunikasi yang berkait secara langsung dengan teknologi dianggap sebagai tahap adaptasi teknologi yang lebih penting dalam kalangan responden yang terlibat dalam pembelian produk atas talian. Skor min yang lebih tinggi untuk adaptasi teknologi dari segi komunikasi menunjukkan bahawa adaptasi teknologi dalam komunikasi yang berkesan adalah penting untuk pembelian produk berasaskan pertanian dalam kalangan generasi millennial luar bandar di Sabah.

c) Apakah tahap Kemahiran Belia (KB) generasi millennial luar bandar terhadap pembelian produk berasaskan pertanian atas talian di Sabah?

Jadual 3: Tahap Cabaran Belia (CB)

	N	Minimum	Maximum	Mean	Std. Deviation
Persekitaran	361	2.00	5.00	4.0993	.43751
Keluarga	361	2.25	5.00	3.9925	.48144
Valid N (listwise)	361				

Jadual 3 dan Jadual 4.2 menunjukkan penerimaan keseluruhan responden terhadap konstruk cabaran yang dihadapi oleh generasi Millennial luar bandar. Konstruk pengaruh persekitaran (4.0993) adalah lebih tinggi berbanding dengan pengaruh cabaran keluarga (3.9925). Ini bermakna konstruk persekitaran memberi kesan yang signifikan terhadap pembelian produk berasaskan pertanian di Sabah. Skor min sebanyak 4.0993 mencadangkan bahawa cabaran yang berkaitan dengan persekitaran adalah agak tinggi. Ini juga merangkumi isu-isu seperti akses terhadap sumber, infrastruktur yang tidak mencukupi, kekangan peraturan, dan kesukaran akses pasaran di kawasan luar bandar.

6.2 Pengetahuan, Cabaran dan Kemahiran Teknologi Secara atas talian

Pengetahuan teknologi merupakan salah satu faktor yang menyebabkan kekerapan seseorang itu menggunakan teknologi secara dalam talian pada setiap hari. Sehubungan itu, berikut merupakan analisis kajian berkenaan bentuk Pengetahuan, Kemahiran dan Adaptasi Teknologi yang diberikan oleh informan yang pertama.

a) Informan 1 (Pekerja Sektor Kerajaan)

“Bagi saya, saya amat memiliki pengetahuan yang luas berkenaan kemahiran teknologi yalah kan. kami pekerja government jadi memang hari-hari kami berhadapan dengan komputer. jadi ada masa free tu....memang dikasi lapang untuk melayari internet untuk mencari-cari produk-produk baharu. Jadikan adalah mau diaim nanti kalau gaji. ada sudah perancangan mau beli apa....”

Berdasarkan dapatan temu bual daripada informan pertama iaitu pekerja sektor kerajaan dapatlah diinterpretasikan bahawa bentuk pengetahuan berkenaan penggunaan teknologi sudah menjadi sebahagian dalam hidup. Hal ini kerana dalam dunia pekerjaan sebagai sektor kerajaan sudah terbiasa dan diwajibkan menggunakan teknologi komputer untuk melakukan pekerjaan. Justeru, dalam hal ini informan akan melayari internet untuk mencari maklumat berkenaan promosi jualan yang ditawarkan sebagai persediaan untuk menjalankan aktiviti membeli belah apabila mendapat gaji kelak.

b) Informan 2 (Pekerja Sektor Swasta)

“Memang di zaman ini, semua orang mempunyai pengetahuan teknologi, budak-budak kecilpun sudah tahu bagaimana menggunakan teknologi. bah kalau di rumah tu. masing-masing ada telefon. jadi apatah lagi orang besar. jadi asal saja mereka boring, bah apa lagi terus buka telefon. kadang tidak sedar itu. main-main telefon dari pagi sampai malam. jadi macam dorang punya hobi sudah tu. sebab ada hiburan dan permainan”

Dapatan temu bual daripada informan kedua iaitu pekerja sektor swasta, interpretasi data menjelaskan informan sudah memiliki alatan dan kemampuan dalam pengetahuan dan penggunaan alatan teknologi. Hal ini kerana informan adalah golongan millineal yang sudah terbiasa dengan penggunaan teknologi serta alatan teknologi yang mana merupakan budaya kehidupan dan dijadikan sebagai aktiviti apabila bosan untuk mencari hiburan dan permainan.

c) Informan 3 (Pekerja Sendiri @ Bekerja Sendiri)

“Kalau sayakan, memang tahu ni, juga teknologi. sebab sayakan bekerja sendiri, jadi apabila saya mau mendapat customer mesti menggunakan secara dalam talian. memang begitulah sehari-hari. sayakan bekerja sendiri. jadi untuk saya mendapatkan prospek tempat siapa saya mau menjual. Sayapun sebagai pembeli juga, jadi sayapun taulah macammana pergerakan orang. jadi pendek cerita zaman sekarang ni..... memang sangat perlu kemahiran teknologi ni.”

Maklumat di atas menjelaskan dapatan temu bual informan yang ketiga adalah pekerja sendiri. Menerusi kenyataan yang diberikan dapatlah diinterpretasikan bahawa dalam aspek pengetahuan dan penggunaan teknologi sememangnya sudah memiliki kemahiran yang baik. Hal ini kerana dalam bidang bekerja sendiri amat perlu kemahiran teknologi yang baik. Ini kerana pada setiap masa akan mencari prospek untuk melaksanakan rundingan dan transaksi jualan.

6.3 Faktor Pendorong Yang Menggalakkan Budaya Konsumerisme Dalam Kalangan Generasi Millennial membeli produk berasaskan pertanian luar bandar

Dalam era dan kehidupan zaman millennial terdapat pelbagai bentuk faktor pendorong yang mencetuskan terhadap keinginan untuk meneroka sesuatu produk barangan dalam talian dan juga mencetuskan keinginan untuk membeli sesuatu barangan. Berikut merupakan data temu bual daripada kajian lapangan dan juga interpretasi kajian.

a) Informan 1 (Pekerja Sektor Kerajaan Luar Bandar)

“Bagi saya faktor yang mendorong saya untuk memilih membeli barangan produk pertanian secara online adalah persembahan dan grafik yang terdapat dalam promosi jualan. grafik yang terbaik memaparkan ciri jualan yang khas.

Selain grafik, bahasa iklan. bahasa iklan memang menjadi tarikan saya. saya minat kalau bahasa iklan profesional, lucu, informatif. tetapi saya tidak juga minat kalau terlampau panjang. Sebab kalau bahasa itu cantik. setiap orang pun suka membaca. jadi semakin banyak pembeli membaca maka semakin banyak dorang tahu. maka itulah yang akan membuat mereka berkeinginan untuk membeli sesuatu produk barangan.

Penawaran harga menjadi tarikan kepada saya, saya lebih menyukai jika suatu barangan yang dipromosikan mengandungi harga dan apabila harganya murah sudah tentu jadi pilihan “

Berdasarkan hasil temu bual informan pertama iaitu pekerja sektor kerajaan, dapatlah diinterpretasi dan dijelaskan bahawa terdapat tiga faktor pendorong yang mendorongnya untuk membeli barangan secara dalam talian. Faktor pendorong yang pertama adalah persembahan iklan, persembahan iklan yang kreatif dan kritis yang mana dapat

menarik perhatian untuk meneroka dan memahami serta membuat keputusan untuk membeli barangan secara dalam talian.

Faktor pendorong kedua adalah iklan sama ada dalam bentuk deskriptif ataupun disampaikan secara lisan. Bagi informan ini, bahasa dalam iklan itu adalah amat penting bagi memberi tarikan dan keinginan serta keyakinan untuk golongan millineal membeli sesuatu barangan yang ditawarkan. Sehubungan itu, bahasa dalam iklan perlulah cantik dan kreatif agar dapat menarik keinginan untuk membaca bagi mengetahui kandungan dan keperluan untuk membeli barangan tersebut.

Faktor pendorong yang ketiga adalah harga. Harga memainkan peranan yang penting dalam membangkitkan keinginan untuk golongan millineal mengetahui dan meneroka sedalam-dalamnya maklumat promosi jualan untuk membentuk hasrat dan keinginan untuk membeli sesuatu barangan.

b) Informan 2 (Pekerja Sektor Swasta)

“Bagi sayakan saya suka kaedah jualan yang ada video lakonan macam iklan Thailand. di Malaysia pun ada juga macam ni. jadi kalau adakan pada pandangan saya ia meningkatkan keinginan seseorang untuk mencari barangan. Sebab orang sekarang ni banyak stress jadi mereka mencari hiburan, maka dengan merasa terhibur lah mereka akan meneroka dan cuba mempertimbangkan sesuatu barangan yang dijual.

Selain itu, kan saya juga berpandangan. iklan itu bah, mesti menarik dan tidak boring. sebab kalau boring itu orang memang tidak mahu tahu apa yang diiklankan jadi apapun yang diiklankan tu tidak sampai.

kalau sayalah kan, saya memang tertarik bila ada iklan secara dalam talian itu mempunyai gaya baharu. macam guna software ai dan pelbagai software lain. barulah para pembeli yakin membeli secara dalam talian. Sebabkan kalau iklan itu canggih ia akan dapat melahirkan rasa kekaguman dalam diri mereka.”

Maklumat daripada informan kedua menyatakan faktor pendorong yang memberikan inspirasinya dalam membeli sesuatu barangan adalah kecanggihan dan keunikan iklan yang dipaparkan. Hal ini juga menjadi suatu kepuasan psikologi untuk membeli suatu barangan atau produk yang ditawarkan secara dalam talian. Bagi informan ini, sesuatu yang menghiburkan itu menjadi suatu tarikan bagi dirinya untuk membeli suatu barangan selain mutu dan kualiti sesuatu barangan tersebut. Di samping itu, bagi dirinya juga berpandangan bahawa iklan yang dipaparkan secara dalam talian hendaklah mengeksploitasi penggunaan perisian terkini dan pelbagai perisian lainnya untuk menghasilkan iklan jualan, promosi jualan yang bermutu.

c) Informan 3 (Pekerja Sendiri @ Bekerja Sendiri)

“Banyak bah faktor pendorong yang membuat orang berminat untuk membeli barangan secara dalam talian. bagi pendapat sayalah kan, yang penting iklan jualan itu jujur. Tapi kalau saya, saya mahu juga akan menarik minat saya sebagai pembeli. Macam sayakan kalau saya membeli barangan online. Saya akan tengok itu iklan, kalau jujur itu, saya akan bertambah yakin untuk membeli barangan jualan

Satu lagi kan, yang menarik minat saya apabila ada promosi. saya memang selalu menunggu promosi. ya memanglah kan, zaman sekarangni kita mesti mau berjimat. jadi saya suka servay atas talian dulu sebelum memberi sesuatu barangan. sudah tentu saya memandag pada kualiti. biasanya saya suka membandingkan kualiti setelah membandingkan harga sesuatu barangan.”

Dalam keterangan informan ketiga yang bekerja sendiri, menyatakan bahawa aspek kejujuran terhadap maklumat yang disampaikan dalam iklan produk secara dalam talian amat diberikan perhatian. Hal ini kerana jika iklan yang disampaikan tidak jujur menyatakan maklumat berkenaan sesuatu produk yang dijual, akan membuat pembeli trauma dan serik untuk membeli sesuatu barangan yang ditawarkan. Kejujuran dalam iklan yang diberikan iaitu tidak memberikan *claim* yang berlebihan ke atas sesuatu barangan sehingga tidak masuk akal difikiran. Informan ini juga menyatakan kualiti dan harga memainkan peranan yang penting untuk menarik minat membeli sesuatu barangan yang ditawarkan secara dalam talian.

7.0 Perbincangan dan Kesimpulan

Secara keseluruhannya, terdapat pelbagai tahap Kemahiran, pengetahuan serta persekitaran yang mampu memberi kesan terhadap bentuk pengetahuan yang memberi kesan terhadap faktor pendorong yang membudayakan konsumerisme bagi golongan millennial iaitu bermula daripada bentuk pengetahuan dan kemahiran dalam menggunakan dan mengaplikasikan teknologi, bentuk persembahan iklan, harga, mutu dan kualiti, kejujuran dan pelbagai faktor lainnya. Kesemua ini menggalakkan keinginan mereka untuk meneroka, mengetahui, memahami dan seterusnya membentuk tindakan bagi diri dalam membuat keputusan bagi membeli suatu barangan. Justeru, dalam kajian ini juga dapat menjadi perintis untuk meneroka dan memahami dunia digital luar bandar dan kepentingannya dalam memperkasakan sistem ekonomi luar bandar berteraskan penjualan produk pertanian dalam talian terutamanya melibatkan golongan millennial.

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CAUSES OF MOTORCYCLE ACCIDENTS AMONG YOUTH MOTORCYCLISTS

¹NORASHIKIN BINTI SAMURI, ²MUHAMMAD RAZUHANAFI BIN MATYAZID, ³NUR IZZI B MD YUSOFF, ⁴RUFAIZAL BIN CHE MAMAT, ⁵RIZATI BT HAMIDUN, ⁶ZAMIRA HASANAH BINTI ZAMZURI

^{1,2,3}Civil and Build Environment Faculty, University of National Malaysia (UKM), Malaysia ⁴Civil Engineering Department, Polytechnic of Ungku Omar, Malaysia.

⁵Malaysian Institute of Road Safety Research, Malaysia, ⁶ Faculty of Science and Technology, University of National Malaysia (UKM), Malaysia

Email: ¹p123188@siswa.ukm.edu.my, ²razuhanafi@ukm.edu.my, ³izzi@ukm.edu.my, ⁴rufaizal@puo.edu.my, ⁵rizati@miros.gov.my, ⁶zamira@ukm.edu.my

ABSTRACT

Motorbike accidents contribute to Malaysia's high traffic accident rate. The youth demographic is responsible for the majority of motorbike accidents in Malaysia. The youth aged 15 to 25 are especially vulnerable to motorbike accidents. Youth motorbike accidents are a major concern, with mortality rates more than doubling over time compared to other age groups. As a result, factors associated with accidents are common and have previously been tested (such as risky driving style). Although such factors can explain a significant portion of the variance in accidents, far exceeding what can be accounted for by any single cause to date, they were found to be mostly similar to microbial risk factors in the sense that they can predict an individual's willingness to engage in risky behaviour. That is, they reflect the individual's risk taking disposition, and they appear to provide a description of the fundamental 'who takes the most risks' rather than an answer to the question 'what is the most risky'. The primary goal of this study is to identify the causes of motorbike accidents among young people and to assess the rate of compliance with road rules. In addition, determine the severity of motorcycle riders' injuries. To achieve the study's objective, motorbike accident data from the Royal Malaysian Police (PDRM) will be analysed. The Bayesian network method was used in this study to analyse data. The study will last from January 2021 to March 2024. According to the findings of the analysis, human behaviour is the leading cause of motorbike accidents among young people. In This study, the variable "self-inflicted" (classified as a human factor) had a higher number of accidents than the other factors, with 162 (43.8%) accident cases. This could be because young motorbike riders lack experience. Furthermore, motorbike accident victims frequently sustain minor injuries, accounting for 230 (62.2%) of all accidents. To summarise, youth riders' behaviour and attitudes are the leading causes of motorbike accidents in Malaysia.

Keywords: Road Accident, Youth, Motorcycle Crashes, Factors.

Introduction

Due to inadequate public transportation and a growing low- to middle-income population, motorcycles are becoming more common on the roads. Motorcycles now serve as the primary form of transportation for both urban and rural commuters. The low cost of transportation makes it a popular choice for low- to moderate-income families and youth. The rapid increase in motorcycle use has resulted in a significant increase in motorcycle-related accidents and deaths. Motorcyclists are among the most vulnerable road users.

According to data from the Royal Malaysian Police, the number of registered vehicles in 2019 was 31,244,897 and the number of vehicles involved in accidents amounted to 832,673 vehicles. Next in 2020 a total of 32,378,174 vehicles have been registered and a total of 599,742 vehicles have been involved in accidents that have been reported. While in 2021, 33,375,599 vehicles were registered and 576,719 vehicles were involved in accidents.

Youth motorbike accidents are a major issue, with mortality rates more than doubling over time when compared to other age groups. The current report looked into specific factors that could be contributing to the problem, focussing on issues that had previously received little attention. While much has been done to identify the problem (typically youth and recklessness), little has been done to find a negative-related solution. Accordingly, factors associated with accidents are common and have previously been tested (for example, risky driving style). Although such factors can explain a portion of the variance in accidents, far exceeding what can be accounted for by any single cause to date, they were found to be mostly similar to microbial risk factors in the sense that they can determine an individual's willingness to engage in risky behaviour. That is, they reflect the individual's dispositional orientation towards risk, and they appear to provide a description of the fundamental 'who takes the most risks' rather than an answer to the question 'what is the most risky'.

Riding a motorbike is becoming increasingly popular as a mode of transportation among Malaysia's youth. The number of registered motorcycles in Malaysia is increasing year after year, with nearly half of them owned by young people. The majority of young people want to own and ride motorcycles because they believe that driving a car is a waste of time and money. Aside from that, the rule requiring a driver's license for a specific class of motorcycle does not apply to motorcycle use. The primary reason for young people to ride motorcycles is that they believe it is the cheapest mode of transportation for travelling during traffic congestion.

The most common complaint among experienced motorcyclists was that when driving a moped, they frequently had to deal with boys who lacked sufficient knowledge of traffic rules or the capabilities that the moped required. Young motorcyclists obviously pose a risk, so they should be constantly monitored. To reduce the risk of accidents, a prevention program should be implemented for these motorcyclists. It is also clear that current educational measures are inefficient. The current requirements to complete moped courses do not meet the needs of these young moped drivers. New measures must be developed, which necessitates first and foremost a greater understanding of these motorcyclists' behaviour and problems.

1.1 Motorcycle Safety Research

Over the last two decades, there has been a significant amount of research into motorbike safety. Several researchers (e.g., de Lapparent, 2006; Quddus et al., 2002; Shankar and Mannering, 1996) attempted to quantify the effects of roadway, traffic, environmental, human, and vehicle factors on motorcyclist injury severity, while others (e.g., Pai and Saleh, 2007; Pai and Saleh, 2008) conducted similar studies at intersections. A number of studies (e.g., Lin et al., 2003; Mannering and Grodsky, 1995; Rutter and Quine, 1996) have examined the crash risk based on rider-motorcycle characteristics, while others (e.g., Williams and Hoffmann, 1979; Yuan, 2000) have investigated the crash risk of motorcycles due to conspicuity issues. In general, these studies provide useful information about the risk of motorbike accidents and injuries. However, the road geometry and traffic factors that may influence the occurrence of motorbike crashes at signalised intersections have not been thoroughly investigated.

1.2 Research Objective

The objective of this research is to explore factors related to road accidents involving motorcyclists among youth. This study also examines the relationship between each variable that causes accidents to occur among youth associating the frequency of motorcycles with the type of first collision, traffic system, weather, type of accident and line type.

2. Methodology.

Data collection for conducting research is important and needs to be done correctly. Most of the previous research chose a mixed approach that integrates both quantitative and qualitative approaches in data collection. Due to the nature of the research that requires cooperation from the test subjects, data needs to be collected through a survey to get a proper understanding from the test subjects.

Bayesian networks have emerged as an effective tool for analysing traffic accidents, with numerous advantages. They can simulate complex relationships between accident causes and outcomes, providing useful information for improving road safety (ZhongFang, 2011; M. Simoncic, 2004). These networks enable interdependence among variables, eliminating the need for strict dependent and independent variable distinctions (M. Simoncic, 2004). Bayesian networks can express complex relationships between causal factors and reveal accident causality mechanisms (Hongguo Xu et al. 2010). The graphical nature of these models allows for clear visualisation of conditional dependencies between variables and supports evidence- based updates (Esma Nur Cinicioglu et al., 2013). Furthermore, Bayesian networks predict accident outcomes with high accuracy and can be used to assess the effectiveness of potential safety interventions (Zong Fang, 2011; Esma Nur Cinicioglu et al., 2013). Overall, Bayesian networks provide a comprehensive approach to traffic accident analysis, helping to develop accident causality theory and guiding effective safety measures.

For safety analyses, the study period is typically three to five years. It is not recommended to base safety interventions on short time periods, such as a year's worth of crash data. However, as stated in the Public Works Department's InterimGuide (1995), shorter time periods can be considered as long as caution is exercised before drawing any conclusions if data for such a long period is not available in the local computer database. (Nordiana, Sitti Hasmah and Haryati, 2018).

2.1 Data Preparation

Data pertaining to police-reported road crashes between 2017 and 2021 were obtained from Bukit Aman Traffic Investigation and Enforcement Department (JSPT), Royal Malaysia Police (PDRM). The injury level was categorized as (1) fatal, (2) serious injury, (3) slight injury , and (4) no injury. Studies show that risky driving behaviour, emotions influencing behaviour, and negative emotions such as snapping or anxiety all contribute to accidents. Common causes include unsafe driving habits such as excessive speeding, overtaking, and a lack of vigilance. The study emphasises the importance of addressing human errors by managing emotions and driving speeds, providing appropriate training to unsafe drivers, and raising road safety awareness through strict law enforcement and infrastructure improvements. (Jinda, Nuthajit, Seppo Karrila, and Jariya, 2021).

2.2 Bayesian Inference

Bayesian analysis involves fitting a probability model to a dataset and summarising its posterior probability distribution on model parameters and unobserved variables. Bayesian methods use probability to quantify uncertainty in statistical inferences, rather than relying solely on sample data for maximum likelihood estimates. Bayesian models use observed data to update prior beliefs about unknowns, resulting in posterior distributions (Congdon, 2003).

Bayesian inference provides flexibility in explicitly modelling hierarchical models. One issue with Bayesian hierarchical models is that the posterior distributions are not always algebraically tractable, as seen in this study. Furthermore, posterior densities for hierarchical models frequently yield nonstandard densities. To address these analytical limitations, sampling-based estimation methods have been used. MarkovChain Monte-Carlo (MCMC) methods (Gilks et al., 1996) utilise the Gibbs sampler and the 8 Haque et al.

3. Results And Discussion.

Motorcycle accident factors using The R Foundation for Statistical Computing

A total of 9331 accident cases involving motorcycles have been reported to the Royal Malaysian Police from 2016 to 2021. From the raw data provided, there are 43 variables identified for each accident report. By using The R Foundation for Statistical Computing, the results of the first time analysis found from the data results, 9331 cases with 43 variables. (Figure 1.1)

```

> mydat=read.csv(file.choose())
> str(mydat)
'data.frame':   9331 obs. of  43 variables:
 $ state      : int  2 2 2 2 2 2 2 2 2 ...
 $ district   : int  202 202 202 202 202 202 202 202 202 ...
 $ report_number : num  2.02e+12 2.02e+12 2.02e+12 2.02e+12 2.02e+12 ...
 $ date       : chr   "6/01/2017" "9/01/2017" "13/01/2017" "14/01/2017" ...
 $ time       : chr   "1/01/1970 6:30" "1/01/1970 5:45" "1/01/1970 0:15" "1/01/1970 5:45" ...
 $ day        : int  5 1 5 6 0 3 6 2 6 0 ...
 $ total_veh   : int  2 1 1 2 3 2 3 2 3 2 ...
 $ num_veh_damage : int  2 0 0 0 0 0 3 0 0 1 ...
 $ number_driver_fatal : int  0 1 1 1 0 0 1 1 1 1 ...
 $ number_driver_injured : int  2 0 0 0 0 0 6 0 0 0 ...
 $ number_pas_fatal : int  0 0 0 1 1 2 0 0 0 0 ...
 $ number_pas_injured : int  0 0 0 0 0 0 0 0 0 0 ...
 $ number_pedes_fatal : int  0 0 0 0 0 0 0 0 0 0 ...
 $ number_pedes_injured : int  0 0 0 0 0 0 0 0 0 0 ...
 $ accident_severity : int  2 1 1 1 1 1 1 1 1 1 ...
 $ road_surface_condition: int  3 5 3 3 3 3 2 3 2 3 ...
 $ traffic_system : int  2 2 2 2 2 2 2 2 2 2 ...
 $ road_geometry : int  1 1 1 1 1 1 1 1 1 1 ...
 $ quality_of_surface : int  1 1 1 4 4 1 1 1 1 1 ...
 $ road_condition : int  1 1 1 1 1 1 1 1 1 1 ...
 $ lane_marking : int  2 6 2 1 2 2 2 2 1 4 ...
 $ hitrun      : int  2 2 2 2 2 2 2 2 2 2 ...
 $ control_type : int  9 9 9 9 9 9 9 9 9 9 ...
 $ road_width  : int  7 0 0 7 0 4 0 0 0 0 ...
 $ shoulder_width1 : int  1 0 0 2 0 4 0 0 0 0 ...
 $ shoulder_width2 : int  1 0 0 2 0 4 0 0 0 0 ...
 $ shoulder_type : int  1 2 2 1 2 2 2 2 1 1 ...
 $ road_defect  : int  12 12 12 12 12 12 12 12 12 12 ...
 $ speed_limit  : int  4 2 3 4 3 2 2 3 2 2 ...
 $ road_surface_type : int  1 1 1 1 3 1 3 1 1 1 ...
 $ collision_type : int  1 12 7 1 4 4 1 1 4 2 ...
 $ weather      : int  1 1 1 1 4 1 4 1 1 1 ...
 $ light_condition : int  1 4 4 4 1 1 4 4 1 4 ...
 $ road_type    : int  2 5 2 2 2 5 2 2 4 2 ...
 $ route_number : chr   "F092" "F0999" "F092" "F093" ...
 $ location_case : chr   "JALAN SUNG" "LAIN-LAIN" "JALAN SUNG" "JALAN JOHO" ...
 $ location_type : int  4 4 4 4 1 4 4 4 1 1 ...
 $ area_type    : int  7 7 7 7 7 4 7 7 3 7 ...
 $ animal_fault : int  4 4 3 4 4 4 4 4 4 4 ...
 $ estimate_cost_veh : num  0 0 0 0 0 0 0 0 0 0 ...
 $ estimate_cost_total : int  0 0 0 0 0 0 0 0 0 0 ...
 $ km_post      : int  0 0 0 0 0 0 0 0 0 0 ...
 $ almost_100m : int  0 0 0 0 0 0 0 0 0 0 ...

```

Figure 1.1: Motorcycle accident factors - the first analysis

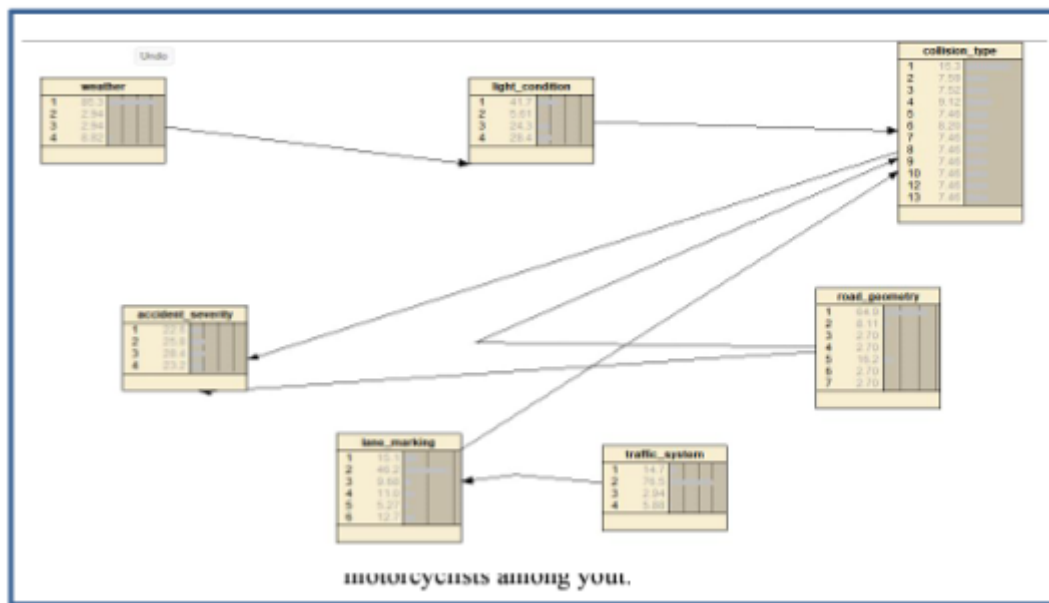


Figure 1.2 Diagram of the relationship between the variables that cause accidents to motorcyclists among you.

Analysis using Netica Software. By entering the variables that have been identified using The R Foundation for Statistical Computing, it is found that the variables are weather, lighting, type of first collision, road shape, control system, type of line and type of accident. Each of these variables is related to each other.

Where in the diagram, it is found that weather is related to lighting. (Figure 1.2) It was found that the highest weather is during sunny hours which is 85.3% which causes bright lighting which is 41.7%. It was found that during the rainy season, as many as 8.82% involved accidents that occurred in dark lighting with dark road conditions without street lights. Next, in windy and foggy weather conditions, 2.94% were caused by dark lighting conditions in the early morning and dark road conditions but with street lights. Next with the lighting condition variable it affects the first type of collision which is found that 15.3% of motorcycle accidents are caused by head on. Next, 9.12% of accidents that occur are caused by angular, 8.20% are forced, 7.59% are caused by rear, 7.52% from right angle side. The rest each contributed 7.46% resulting from the first collision side swipe, hitting animal, hitting object on road, hitting object off road, hitting pedestrian, overturned, out of control and others.

Next from the figure, it was found that the variable of the first type of collision is closely related to the type of accident. Where it was found from the results of the analysis using Netica, the highest type of injury was the type of minor injury which was as much as 28.4%, followed by severe injuries as much as 25.8%, accidents involving only damage as much as 23.2% and fatal accidents as much as 22.5%.

Road accidents are a major global health concern, resulting in over 1.24 million deaths each year (Kumar, 2018). Fatal accidents make a significant contribution to road accident statistics, with a 70% increase in Malaysia (Kamarudin et al., 2018). Several factors influence accident severity, including human behaviour, road conditions, and vehicle characteristics (Santosa et al., 2017). Motorcycles are the leading cause of fatalities and major injuries in Indonesia, with the 16-30 age group particularly vulnerable (Santosa et al., 2017). In Iran, 61% of traffic fatalities occur on rural roads, with pedestrians accounting for more than 39% of deaths (Ahadi et al., 2014). Lower

literacy levels and certain occupations, such as self-employment, are linked to higher fatality rates (Ahadi et al., 2014). Data analysis techniques such as artificial neural networks and decision trees can be used to create prediction models for traffic accidents, potentially informing policy decisions to reduce fatalities (Kumar, 2018).

From the analysis, it was found that road accidents are divided into 7 categories of road geometry, the highest number of accidents occurring among youth motorcyclists is in straight road areas, which is 64.9%, then 16.2% of accidents occur in T/Junction areas, 8.11% of accidents occur in bend road area, followed by the roundabout area by 2.7%, in the cross junction area also by 2.7%, staggered junction by 2.7% and lastly by the interchange also by 2.7%.

The analysis also found that the variable factor of road geometry is directly related to the type of road accident injury. It is displayed according to the table below. (Figure 1.3)

Road Geometry		
1	Straight	64.9%
2	Bend	8.11%
3	Roundabout	2.70%
4	Cross Junction	2.70%
5	T/Y Junction	16.2%
6	Staggerd Junction	2.70%
7	Interchanges	2.70%

Accident Severity		
1	Fatal	22.6%
2	Serious	25.8%
3	Slight	28.4%
4	Damage	23.2%

Figure 1.3 : The table shows the relationship between road geometry and accident severity

The analysis also shows the relationship between road geometry and collision type. Where the first type of collision is divided into 13 categories namely head on, right angle side, angular, side swipe, forced, hitting animal, hitting object on road, hitting object off road, hitting pedestrian, overturned, out of control and others. The data is attached as follows (Figure 1.4).

Collision Type		Road geometry	
Head on	15.3%	Straight	64.9%
Rear	7.59%	Bend	8.11%
Right angel side	7.52%	Roundabout	2.70%
Angular	9.12%	Cross Junction	2.70%
Side swipe	7.46%	T/Y Junction	16.2%
Forced	8.20%	Staggerd Junction	2.70%
Hitting animal	7.46%	Interchanges	2.70%
Hitting object on road	7.46%		

Hitting object off road	7.46%
Hitting pedestrian	7.46%
Overtuned	7.46%
Out of control	7.46%
Others	7.46%

Figure 1.4 : The table shows the relationship between road geometry and collision type.

Road geometry has a significant impact on the types of collisions and accidents that occur on highways. Horizontal curves, straight road sections, and intersections have been linked to varying crash patterns and severity levels (Rengarasu et al., 2007; Debela Jima & T. Sipos, 2022). Straight roads have a higher accident rate, but horizontal curves have more severe crashes (Debela Jima & T. Sipos, 2022). Specific geometric elements such as stopping sight distance, bend radius, and degree of curvature have been found to have a strong correlation with accident rates (Ellytrina & Zhafirah, 2023). Additionally, lane width, shoulder width, median type, and gradient all have an impact on road safety (Islam et al. 2019). To investigate the relationship between road geometry and accidents, researchers used a variety of statistical models, including Poisson regression and artificial neural networks (Rengarasu et al., 2007; Debela Jima and T. Sipos, 2022; Islam et al., 2019). These studies emphasise the significance of proper road geometric design in reducing accident frequency and severity.

4.0 Conclusion

Motorcycle accidents are an ongoing issue. Because prevention is preferable to treatment, we should take proactive measures to reduce and avoid this situation. Motorcycle accidents could be avoided if everyone, including individuals, communities, governments, and non-governmental organisations, collaborated to address road safety issues. A low accident rate could improve Malaysia's international standing and reputation, positioning it as a country with effective traffic laws and regulations. According to the factor analysis, the human behaviour elements that contribute to the highest percentages of motorcycle accidents are excessive speeding, alcohol consumption, giving motorcycle riders less attention on the road, and abrupt lane and direction changes. As a result, this study

provided Malaysian authorities with a few recommendations to help reduce the number of motorbike accidents. According To the human behaviour factor, speeding has a higher degree of variability than other behaviours (28.975%). It demonstrates how human attitudes encourage excessive speed on the road, which can lead to accidents. To install a speed limit control detector, Jabatan Pengangkutan Jalan (JPJ) and the Royal Malaysia Police (PDRM), specifically the Road Traffic Department, should work together. To enforce the speed limit, the detector must be installed inside the vehicle. When they exceed the speed limit, the detector notifies JPJ and RMP, who then take appropriate action. The detector must be registered with the vehicle's chassis number. Currently, Malaysian citizens must be 16 years old to apply for a motorcycle licence in the country. The motorcycle rider is too young at this age, and their actions on the road can sometimes result in an accident due to a lack of maturity. To reduce accident rates, Jabatan Pengangkutan Jalan (JPJ) suggests raising the minimum age for obtaining a motorcycle licence from 16 to 18. Teenagers mature around the age of 18, and their behaviour on the road may reflect their riding skills. They're also more accepting of others. We can reduce the number of car accidents here. Road safety research is critical for developing reliable strategies to mitigate the causes of road accidents and reduce the number of fatalities. To reduce the risk of fatalities and injuries to motorcyclists and pillion passengers in the event of a road accident, a safer and more forgiving road is required.

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IMPROVING PRE UNIVERSITY STUDENTS' WRITING SKILL IN STATING CLEAR STAND AND DEVELOPING EXPLICIT THESIS STATEMENT IN ARGUMENTATIVE ESSAY USING "MYS+3MI WGRID"

Julinamary Parnabas^{1*}, Vincent Parnabas², Kumaran Ramayah³

¹SMK King Edward VII, Taiping, Perak, Malaysia

²Faculty of Sport Science and Recreation, Universiti Teknologi MARA (UiTM), Shah Alam, Malaysia ³SMK Ibrahim, Kedah, Malaysia

*Corresponding Author: julina1974m@gmail.com

Abstract

English serves as a global language that acts as a lingua franca for individuals from various cultures, ethnicities and social groups in the present time. The Malaysian Ministry of Education has consistently highlighted the significance of English language through a range of initiatives. Nevertheless, recent local studies have shown that Malaysian pre university students are still struggling with essay writing. Writing essays is a significant obstacle for pre university students taking the Malaysian University English Test (MUET) as it accounts for the highest score of 60 marks. The pre university students' achievement for this section is definitely cause for concern. Thus, this Action Research aims to assist the pre university students to state their "stand" clearly and develop explicit thesis statement in their argumentative essay. Eleven pre university students with poor scores in Extended Writing in Paper 4, Writing (800/4) for the Trial Examination were selected to participate in this study using the purposive sampling. Data were triangulated based on the research participants' School Trial Examination Score Sheet, semi structured interview sessions, document analysis and classroom observation. Document analysis was done based on research participants' argumentative essays in Extended Writing in the MUET School Trial Examination for Lower Pre University. Semi structured interview sessions were conducted to identify the obstacles faced by the research participants in stating their stand clearly and in developing explicit thesis statement in their argumentative essay. "MyS+3MI WGrid" intervention was introduced to consolidate "Gemini AI" application to further scaffold the pre university students in writing their argumentative essays. Classroom observations were done for the both pre intervention stage and post intervention stage. The findings in this study provided useful pedagogical implications for policy makers, MUET academic teachers, module writers, teaching material designers and reference book publishers by taking into consideration of the appropriate possible intervention in line with the actual students' needs.

Keywords: Malaysian University English Test (MUET), pre university students, Clear stand, Explicit thesis statement

1.0 INTRODUCTION

English serves as a global language that acts as a lingua franca for individuals from various cultures, ethnicities and social groups in the present time (Dewi, 2015). Realising this, the Malaysian Ministry of Education has consistently highlighted the significance of English language through a range of initiatives. Nevertheless, recent local studies have shown that Malaysian pre university students are still struggling with essay writing. Teachers too, faced various difficulties in developing their students' capability in writing (Suyansah Swanto & Wardatul Akmam Din, 2014).

Writing essays is a significant obstacle for pre university students taking the Malaysian University English Test (MUET) because it accounts for the highest score of 60 marks. Scoring in writing seems to be a difficult task for

most of the learners (Stephanie Jee & Azlina Aziz, 2021; Voon, Teo & Joyce Voon, 2019).

Writing can be defined as the narration of exercises and experiences by the opinions, ideas and emotions of writers who possess the power of thought on a selected subject by planning their interest in the subject and in accordance with the rules of the language (Gocer, 2010) presented in an essay form. There are mainly four types of essay such as argumentative, expository, narrative and descriptive. This study focuses on improving the pre university students' writing skill in stating clear stand and developing explicit thesis statement in argumentative essay.

1.1 Argumentative Essay

The pre university students are required to write an argumentative essay of at least 250 words although there will be no explicit penalties for shorter or longer responses. The test takers are allocated with 50 minutes to complete this task in the Malaysian University English Test (Malaysian Examinations Council, 2019).

According to Oshima and Hogue (2006), an argumentative essay can be defined as an essay in which writers agree or disagree with a particular issue and used reasons to support their opinions. Writing an argumentative essay is more challenging because producing an argument is more cognitively demanding than producing narrative essays (Crowhurst, 1990). In argumentative essay, the writer holds a "position" on a controversial issue, provides reasons and opinions, clarifies and illustrates those opinions to persuade the audience to agree or disagree with an issue (Reid, 1988).

In other words, an argumentative essay requires a clear "stand", foresee the opposing ideas and have the ability to refute those ideas as well as convince the reader to trust the stand with sufficient supporting evidence (Chase, 2011). Therefore, presenting a clear stand or position with explicit thesis statement act as the backbone of the argumentative essay. It is vital for the thesis statement to be clear in order to remove any ambiguity on the purpose of writing the argumentative essay.

1.2 Scaffolding

It is undeniable that the pre university students need assistance to improve their writing skill in writing the argumentative essay. Hence, it is vital to provide sufficient instructional scaffolding when the students are at the Zone of Proximal Development. Instructional scaffolding refers to types of support provided by teachers to help students to accomplish a specific task that they are unable to accomplish on their own (Yvonne C. Campbell & Claudia Filimon, 2018).

In Vygotsky's Sociocultural theory, the Zone of Proximal Development refers to the difference between what students can do on their own and what they can achieve with guidance and encouragement from a skilled partner known as the "more knowledgeable other" (Nguyen Van Nhan, 2020) or with the assistance of technology and tools (Lim Chee Leong, Nurhanim Hassan, Filzah Md. Isa & Habibah Ab Jalil, 2018). In this study, the more knowledgeable other actually refers to the teacher, technology refers to the Gemini AI application and tools related to MyS+3MI WGrid. Refer to figure 1 to view students at the Zone of Proximal Development in Vygotsky's Sociocultural theory.

Bruner (1986) described scaffolding as the support that teachers provide to students to facilitate them in learning and mastering new tasks. The teacher gradually withdraws the scaffolding so that students transition from using the assistance of the intervention to working independently, as students begin to improve on the task assigned.

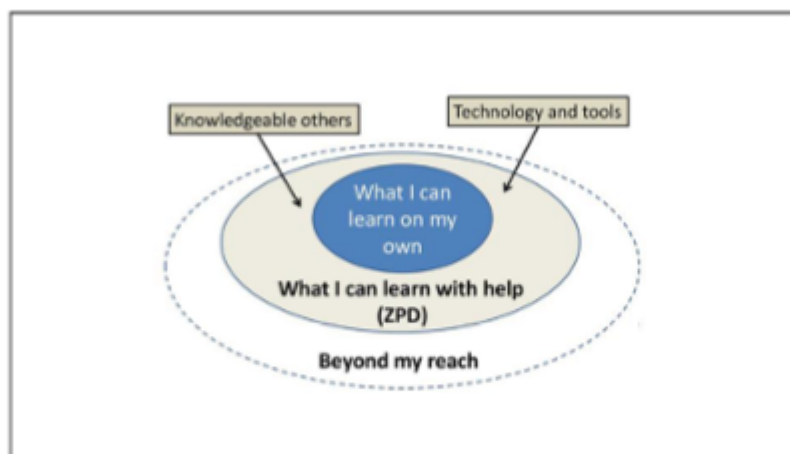


Figure 1 : Students at the Zone of Proximal Development in Vygotsky's Sociocultural theory
Source: McLeod, S. (2018). Vygotsky, Simply Psychology.

1.3 Reflection on Teaching and Learning

I was assigned to teach English Language Form 6 (*Bahasa Inggeris Tingkatan Enam*) for this particular class since they were in Lower Six. I was well aware of their English language proficiency level after reviewing their English language grades in the Malaysian Certificate of Education, also known as *Sijil Pelajaran Malaysia*. Overall, their language ability indicates that these students belong to the average and below average.

These students were moderately fluent in attempting listening, speaking and reading assessment in the School Trial Examination. However, their scores in argumentative essay were a cause of concern since 50% of the students scored less than 30 marks upon 60 marks for this section. Most of the students could not state any stand in their argumentative essays. They faced great difficulties in developing thesis statement in their introduction. These students too could not generate relevant main ideas pertaining to the topic given.

This issue is similar with a local study conducted among the pre university students by Julinamary Parnabas, Alias Areff, Hamidah Baharom, Harbhajan Singh Kartar Singh and Yushaiza Mohamad Yusop (2022) in a northern region, in Malaysia. The study conducted by Julinamary Parnabas et al. (2022) too highlighted that the pre university students do faced various challenges in stating their stands and developing explicit thesis statement in writing the argumentative essays.

Studies conducted abroad too highlighted that argumentative writing has been confirmed to be the hardest model in writing by researchers (Ferretti, Andrews-Weckerly & Lewis, 2007; Neff-van Aertselaer & Dafouz-Milne, 2008). Rahmatunisa (2014), Zhu (2001), Ka-kan-dee and Kaur (2014) discovered that students experienced a variety of obstacles when writing argumentative essays. Even English majored undergraduate students, too still cope with some difficulties in writing argumentative essays. These undergraduates were identified to face difficulties to write clearly, orderly, convincingly with relevant supporting evidence and refutation (Thi Hanh Dang, Thanh Hai Chau & To Quyen Trai, 2020).

Briefly, a fresh writing strategy is necessary to scaffold these pre university students to improve their argumentative essay writing. Hence, the initiation of "MyS+3MI WGrid" is hope to shed light on this issue.

1.4 Research Objectives

There are 2 research objectives in this study. This study is done to improve the pre university students to

- (i) state their stand clearly in an argumentative essay
- (ii) develop explicit thesis statement in their argumentative essay

1.5 Research Questions

There are 2 research questions in this study. These research questions are as below : (i) How to aid the pre university students to state their stand clearly in an argumentative essay? (ii) How to aid the pre university students to develop explicit thesis statement in an argumentative essay?

2.0 METHODOLOGY

2.1 Research Design

This Action Research is conducted using the Jean McNiff's Model (1988). The stages in this model are shown in Figure 2 below.

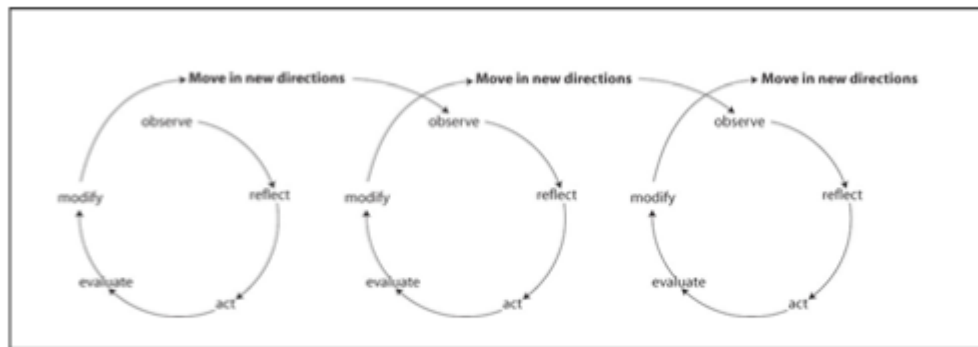


Figure 2 : The Action Research Cycles as proposed by McNiff (1992: 22)

Source : McNiff & Whitehead. (2006). All You Need to Know About Action Research. London: SAGE Publications.

2.2 Research Participants

This research was carried out with Semester 1, pre university students from a selected primer secondary school in the northern region. The population of Semester 1 MUET candidates in this school was 103 at the moment this study took place. They represented students from Malay, Indian and Other ethnicity residing in Malaysia. Refer to figure 3 to view the research participants' ethnicity in this study.

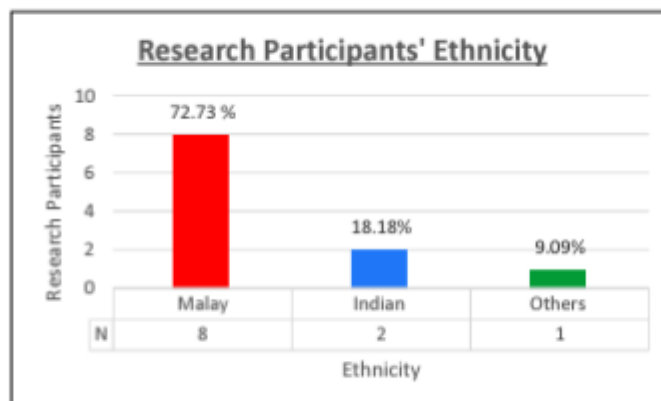


Figure 3: Research participants' ethnicity

Purposive sampling was done to select the research participants for this study by referring to their Trial examination score sheet. Eleven pre university students with poor scores in Extended Writing in Paper 4, Writing (800/4) were selected to participate in this study. These mixed gender research participants were coded using pseudonym such as “PUS 1” which refers to “Pre University Student 1” to affirm the confidentiality and anonymity. Refer to figure 4 to view the gender proportion in this study.

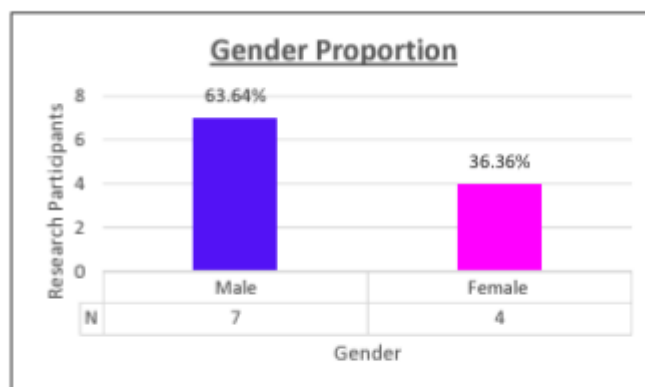


Figure 4: Gender Proportion

2.3 Implementation

This study is carried out in 5 stages as proposed by McNiff & Whitehead (2006) as shown in figure 2. These stages involved Observation, Reflection, Action, Evaluation and Modification of the intervention.

2.3.1 Observe

Semi structured classroom observation was done based on students' participation during the teaching and learning process for the Extended writing lesson. These research participants' responses during the argumentative essay in Task 2, Extended writing lessons were documented using anecdotal records from time to time.

2.3.2 Reflect

Reflection was done based on students' essays in generating and writing the main ideas to develop explicit thesis statement in accordance to the stand presented in the introduction. Reflection was also done based on the common errors produce by students from time to time in completing the task assigned.

2.3.3. Act

The Action plan was carried out in 3 stages. In the first stage, the argumentative question was discussed with the targeted research participants verbally. In the second stage, these research participants were allowed to use their handphones to access the online dictionary to facilitate their understanding on the vocabularies used in the questions. Technologically supported intervention known as “Gemini AI” was introduced in the third stage.

2.3.4 Evaluate

Students writing were analysed using the qualitative approach by referring to their “stand” pertaining to the essay topic. Students development on writing explicit thesis statement was coded and analysed using the Thematic Conceptual Matrix as suggested by Miles and Huberman (1994).

2.3.5 Modify

Modification of the intervention were identified to be necessary based on students' performance in identifying the

main ideas to develop effective thesis statement using “Gemini AI.” The necessity of modifying the usage of this intervention was further affirmed by conducting several interview sessions with the research participants. Hence, “MyS+3MI WGrid” was further introduced to aid the research participants in arranging the main ideas identified using the Gemini AI in accordance with their stand.

2.4 Data Collection

Triangulated data were collected based on the research participants’ School Trial Examination Score Sheet, document analysis, semi structured interview sessions and classroom observation.

Students’ scores in the Extended Writing were collected from the School Trial Examination Score Sheet.

Then document analysis was done based on students’ argumentative essays presented in the MUET School Trial Examination for Lower Pre University. In this study, document analysis based on students’ essays were done in 3 phases. In the first phase, students’ essays were collected prior to the introduction of any intervention. Second phase included recollecting students essays after the introduction of the technologically supported intervention namely “Gemini AI” accessed using smart phones. The third phase comprised students’ essays gathered again after the further modification of the intervention using the “MyS+3MI WGrid.”

Students feedback before, during and after the application of the intervention in writing clear stand and explicit thesis statement were investigated using the semi structured interview sessions.

Qualitative data were gathered from classroom observation before, during and after the implementation of the intervention. These data were documented in anecdotal records.

2.5 Data Analysis

Data analysis was done based on the triangulated data, which included School Trial Examination Score Sheet, interview transcriptions, document analysis and anecdotal records.

Document analyses were conducted using the scores earned by students for the essay in Task 2, Extended Writing, as recorded on their school Trial examination score sheet. Students with poor scores in the Extended Writing were selected to participate in this study. These students’ argumentative essays were analysed using thematic conceptual matrix to identify their clarity in stating the “stand” and “explicit thesis statement”.

Eleven students with poor scores were identified for the semi structured interview sessions. Semi structured interview sessions were carried out on these research participants to investigate their comprehension, concerns and challenges in “stating their stand clearly” and developing “explicit thesis statement” in writing the argumentative essays. The interview data were audio recorded and transcribed using coding scheme.

Anecdotal records were updated based on classroom observations on students' performance prior to, during and after the implementation of the intervention.

3.0 FINDINGS AND DISCUSSION

The findings in this study are discussed in 2 stages. These stages are the Pre intervention stage and Post intervention stage.

3.1 Pre Intervention

Pre Intervention stage revealed that students do faced various difficulties in writing explicit thesis statement in accordance with their stand in the argumentative essays in MUET Trial Examination for the Lower Six students. Refer to figure 5 to view the argumentative essay question presented in MUET Trial Examination for Lower Pre University.

Task 2

You are advised to spend about **50 minutes** on this task.

You attended a talk on skilled-based education. Some of the programmes found in skilled-based education are photography and automotive. During the talk, the following statement was made by the speaker:

"Skilled-based education is a ticket to unlimited opportunities in life."

Write an essay expressing your opinion on the statement. **Write at least 250 words.** [60]

Figure 5: Extended Writing – MUET Trial Examination for Pre university (800/4) Writing Source: Malaysian Examinations Council. (2023). MUET Writing, Paper 4 (800/4) Session 2/2023.

This study discovered that PUS 1, PUS 3, PUS 4, PUS 5, PUS 8, PUS 10 and PUS 11 were able to write simple stand (underlined in yellow in figure 6 for PUS 6) in their argumentative essays. However, they were unable to develop explicit thesis statement pertaining to the essay topic tested in the school Trial Examination. They were incapable to generate and write relevant main ideas to developing explicit thesis statement. According to PUS 1, "when I writing the introduction, I was also teacher still thinking what point... point not *chet* come yet." Meanwhile research participant PUS 3 claimed that, "I also no have all point *laa* in time writing the intro..." In other words, this means that these research participants were actually unsure of the main ideas when they were writing the introductory paragraph. Refer to figure 6 to view the essay written by PUS 1 and figure 7 to view the essay written by PUS 3.

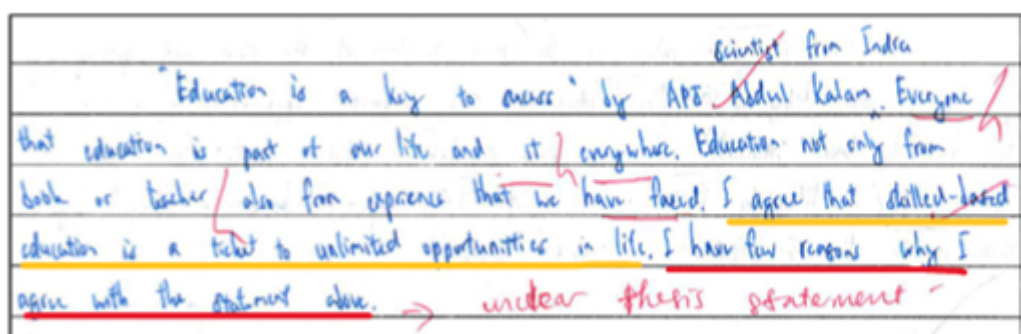


Figure 6 : Research participant PUS 1 was able to write clear stand but unable to produce explicit thesis statement in the argumentative essay.

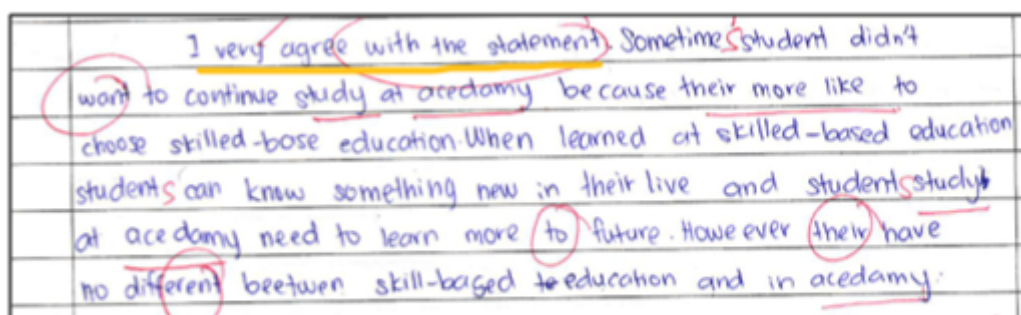


Figure 7: Research participant PUS 3 were able to produce stand but unable to provide any main ideas.

Meanwhile, research participant PUS 2, PUS 6, PUS 7 and PUS 9 were unable to state any stand nor develop explicit thesis statement in their argumentative essay. Refer to Figure 8 to view the argumentative essay written by PUS 2.

The findings in this study are similar with the study conducted by Julinamary Parnabas et al. (2022) with the pre university students from a selected premier secondary school in northern Perak. In this study only 25% of the research participants were able to develop effective stand in their essays due to poor language command.

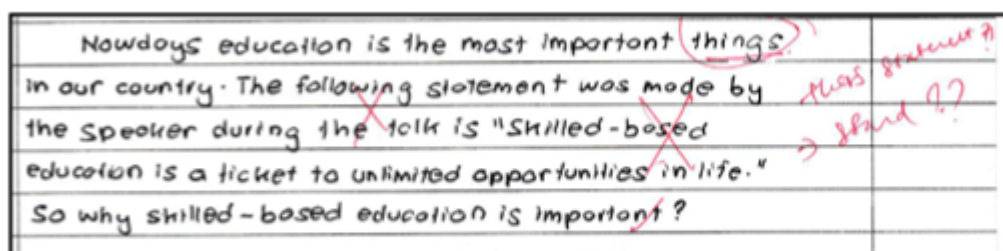


Figure 8: Research participant PUS 2 was unable to state the stand and explicit thesis statement in argumentative essay.

It is indisputable that linguistic competency is one of the most crucial components in assisting students to access writing effectively. It is evident that grammatical errors are also present in the writing, as seen in PUS 1 (figure 6), PUS 3 (figure 7) and PUS 2 in figure 8. Rajoo (2010) argued that grammar also contributes significantly to students' errors since they construct sentences without taking grammar into consideration.

3.2 Post Intervention

During this phase of intervention, research participants were introduced to a technologically aided intervention known as the "Gemini AI" application. The Malaysian Ministry of Education has made this application available for free in Delima 2.0. Gemini AI enable these research participants to explore the relevant main ideas pertaining to the topic and their stand. Then students were taught to arrange their main ideas using the "MyS+3MI WGrid" which means "My stand and 3 main ideas Writing Grid.

Research participants were taught to utilise this online application using their smart phones during the writing lessons in the classroom. Classroom observation revealed that the usage of Gemini AI is able to facilitate students to locate relevant main ideas pertaining to the essay topic in completing their correction for the MUET Trial Examination at a faster rate. It was also evident that Gemini AI manage to provide both content schemata dan language schemata to students in comprehending the argumentative essays topics or subject matter better.

Classroom observation too discovered that utilising this online application save students' time in exploring for main ideas in completing their corrections during the lesson. At the same time, utilising Gemini AI application also enable teacher to monitor and hinder research participants from visiting irrelevant unnecessary websites in the process of locating the main ideas required for the task completion. Refer to figure 9 to view the usage of "Gemini AI" in the ESL classroom.



Figure 9: Usage of "Gemini AI" in the ESL classroom

It was identified that all the eleven research participants were able to write simple stand for their essays with the assistance of Gemini AI. They were also able to locate some relevant main ideas using this application in accordance with the essay topic.

However, research participant PUS 2, PUS 6, PUS 7 and PUS 9 still faced difficulties in matching their stand in the argumentative essay with the main ideas generated using the Gemini AI application. Their stands (underlined in yellow in figure 10 for PUS 10) were found to be contradicted with the main ideas (underlined in red in figure 10) provided. Refer to figure 10 to view the mismatch of the stand and thesis statement identified in research participant PUS 9.

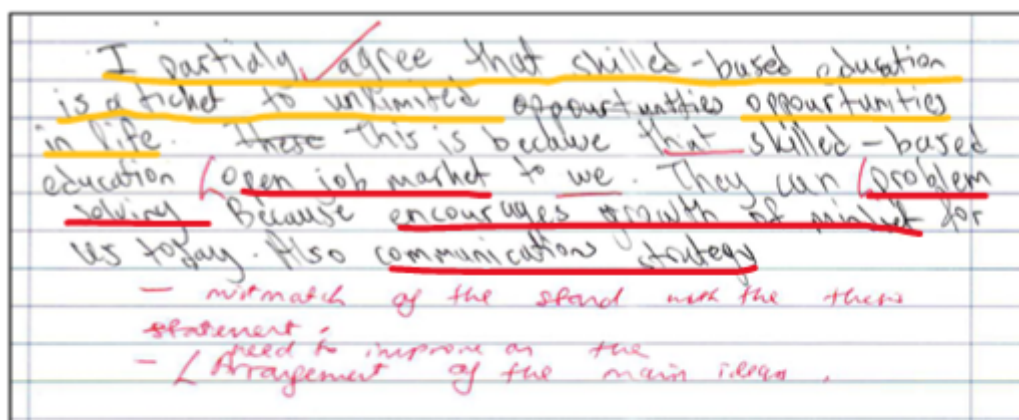


Figure 10: A mismatch of the stand with the thesis statement identified in research participant PUS 9

This study too discovered that although research participant PUS 1, PUS 3, PUS 4, PUS 5, PUS 8, PUS 9, PUS 10 and PUS 11 were able to locate the relevant main ideas but they were still unable to arrange the main ideas in a single sentence to develop a proper explicit thesis statement. These research participants presented all their main ideas in various new sentences as shown in figure 10 by PUS 9 and in figure 11 by PUS 5.

Research participant PUS 5 were able to state a very clear stand in his argumentative essay. This research participant too was able to provide 3 main ideas. The first main idea is "many varieties of education" which actually means variety of courses offered in skilled based education. The second main idea is on "jobs ... help them gaining knowledge and experience ... mastering the job." This means, skilled based education is capable to provide knowledge and experience to learners in mastering the job related task. The third main idea is on "experience and training." This means, skilled based education is also capable to provide experience and training to the learners. Repetition of the main idea on "experience" is also evident in the essay wrote by PUS 5. Research participant PUS 5 claimed that "not realise *laa* teacher same ideas got two ... I write fast to finish before collecting the test paper." This actually indicate that this research participant was actually unaware of the

repetition of ideas in his writing due to poor planning in drafting the essay and poor time management during examination.

Similar findings were also found in a study conducted by Thi Hanh Dang, Thanh Hai Chau and To Quyen Trai (2020) among 90 English majors undergraduate at Tay Do University in Vietnam. The study revealed that these undergraduates struggled with planning the structure and development of an argumentative essay due to lack of critical thinking skills.

According to Maulidini Aulia Tasya (2022) planning in writing is effective in assisting students to stay on track while developing the essay, as it allows them to maintain focus on the main ideas. However, if students continue to write without appropriate planning or drafting out the main ideas in the thesis statement, then they would end getting a little lost in writing and miss out the essential elements in their essays.

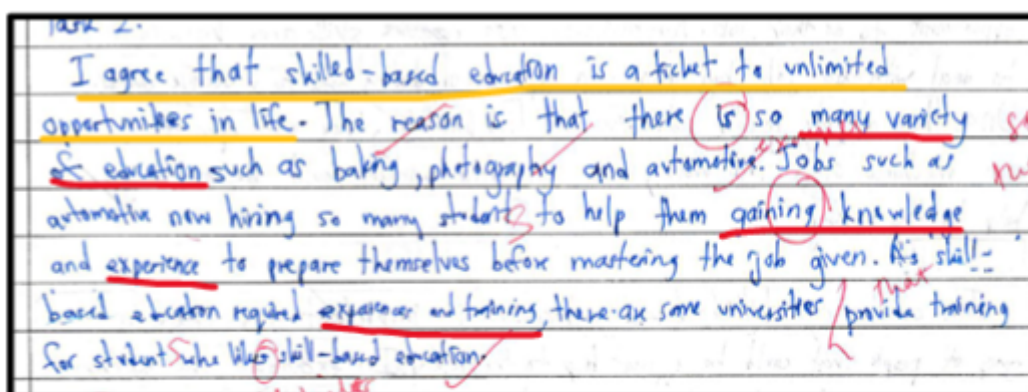


Figure 11: Stand (underlined in yellow) and main ideas (underlined in red) provided by PUS 5

Hence, the intervention named “MyS+3MI WGrid” which means “My stand plus 3 Main Ideas Writing Grid” was further introduced to consolidate the application of Gemini AI usage in the writing lesson. All the research participants were further coached to use Gemini AI and record their main ideas in “MyS+3MI WGrid.” All the eleven research participants were able to state clear stand in the argumentative essay. However, only ten research participants were able to detect and structure their main ideas to develop explicit thesis statement, after 4 weeks of drilling using this intervention. They were able to list out the relevant main ideas extracted using Gemini AI and convert their main ideas into thesis statement. Repetition of main ideas were also undetected as these research participants were further scaffolded using this intervention. Refer to figure 12 to view the use of “MyS+3MI WGrid” by PUS 7.

FOR ARGUMENTATIVE ESSAYS ONLY			
ELEMENT	POSITION	Please (✓) the selected stand. You may select only ONE position	Sentence construction based on the chosen STAND
STAND	(a) I agree	✓	I will definitely agree that skilled-based education is a ticket to unlimited opportunities in life.
	(b) I disagree		
	(c) I partially agree		
ELEMENT	MAIN IDEAS	Please state the key words for the main ideas	Sentence construction on the THESIS STATEMENT
THESIS STATEMENT	(a) Main Idea 1 :	Develop confidence	Skilled-based education can develop confidence, enhance creativity and higher the chance of job opportunities
	(b) Main Idea 2 :	enhance creativity	
	(c) Main Idea 3 :	higher the chance of job opportunities	

Figure 12: The use of "MyS+3MI WGrid" by PUS 7

The utilisation of "MyS+3MI WGrid" in conjunction with Gemini AI application too manage to reduce the grammatical errors produce by these nine students in their writing. This is because this intervention enables them to organise their sentences better as they manage to select words and sentences patterns from this web tool.

Meanwhile, another one research participant was only able to provide single main idea in developing his thesis statement. His writing too reflects poor linguistic competency. Hence, this student will be included in the second cycle in Jean McNiff's Model.

4.0 TEACHING AND LEARNING REFLECTION

4.1 Teaching Reflection

The practitioners' own self-learning during the study is one of the key components of action research (Coghlan & Brannick, 2010). It is undeniable that during the last twenty years, rapid developments in technology have led to changes in the way we teach and learn. Technology has become an integral part of society's everyday landscape. Students who have grown up amid what has been dubbed the technological or digital revolution have never known a world without instantaneous communication and easy access to vast quantities of information delivered in multiple formats.

Hence, in this study, I learnt that integrating technology such as Gemini AI is a necessity in teaching and learning today. Integrating technology could make learning much efficient, easier and fun in the ESL classroom. Despite being user-friendly and efficient, AI Gemini too revolutionised the way students access and interact with various information by providing advanced, more accurate and contextually relevant responses (Imran & Almusharraf, 2024) pertaining to the argumentative essay topics. This aid in reducing students' anxiety in exploring and locating relevant main ideas pertaining

to the argumentative essay topics. Reducing students' anxiety is vital in significantly boosting their learning capability as suggested by Krashen in his Affective Filter Hypothesis (Krashen, 1981).

4.2 Save Time

Further reflection revealed that the usage of Gemini AI in the classroom actually save students' time to locate relevant main ideas pertaining to the argumentative essay topics. Students don't have to waste time browse through various unnecessary irrelevant websites in the classroom while locating the main ideas for their argumentative essays.

4.3 Drilling

The use of MyS+3MI WGrid too managed to drill students repeatedly to teach structural patterns of stating the stand clearly and arranging the main ideas to develop explicit thesis statement for the below average students. Drilling technique seems to have a favourable influence on low proficiency ESL students' writing ability (Suyansah Swanto & Wardatul Akmam Din, 2014). Repeated practice on using this intervention aid students to enhance their essays in stating clear stand and developing explicit thesis statement in their argumentative essay.

4.4 Students' Reflection

Active involvement of research participants in this Action research manage to provide students with various kinds of knowledge. The research participants learn how to use AI Gemini application to locate main ideas to develop explicit thesis statement in a faster manner. Hence, students save time by avoid visiting unnecessary irrelevant websites in the process of locating main ideas for their argumentative essays. At the same time, the use of "MyS+3MI WGrid" enable students to have repeated practise in arranging the main ideas to develop explicit thesis statement.

This study also succeeded in raising knowledge among pre university students about the composition of the opening paragraph of an argumentative essay. By enumerating all the pertinent primary concepts, students will become more adept at taking a firm stance and crafting a concise thesis statement. As a result, these pre university students would be more aware of their areas of weakness, strive to find suitable and practical solutions to get over these obstacles and develop their English writing skills.

5.0 FUTURE RESEARCH

This study can be used to form the basis for the next cycle in McNiff's Action Research Cycles (1992: 22). This study managed to highlight some of the challenges that pre-university students encounter while stating a clear position and creating an explicit thesis statement in their argumentative essays.

This issue was rectified using the AI Gemini in conjunction with "MyS+3MI WGrid." However, this intervention could be further improved by digitalising the "MyS+3MI WGrid" to save cost and support the paperless policy.

This study too discovered that there were still some minor grammatical errors evident in some students' essays. Hence, the use of more online web tools such as "Grammarly" could be introduced in future to assist students to produce grammatically error free essays and enhance their linguistic competency.

6.0 CONCLUSION

This research was done to improve the pre university students' writing skill in stating clear stand and developing explicit thesis statement in argumentative essay. Students score in the MUET Trial Examination revealed that these students do faced various difficulties in writing explicit thesis statement in accordance with their stand in the argumentative essays.

In a nutshell, all research participants were able to state clear stand after scaffolding with the intervention namely "MyS+3MI WGrid" in conjunction with AI Gemini. However, only ten research participants were able to provide 3 main ideas to develop explicit thesis statement in their argumentative essay with some grammatical errors. Another one research participant was identified as still facing difficulties in generating main ideas to develop effective thesis statement. This happens because of various factors such as limited vocabulary, struggles in

verbalizing thoughts, challenges in converting ideas from native language to target language, unable to organise main ideas beforehand, and insufficient knowledge of subject matter as well as grammar.

Therefore, it is strongly recommended to inculcate reading habits in target language. This would enhance and broaden the pre university students' content schemata and language schemata in terms of topics, vocabulary and grammar. Routine reading habits is capable to facilitate students to generate fresh ideas, shaping, developing and organising the ideas in their writing. Thus, it is crucial to incorporate range of supporting programs to improve language learning and acquisition in order to boost writing skills through reading activities.

Consequently, teaching of grammar in isolation through various supporting programs too should be introduced to scaffold the poor achievers in their Zone of Proximal Development (Julinamary Parnabas et al., 2022). In addition to this, it is crucial to develop remedial modules to further enhance writing skills by improving linguistic competence of the students.

In conclusion, the finding in this study provides significant insight for the policy makers, MUET academic teachers, module writers, teaching material designers, pedagogical implications and reference book publishers by taking into consideration of the appropriate possible intervention in line with the actual students' needs.

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THE GUIDELINE FRAMEWORK OF MATERNITY CARE PRACTICES TOWARD THE ENHANCEMENT OF SHARIAH COMPLIANT HOSPITAL

Siti Khatijah Ismail^{1*}, Normadiah Daud², Syh. Noorul Madiah Syed Husin³, Siti Fatimah Salleh⁴, Zainab Mohd Shafie⁵

^{1,2,3,4} Faculty of Islamic Contemporary Studies, Universiti Sultan Zainal Abidin, Kuala Nerus, Terengganu, Malaysia

² Faculty of Medicine, Universiti Sultan Zainal Abidin, Kuala Nerus, Terengganu, Malaysia *Correspondent
Author: Khatijah@unisza.edu.my

Abstract:

Shariah-Compliant Hospitals are healthcare institutions that emphasize Islamic principles in their services. In the context of maternity care, healthcare providers' practices aligned with Shariah are critical to ensuring the comfort and safety of Muslim patients. The presence of Shariah-compliant hospitals is increasing in Malaysia; however, there is a lack of specific guidelines to assist healthcare providers in applying Shariah principles in maternity care. This need is more pressing given the requirement to ensure medical practices do not conflict with Islamic values. There is confusion and a lack of specific guidance for healthcare providers in practicing Shariah principles in maternity care. This deficiency can affect the quality of services and patients' confidence in Shariah-compliant hospitals. This study aims to develop a framework of guidelines for healthcare providers' practices in Shariah-compliant maternity care. The study uses a qualitative approach through document analysis about maternity care services. The collected data are analyzed using a thematic approach to identify key themes related to Shariah-compliant practices. The findings of this study indicate an urgent need for comprehensive and practical guidelines. Healthcare providers face challenges in integrating Shariah principles with modern medical practices. This study also proposes a framework of guidelines that can be applied in Shariah-compliant hospitals to improve the quality of maternity care services.

Key words: Maternity Care, Shariah-Compliant Hospitals, Guideline Framework

1.0 Introduction

In Malaysia, the concepts of Shariah-Compliant Hospitals and Worship-Friendly Hospitals (HMI) are gaining increasing attention and have become important agendas in the healthcare sector to meet the needs of the Muslim community specifically and the Malaysian population generally. The launch of the Malaysian Shariah Index by former Prime Minister Dato' Sri Mohd Najib bin Tun Abdul Razak on February 10, 2015, also led to the introduction of a framework for Islamic governance in Malaysia. One of the main areas included in this Shariah compliant index, based on *maqasid shariah*, is the health sector. The input for this health sector is through compliance with shariah-compliant work practices, quality assurance, and effectiveness of processes, as well as continuous empowerment and strengthening of structural resources and human resources (JAKIM, 2015). This is also related to the goal of meeting Sustainable Development Goal (SDG) 3, which focuses on Good Health and Well-Being at the international level (WHO, 2018).

Establishing core Islamic values within organizations that manage hospitals is also one of the criteria for a shariah-compliant hospital. This clearly demonstrates that shariah-compliant work practices are an important aspect in measuring the compliance of the health sector with *maqasid shariah*, thus contributing to the achievement of SDG 3. The field of maternity services, in particular, is an area of health that requires a holistic approach to ensure optimal benefits for all parties involved. The development of a shariah-compliant hospital concept necessitates the integration of Islamic values in various aspects, such as infrastructure facilities, administration, management of medications, patients, and healthcare staff.

In this regard, healthcare workers are seen as individuals directly involved with the national healthcare services. This group is also a key entity supporting the success of the Shariah Compliant Hospital concept and the implementation of Worship-Friendly Hospitals (HMI). The general framework for the criteria of a healthcare worker in a shariah-compliant hospital requires the development of detailed guidelines, particularly in aspects of maternity care. Recognizing the importance of the role of healthcare workers in hospital services in general and in specific fields such as obstetrics and gynaecology, this study will develop a set of guidelines necessary for healthcare workers to ensure their role as entities that support the success of the Shariah-Compliant Hospital concept, which practices worship-friendly principles. The study will identify the basic provisions for the practice of maternity care providers and highlight guidelines in aspects of preserving patients' rights and privacy, as well as resolving related Shariah issues. This study is also a continuation of research related to the maternity care model in Malaysia (Siti Khatijah & Lukman, 2022) and the need for Shariah compliant maternity services in Malaysia (Siti Khatijah & Lukman, 2022).

2.0 Literature Review

Various studies related to Shariah compliance in Malaysia have been conducted by previous researchers. Studies on Shariah-compliant hotels conducted by Nor Zafir Md Salleh et al. (2014), Sulaiman, Z.A. et al. (2022), and Michael Hall et al. (2019) show consumer awareness in seeking services that align with shariah principles. This is similarly reflected in the attitudes of tourists visiting Malaysia. The aspect of shariah compliance is also a focus in other fields such as administration, financial financing, and national governance.

The history of maternity care in Malaysia dates back to ancient times when traditional practices and rituals were used to ensure the well-being of mothers and babies. Over the years, these practices have evolved to incorporate modern medical techniques and technologies. Today, Malaysia has a comprehensive healthcare system that provides maternity care services to women across the country. The principal public health provider in Malaysia is the Ministry of Health, which offers primary, secondary, and tertiary care through a range of healthcare facilities, including clinics, general hospitals, and district hospitals. In 2005, there were 1,919 rural clinics, 89 maternity and child health clinics, 146 mobile clinics, 122 MOH hospitals (a total of 30,021 beds), 6 special medical facilities (with 4,740 beds), and 809 health clinics. The availability of healthcare is a basic tenet of the Malaysian healthcare system. In the World Health Report 2000, Malaysia was placed 49th out of 191 WHO member nations. The report evaluated the effectiveness of the health system as a whole in relation to three goals: responsiveness, excellent health, and equitable financial contribution (WHO, 2000). The rise in the number of skilled personnel (doctors, nurses, midwives) over the traditional birth attendants was an important factor in the reduction of maternal mortality. The women started to use the government trained midwives for antenatal care and deliveries and as such maternal mortality declined (Indra Pathmanathan et. al, 2003).

The government has implemented various policies and programs to improve maternal and child health outcomes, including the promotion of Shariah compliant practices in maternity care (Hamzah M. et al, 2019). Despite these efforts, there is still a need to further integrate Shariah principles into maternity care to ensure that Muslim women receive culturally sensitive and religiously appropriate care during pregnancy, childbirth, and postpartum. This will not only benefit the physical and emotional well-being of mothers and babies but also strengthen the bond between healthcare providers and Muslim communities.

The guidelines framework for a good maternity care practice of health care givers includes ensuring timely, equitable, respectful, evidence-based, and safe maternal health care, delivered through context-appropriate implementation strategies. It also involves building linkages within and between maternal and other health care services to address the increasing diversity of the burden of poor maternal health (Koblinsky, 2016). Building trust between care recipients, providers, and managers, lowering out-of-pocket expenses, resolving access barriers, and enhancing quality of care are all part of the framework of recommendations for health care providers' optimal maternity care practices. Sociocultural aspects, the standing of the facility, and past encounters are trust determinants in maternity care that influence care seeking behaviors. In maternity care settings, trusting relationships are also influenced by structural variables and gendered patient-provider interactions. Health facilities' ability to adjust to policy changes and accountability elements can both have an impact on confidence in policy contexts like Kenya's devolution and free maternity programs (Kathy et al., 2019).

There are general guidelines in delivering maternity services. These guidelines include ensuring timely, fair, respectful, evidence-based, and secure maternal health services are delivered through context-friendly implementation strategies. It also involves create relation between maternal health services and other health services to address the diversity of poor maternal care burdens (Ciaran Crowe & Kim Manley, 2019). This study will focus on developing a framework for maternity care practice guidelines to further strengthen the concept of Shariah-compliant hospitals.

3.0 Methodology

The research employs document analysis as the primary methodology to develop a guideline framework for maternity care practices that align with Shariah-compliant principles. This approach involves a comprehensive review and examination of existing literature, policy documents, and relevant guidelines that pertain to Shariah compliance in healthcare, particularly in maternity services. The analysis focuses on identifying key elements and best practices from various sources, including religious texts, medical ethics, and legal frameworks that influence Shariah-compliant practices. By synthesizing information from these documents, the study aims to establish a robust framework that healthcare practitioners can adopt to ensure their maternity care services are consistent with Shariah principles. The findings from the document analysis will provide a solid foundation for the development of detailed guidelines that address both the practical and ethical aspects of maternity care in Shariah-compliant hospitals.

4.0 Discussion and Conclusion

The study on The Guideline Framework for Maternity Care Practices Towards the Enhancement of Shariah Compliant Hospitals reveals the importance of developing Shariah based guidelines to guide healthcare workers in providing maternity services that adhere to Islamic principles. These guidelines encompass aspects such as modesty, emergency management, and the execution of medical procedures that comply with Shariah law. The study also highlights the critical need for enhanced training and education programs for healthcare workers to equip them with the knowledge and skills required to apply Shariah principles in maternity care. This not only ensures high-quality service but also guarantees that the services are Shariah-compliant.

Additionally, the study emphasizes the importance of strengthening interpersonal relationships between healthcare workers and patients, considering religious and cultural sensitivities. Effective communication is key in explaining treatment options that align with Shariah principles. The study also identifies the need to review and refine certain medical procedures, such as Bilateral Tubal Ligation (BTL), to ensure they align with Shariah principles, with potential solutions including more Shariah-compliant alternatives or clear justifications for specific cases. Ultimately, the implementation of these guidelines is expected to enhance the overall Shariah compliance of hospitals, solidifying their reputation as institutions committed to upholding Islamic values in all aspects of service delivery.

Importance of Religious Considerations in Healthcare

Medical professionals must balance upholding medical regulations with their commitment to religious ideals when treating patients. When healthcare practitioners disregard Islamic standards, patients' health results may suffer, which could result in delayed treatment, reluctance to seek care, and ultimately worse outcomes (Karen et al., 2011). Enhancing patient satisfaction, treatment adherence, and disease outcomes requires effective communication and an understanding of patients' religious and cultural views (Karen et al., 2011).

Both patients and providers recognize the importance of addressing language-related communication barriers and lack of understanding of disease processes to ensure culturally appropriate care for Muslim women (Karen et al., 2011). Healthcare practitioners can have a better understanding and appreciation of maternity leave by using recommendations such as guidelines for maternity care practices by healthcare workers. Religious considerations of their patients, ultimately leading to improved patient outcomes.

By recognizing and incorporating religious beliefs into patient care, healthcare professionals can create a more holistic and patient-centered approach that promotes the well-being of all individuals (Christina P. & Betty F.,

2011) and a part of shariah compliant hospital scope (Raimi Rahmat Yahya, 2018) . For example, a Muslim woman may refuse certain medical treatments during pregnancy due to religious beliefs, such as avoiding medications that contain alcohol. Healthcare providers who are aware of these considerations can work with the patient to find alternative solutions that align with her faith while still ensuring her health and safety. This level of understanding and respect can foster trust between the patient and provider, leading to better cooperation and outcomes in the long run.

Challenges in Implementing The Role

The existence of the Shariah-Compliant Hospital concept in general, and in the context of maternity services specifically, not only impacts hospital management practices but also closely relates to the practices of healthcare workers. Healthcare workers in the field of maternity face challenges in adhering to this Shariah-compliant concept. These challenges encompass the application of Shariah-compliant principles, interpersonal relationships with patients, and determining legal rulings related to maternity care.

In addition to the requirement for halal medications, healthcare workers also face challenges in ensuring that medical procedures fully comply with Shariah principles, particularly in maternity services. For instance, in certain cases, a bilateral tubal ligation (BTL) or tubectomy might be necessary for the safety of the mother's life, but such a procedure may not align with Shariah principles if its necessity is not thoroughly examined.

From the aspects of training and education, healthcare workers still require both elements to further enhance the services provided and to empower the concept of Shariah-compliant hospitals in general, and maternity services in particular. These elements are crucial for providing an understanding of applying Shariah principles in a medical context. Another challenge for healthcare workers is related to interpersonal relationships with patients. Religious and cultural aspects can sometimes pose challenges for them in providing the best Shariah-compliant services. There is a possibility that patients or their families may have differing opinions on the appropriate treatment. For instance, they might reject certain treatments for religious reasons, which can lead to conflicts between medical needs and Shariah aspects.

Healthcare providers must set aside funds to supply the right supplies, facilities, and qualified personnel so that Muslims can fulfill their religious duties. Financial implications play a major role in determining the feasibility of accommodating Islamic practices and Muslim-friendly regulations (Elmira & Amilah, 2019). Research has shown that there is a lack of knowledge among healthcare providers about the religious needs of Muslims, leading to challenges in obtaining religious accommodation (Elmira & Amilah, 2019). Due to this ignorance, Muslim patients may feel ignored or misinterpreted when receiving medical care. Healthcare professionals need to actively educate themselves on the religious practices and beliefs of their Muslim patients in order to close this knowledge gap. They can guarantee that every patient receives the culturally competent treatment they need by doing this. deserve. This will not only improve patient satisfaction and outcomes but also promote a more inclusive and respectful healthcare environment for all. For example, a Muslim patient may require special dietary considerations during their hospital stay, such as avoiding pork or alcohol. If healthcare providers are unaware of these restrictions, it could lead to misunderstandings and potential harm to the patient's health.

By taking the time to learn about and respect these religious practices, (Elmira & Amilah, 2019) healthcare providers can ensure that all patients receive the appropriate care and support they need. This level of cultural competence can also help build trust between healthcare providers and patients, leading to better communication and overall quality of care. Additionally, by acknowledging and accommodating diverse religious beliefs, healthcare facilities can create a welcoming and inclusive environment that values the individual needs and preferences of each patient. Ultimately, by prioritizing cultural sensitivity and respect, healthcare providers can truly deliver patient-centered care that promotes the well-being of all individuals.

Framework of Practice Guidelines for Health Workers in Maternity Care

The guidelines framework for a good maternity care practice of health care givers involves providing high-quality care that meets the needs of women, newborn infants, and families throughout the pregnancy, birth, and postpartum period. This includes effective practices, organization of care, values of care providers, and characteristics of care providers (Mary et al., 2014).

Adherence to high-quality clinical practice guidelines, combined with simulation-based training, can help improve providers knowledge, skills, and attitudes (Koblinsky, 2016). However, the shortage of qualified health workers, especially in low-income countries, remains a challenge in ensuring quality maternity care (Koblinsky, 2016). It is important to tailor care to the local burden of illness and address issues like timeliness, quality, and over-intervention in maternity care services (Koblinsky, 2016). Global recommendations for care content are valuable, but implementation strategies should consider context, resources, and individual needs due to variations in health systems and maternity care models (Koblinsky, 2016).

In addition to addressing workforce shortages, improving the quality of maternity care also requires a focus on continuous education and training for existing providers. This includes ongoing professional development opportunities, mentorship programs, and regular skills assessments to ensure competency and adherence to best practices. By investing in the education and support of healthcare workers, we can ultimately improve the overall quality of care provided to pregnant women and their newborns (Karen et al., 2011) (Mary et al., 2014) (Koblinsky, 2016).

This investment in education and training not only benefits the healthcare providers themselves, but also has a direct impact on patient outcomes. Providers who receive ongoing education and mentorship are better equipped to handle complex cases and provide evidence based care. By prioritizing the professional development of maternity care providers, we can ensure that pregnant women receive the highest quality care possible, leading to better health outcomes for both mothers and babies. Ultimately, investing in the education and support of healthcare workers is crucial for improving the overall quality of maternity care and promoting positive birth experiences (Karen et al., 2011; Koblinsky, 2016; Elmira & Amilah, 2019)

Based on previous studies and current needs, several elements must serve as the foundation for developing the framework of guidelines. The necessary items include Introduction, Core Principles, Patient Care Guidelines, Clinical Practices, Staff Training and Development, Operational Policies, Community Engagement, and Conclusion. The introduction provide a structured and comprehensive framework that aligns maternity services with the principles of Shariah, ensuring that healthcare delivery respects Islamic ethical values while maintaining high standards of medical care. The framework is applicable to all health workers involved in maternity services, including doctors, nurses, midwives, and support staff. Under the aspect of Core Principles, the guidelines focus on preserving religion, life, dignity, and ethical conduct. Meanwhile, the Patient Care Guidelines emphasize elements such as Informed Consent and Autonomy, Privacy and Modesty, and Spiritual Support. For the aspect of Clinical Practices, there are three areas of management that healthcare workers need to address in a Shariah compliant manner, namely during labour and delivery, postpartum care, and new born care.

Every healthcare worker in maternity services must also emphasize the aspect of training and development that focuses on cultural and religious competency. Under Operational Policies, this aspect aims to ensure that resources such as female staff and prayer facilities are adequately allocated to support Shariah-compliant care. It also aims to establish a committee to regularly review and assess the implementation of Shariah-compliant practices in maternity services and conduct patient satisfaction surveys to gather feedback on the Shariah-compliance of services provided. Through the Community Engagement aspect, educational materials should be developed to inform patients about the Shariah-compliant services available at the hospital, host community workshops to educate the public on the importance of Shariah-compliant maternity care, and create channels for patients and families to provide feedback on their experience with maternity services, ensuring that concerns related to Shariah compliance are addressed promptly. In conclusion, the framework emphasizes the hospital's commitment to providing maternity care that is both medically excellent and fully compliant with Shariah principles.

Overall, the implementation of guidelines for maternity care practices by healthcare workers in shariah-compliant hospitals has the potential to greatly benefit both patients and healthcare providers. Despite challenges such as resistance to change and lack of resources, strategies can be put in place to overcome these barriers and promote compliance with the guidelines. By doing so, we can ensure improved patient satisfaction, trust, and quality of care for Muslim patients, while also strengthening ethical and moral values in healthcare practices. It is imperative that healthcare workers recognize the importance of implementing these guidelines in order to provide the best possible care in line with Islamic principles (Karen et al., 2011) and make the necessary adjustments to their practices. This may involve providing cultural competency training for staff, ensuring that appropriate resources and facilities are available to accommodate Muslim patients' needs, and actively seeking feedback from the community to continuously improve services. By prioritizing adherence to Syariah guidelines, healthcare institutions can not only better serve their Muslim patients, but also uphold their commitment to providing equitable and respectful care for all individuals. It is time for healthcare organizations to take proactive steps towards promoting cultural sensitivity and religious inclusivity in their practices.

Acknowledgements

We are deeply grateful for the invaluable support provided by the Center for Research Excellence & Incubation Management (CREIM) and the Faculty of Islamic Contemporary Studies at Universiti Sultan Zainal Abidin, which has been instrumental in supporting the publication of this paper. This paper forms part of a research project titled 'Pembinaan Garis Panduan Amalan Petugas Kesihatan Rawatan Materniti ke Arah Pemantapan Konsep Hospital Patuh Syariah' (UniSZA/2023/SRGS-FKI 1.0/04 | RS004). This project is also supported by the Research Grant for Strengthening International Research Collaboration – FKI (RS004).

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APAKAH DEFINISI LOT LIDI DARI PERSPEKTIF PERANCANGAN BANDAR: TAHUKAH KOMUNITI?

Siti Kartina Juhari ^{1*}, Ishak Che Abdullah², Noraini Omar Chong²Ihfasuziella Ibrahim⁴, Rohana Ramli⁵,

¹⁻³ *Studies for Town Planning & Landscape Architecture, College of Built Environment, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, Malaysia Malaysia*

⁴ *CREAM, Malaysia*

⁵ *MBSJ, Malaysia*

*Pengarang Koresponden: kartinajuhari@uitm.edu.my

Abstrak:

Tawaran harga tanah lot yang murah membuatkan siapa sahaja rambang mata untuk memiliki lot bertanah. Lot lidi merupakan lot tanah yang mempunyai geran yang sah) namun ia dipecahkan kepada beberapa lot yang kecil untuk dijual kepada pembeli tanpa melalui proses kelulusan pecah sempadan di bawah Kanun Tanah Negara (Akta 828). Tujuan adalah untuk mengkaji dan mengenalpasti mengenai definisi lot lidi dari perspektif perancangan bandar. Objektif kajian adalah 1) Menenalpasti takrifan lot lidi 2) Menganalisis tahap kepuasan komuniti terdapat pemilikan lot lidi 3) Mencadangkan strategi dan tindakan kepada pemilikan lot lidi untuk proses mendapatkan kelulusan kebenaran merancang. Skop kajian adalah mengenalpasti definisi lot lidi dan kesedaran komuniti terhadap pemilikan dan risiko lot lidi. Kajian Literatur adalah melibatkan definisi lot lidi dari aspek pemahaman komuniti. Metodologi kajian adalah kuantitatif. Data kuantitatif adalah melihat tahap kepuasan komuniti dalam pembangunan lot lidi. Analisis penemuan dari aspek definisi yang berbeza-beza dan ketiadaan prosedur khusus untuk kemukakan permohonan kepada Pihak Berkuasa Tempatan. Cadangan adalah menghasilkan kerangka konsep dan garis panduan khusus kepada komuniti yang memiliki lot lidi untuk kemuka Kebenaran Merancang di PBT. Penutup adalah komuniti perlulah mengetahui pemilikan dan risiko untuk lot lidi.

Kata kunci: Definisi Lot lidi, Proses Dan Prosedur, Kebenaran Merancang, Pihak Berkuasa Tempatan, Komuniti

1.0 Pengenalan

Lot lidi di Negeri Selangor umpama cendawan tumbuh kerana keinginan memiliki rumah bertanah. Punca-punca peningkatan pembangunan plot-plot kediaman antaranya adalah didorong oleh pembeli yang ingin memiliki rumah bertanah dengan kos lebih rendah daripada dibeli terus melalui pemaju perumahan. Pemilik tanah juga tidak mahu mengusahakan tanah tersebut dan ingin pulang ke kampung. Oleh itu pemilik tanah telah menjual tanahnya secara lot-lot kecil yang mendapat keuntungan berlipat ganda berbanding secara keseluruhannya (Aminah et al, 2022). Risiko yang ditanggung oleh pembeli apabila membeli lot lidi, kesan dari pembangunan lot lidi ini turut mengakibatkan kekurangan infrastruktur, kemudahan awam dan asas yang mencukupi bagi menampung keperluan penduduk yang meningkat hasil daripada pembangunan lot-lot lidi ini. Harga rumah yang mahal telah menyebabkan individu tertarik untuk membeli tanah lot lidi kerana inginkan rumah bertanah yang lebih selesa dan boleh membina mengikut keinginan sendiri (Muhamad Najmir Razaman, 2024). Berdasarkan statistik data yang diperolehi daripada PLAN Malaysia, terdapat lebih 381,000 lot kecil ini di Malaysia (Aminah et al., 2022). Secara dasarnya lot lidi kebanyakannya adalah berstatus tanah pertanian. Iaitu belum dipecah sempadankan kepada geran individu secara berasingan tetapi telah dijual kepada pembeli tanpa urusan pindah milik tanah mengikut proses yang sah.

Kertas ini bertujuan untuk mengkaji dan mengenalpasti mekanisme pelaksanaan proses dan prosedur perancangan di PBT. Objektif kajian adalah 1) Menenalpasti takrifan lot lidi 2) Menganalisis tahap kepuasan komuniti terdapat pemilikan lot lidi 3) Mencadangkan strategi dan tindakan kepada pemilikan lot lidi untuk proses mendapatkan kelulusan kebenaran merancang. Skop kajian adalah mengenalpasti definisi lot lidi berdasarkan beberapa tafsiran

agensi terlibat, isu dan masalah, Mengenalpasti dan membuat semakan terhadap proses dan prosedur Kebenaran Merancang dari persepsi komuniti. Majlis Perbandaran Sepang dan menyediakan panduan perancangan dan mekanisme pembangunan khusus lot lidi di Pihak Berkuasa Tempatan (PBT) dalam pengenaan syarat-syarat Kebenaran Merancang (Siti Kartina, 2024). Aplikasi GIS dan EIS memainkan peranan dengan mudah dan cepat dalam capaian maklumat dengan pantas bagi keperluan infrastruktur dan kemudahan awam.

2.0 Tinjauan Literatur

Latar Belakang Kajian

Tahukah komuniti mengenai tafsiran lot lidi dari perspektif Perancangan Bandar? Sebagai orang awam takrifan lot lidi adalah lot-lot kecil tanah yang belum dipecah sempadankan kepada geran individu secara berasingan (Norfazila, 2021). Kerakusan penjual lot-lot ini hanya ingin mendapatkan keuntungan yang segera dengan menjual kepada pembeli tanpa urusan pindah milik tanah dan hanya dibuat perjanjian melalui surat ikatan amanah. Sudah pasti lot lidi ini berstatus tanah pertanian tetapi telah dijual atas nama lot bangunan serta pelan lakaran belum pun diluluskan kategori syarat nyatanya oleh pihak berkuasa. Oleh kerana harga yang murah itulah pembeli tanpa berfikir panjang membeli tanpa mengetahui proses melibatkan isu tanah dan prosedur permohonan kebenaran merancang di PBT. Risiko membeli lot lidi antaranya nama pemilik lot baru tiada dalam geran, sukar untuk urusan berjual beli, kesalahan langgar syarat tanah, tiada pampasan jika ada pengambilan, tanah tidak boleh diwariskan jika ada kematian dan pemegang amanah meninggal dunia (Jurukur Tanah Klang KL & Selangor, 2024). Jurukur Tanah Klang KL & Selangor (2024) telah mengingatkan pembeli seharusnya tidak mudah terpedaya dengan kata-kata penjual seperti berikut 1) Akan membuat tukar syarat atas tanah itu selepas semua lot habis dijual 2) Akan mengemukakan pelan pembangunan kepada pihak berkuasa 3) Akan pecahkan lot secara betul menggunakan jurukur berlesen pada masa akan datang 4) Sempadan lot lidi akan ditanam dengan batu sempadan 5) Nama akan ditukar secara automatik jika Pemegang Amanah meninggal dunia 6) Tidak akan ada masalah kerana ada Surat Pemegang Amanah dan 7) Lot lidi adalah sah dari segi undang-undang. Banyak lagi risiko dan kesan kepada pembeli lot ini. Biarlah membeli rumah yang sedikit mahal tetapi mengikut undang-undang supaya tidak timbul masalah di kemudian hari. Rumah yang sepatutnya menjadi idaman dan keselesaan tetapi berakhir dengan kerugian besar, perbalahan keluarga dan seterusnya tidak boleh diwarisi.

Takrifan dari sudut perancangan lot lidi merujuk pada lot kediaman seperti contoh bentuk lot di rajah 2.1.



Rajah 2.1 : Ilustrasi plot-plot kediaman
Sumber : PLANMalaysia (2019)

Lot lidi juga ditakrifkan sebagai Sebidang tanah yang mempunyai geran yang sah, tetapi kemudiannya dipecah-pecahkan lot kecil untuk dijual semula dengan tujuan untuk membina rumah (Jurukur Tanah Klang KL & Selangor, 2024).

Pembangunan lot lidi membawa risiko kepada pembeli, termasuk kekurangan kemudahan infrastruktur, awam dan asas yang mencukupi, yang seterusnya menjejaskan kualiti hidup penduduk. Ketiadaan garis panduan yang jelas menyukarkan PBT dalam melaksanakan tanggungjawab mereka untuk menyediakan kemudahan dan infrastruktur yang diperlukan (Rusmiyati Binti Ahmad, 2021). Oleh itu, kajian ini bertujuan menghasilkan kerangka konsep sebagai panduan bagi pemilik tanah dan PBT, serta pihak berkepentingan lain, untuk memastikan pembangunan yang teratur di samping meningkatkan kesedaran komuniti tentang implikasi pembelian lot lidi. Dengan adanya

garis panduan khusus untuk lot lidi, PBT dapat membuat keputusan yang lebih baik dalam penyediaan kemudahan awam dan asas bagi penduduk. Sehubungan dengan itu penggunaan Sistem Maklumat Geografi (GIS) dan Sistem Maklumat Persekitaran (EIS) oleh Pihak Berkuasa Tempatan (PBT) memberikan manfaat besar kepada komuniti dengan meningkatkan kecekapan dalam pengumpulan dan pengurusan data. GIS membolehkan PBT untuk menyimpan, mengemaskini, dan menganalisis maklumat guna tanah, yang penting untuk perancangan yang berkesan. Dengan capaian maklumat yang cepat, PBT dapat membuat keputusan yang lebih baik mengenai penyediaan kemudahan awam dan asas (Zurinah et. al, 2017; Mohamad Zaki et. al, 2023) sekaligus meningkatkan kualiti hidup penduduk. Secara tidak langsung maklumat ini membantu komuniti dalam mendapatkan perkhidmatan yang lebih baik dan responsif terhadap keperluan mereka, serta mengurangkan masalah yang timbul akibat kekurangan infrastruktur yang sesuai. Manakala EIS merupakan sistem bantuan komputer yang dapat digunakan sebagai alat pengurusan dan perancangan, pengawalan dan pemantauan pembangunan. Dengan adanya EIS, komuniti dapat memperoleh maklumat yang lebih tepat dan cepat mengenai perancangan dan pembangunan di kawasan mereka, yang seterusnya meningkatkan kualiti hidup penduduk. EIS juga memudahkan perkongsian maklumat antara pihak berkepentingan, memastikan bahawa aplikasi dalam interaktif dan bersifat mesra pengguna dalam membuat rujukan, carian, analisa, mencetak dan seumpamanya (Portal MBSJ, 2024). Ia juga perlu memastikan bahawa keperluan dan aspirasi komuniti diambil kira dalam proses perancangan (PLANMalaysia, 2024).

Takrifan lot lidi dan dan Lot Kecil

Takrifan lot lidi berdasarkan Kamus Perancangan Bandar dan Desa adalah lot yang berkeluasan 5 ekar dan ke Takrifan dari sudut perancangan lot lidi merujuk pada lot yang berkeluasan 5 ekar dan ke bawah, berbentuk segi empat yang kurus dan memanjang dengan nisbah 1:5 atau lebih serta panjang maksimum salah satu sisi adalah 80 kaki hingga 100 kaki. Panjang bersih selepas serahan rezab jalan lebih atau sama 45 kaki PLAN Malaysia, 2023). Manakala lot Kecil lot yang pelbagai bentuk dan tidak ekonomik berkeluasan di antara 0.07 ekar (3.200 kaki perse) hingga 3 ekar (130.680 kaki persegi) bagi lot yang berbentuk segi empat mempunyai nisbah bukaan sisi yang kurang daripada nisbah 1:5. (PLANMalaysia, 2023). Jika dilihat dari takrifan ini komuniti persoalannya adakah mereka tahu untuk mengenalpasti bahawa lot yang dibeli tersebut adalah lot lidi atau lot kecil.

Isu dan Masalah dalam Proses dan Prosedur Perancangan

a. Takrifan lot lidi

Definisi lot lidi mempunyai takrifan dan kefahaman yang berbeza-beza di pelbagai agensi berkaitan seperti antara PBT, Pejabat Tanah dan Pejabat Tanah dan Galian. Kekeliruan takrifan lot lidi telah menyumbang kepada berkembangnya lot lidi iaitu melibatkan kediaman bertanah. (Mohd Marbawi Bin Taha et al., 2022).

b. Isu Perundangan

Isu perundangan di mana lot lidi tidak melepasi keperluan dan syarat-syarat penetapan pemajuan dan pemakaian prosedur berbeza. Contoh perundangan termasuklah Akta Perancangan Bandar dan Desa 1976 (Akta 172, 1976) di mana penuntukan seksyen 18(1) menggariskan bahawa “tiada seorang pun boleh menggunakan atau membenarkan digunakan mana-mana tanah atau bangunan melainkan menurut RANCANGAN TEMPATAN.” Iaitu setiap pembangunan tanah dalam kawalan perancangan perlulah melalui permohonan kebenaran merancang. Dalam seksyen 22 (1), (2), (3) dan (4) Akta 172 turut menggariskan layanan terhadap permohonan.

Selain itu, ia juga menyalahi kategori penggunaan tanah, syarat nyata tanah dan sekatan kepentingan tanah pertanian. Manakala PBT merupakan pihak yang bertanggungjawab terhadap pentadbiran dan memberi perkhidmatan bandar serta pembangunan sesuatu kawasan atau daerah dalam kawasan kerajaan tempatan berkenaan yang ditubuhkan di bawah Akta Kerajaan Tempatan Akta 171 (Akta 171, 1976) iaitu Majlis Bandaraya, Majlis Perbandaran, Majlis Daerah, mengikut mana mana berkenaan, dan berhubungan dengan Wilayah Persekutuan ertinya Datuk Bandar Kuala Lumpur yang dilantik di bawah seksyen 4 Akta Ibu Kota Persekutuan 1960 (Akta 190, 1960)

c. Kemuka Kebenaran Merancang

Komuniti atau pemilik individu tidak berupaya menyediakan Kawasan lapang, kemudahan awam tidak mencukupi dan infra yang lengkap. Merujuk kepada Eddy (2022), Majlis Bandaraya Kuala Terengganu telah menerima permohonan KM (2018) bagi lot kecil dan lot lidi adalah sebanyak 501 berbanding Negeri lain.

d. Sukar Patuhi Aspek Teknikal

Kesukaran mematuhi aspek teknikal bagi pemajuan lot kecil dan lot lidi. Komuniti sebagai pembeli hanya memberi kerana harga murah tanpa mengambilkira aspek teknikal. Bentuk lot lidi yang tidak seragam, janggal dan berbagai-bagai menyebabkan sukar untuk mematuhi aspek teknikal untuk pembangunan. Kesannya apabila tukar syarat tanah telah dibuat untuk pembangunan, terdapat kekangan keperluan teknikal untuk dibangunkan setelah keluasan lot-lot telah dipecah bahagian. Oleh itu, peningkatan lot kosong (lot lidi) tanah terbiar apabila tidak dibangunkan seterusnya menimbulkan isu kesihatan dan masalah sosial.

e. Tiada Garis Panduan Khusus

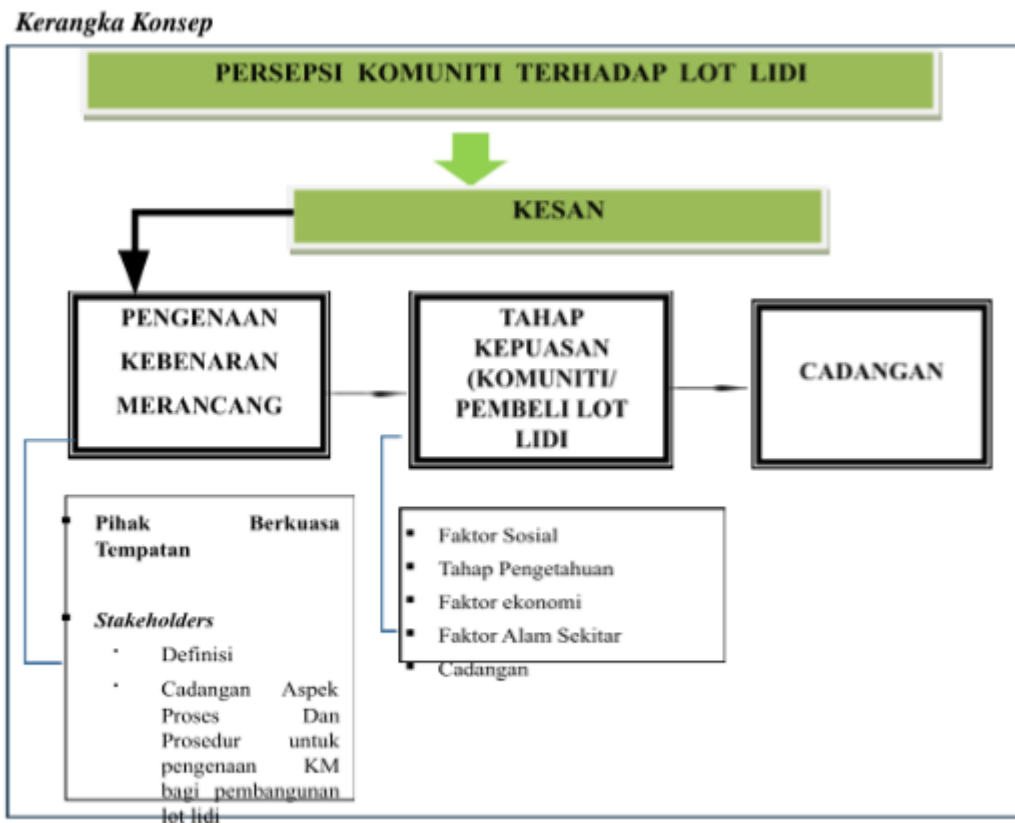
Ketiadaan garis panduan khusus dalam pemprosesan permohonan pembangunan lot lidi menyebabkan PBT secara khusus telah mengakibatkan penyediaan infrastruktur dan kemudahan masyarakat tidak mencukupi. Hal ini menimbulkan masalah bagi komuniti, termasuk isu banjir dan bencana alam, kerana pembangunan dilakukan secara piecemeal tanpa perancangan yang menyeluruh (MPSepang, 2023). Akibatnya, penduduk terpaksa menghadapi risiko yang lebih tinggi dan kualiti hidup mereka terjejas. Oleh itu, adalah penting untuk mewujudkan garis panduan yang jelas bagi memastikan pembangunan lot lidi dapat dilaksanakan dengan baik, memenuhi keperluan masyarakat, dan mengurangkan risiko yang dihadapi oleh penduduk.

f. Tiada Kawalan Ke Atas Pembangunan dan Ketiadaan Data GIS

Ketiadaan kawalan pembangunan di atas lot kecil dan lot lidi di bandar menyebabkan masalah *urban sprawl*, di mana nilai hartanah menjadi lebih rendah berbanding dengan pembangunan berskala besar. Ini memberi kesan negatif kepada komuniti, termasuk penyediaan infrastruktur yang tidak mencukupi dan peningkatan risiko bencana alam seperti banjir. Tanpa data GIS yang tepat mengenai lot-lot lidi, analisis terhadap kesan pembangunan tidak dapat dilakukan dengan cepat, menghalang PBT daripada merancang dan menyediakan kemudahan yang diperlukan. Akibatnya, penduduk terpaksa menghadapi kualiti hidup yang terjejas dan kurangnya akses kepada perkhidmatan penting. Oleh itu, adalah penting untuk memperkenalkan kawalan yang lebih baik dan sistem pengumpulan data yang efektif bagi memastikan pembangunan yang lebih teratur dan berkesinambungan demi kesejahteraan komuniti.

Kerangka Konsep

Kerangka konsep lot lidi dari aspek proses dan prosedur adalah di dalam pengenaan kebenaran merancang oleh PBT. Definisi mengenai lot lidi haruslah jelas supaya pihak PBT dapat menerima permohonan kebenaran merancang (KM). Cadangan aspek proses dan prosedur untuk pengenaan KM untuk pembangunan lot lidi perlu dilihat dari perlbagai aspek supaya ia dapat menghasilkan suatu keputusan yang holistik. Manakala tahap kepuasan kepada komuniti atau pemilik tanah lot lidi adalah dikaitkan juga sekiranya perlu mengemukakan permohonan KM di PBT. Pemboleh ubah seperti tahap pengetahuan, faktor sosial, faktor ekonomi, faktor alam sekitar serta cadangan haruslah dikaji supaya dapat dilihat dari sudut yang menyeluruh. Secara keseluruhannya dalam kerangka konsep ini akan menghasilkan cadangan kepada mekanisma terbaik pelaksanaan lot lidi dari aspek proses dan prosedur.



Rajah 2.2 : Kerangka Konsep Persepsi Komuniti Terhadap lot lidi

3.0 Metodologi

Metodologi kajian adalah kuantitatif. Data kuantitatif adalah mengkaji tahap kepuasan komuniti dalam pembangunan lot lidi. Hasil daripada soal selidik kepada komuniti melibatkan 167 responden. Analisa ini adalah untuk melihat sejauhmanakah persepsi komuniti terhadap hartanah lot lidi ini. R-Square (R^2) adalah ukuran statistik yang menunjukkan sejauh mana pemboleh ubah bebas (independen) dapat meramalkan atau menjelaskan pemboleh ubah bergantung (dependen) dalam suatu model regresi. Pemilihan responden adalah melibatkan kawasan Pihak Berkuasa Tempatan di Negeri Selangor.

4.0 Perbincangan dan Kesimpulan

4.1 Analisis Kuantitatif

Analisis mengenai mekanisme pelaksanaan lot lidi dari aspek prosedur pembangunan di PBT melibatkan beberapa elemen penting yang perlu dipertimbangkan. Berikut adalah analisis terperinci berdasarkan maklumat yang diperoleh:

1. Definisi dan Ciri-ciri Lot Lidi

Persepsi komuniti adalah pandangan komuniti terhadap pembangunan dan risiko pemilikan lot lidi. Pandangan komuniti memiliki hartanah lot lidi dengan tujuan membina rumah bertanah adalah mendahului dari 10 keutamaan seperti berikut:

Jadual 4.1: Persepsi Komuniti Terhadap Lot Lidi

1	Memiliki hartanah lot lidi dengan tujuan membina rumah bertanah
2	Saya membeli hartanah lot lidi kerana ada PA dan sah kerana diuruskan oleh pihak-pihak terlib
3	Pengaruh dari kawan-kawan
4	Terpengaruh di media sosial kerana harga murah
5	Ingin membina rumah mengikut reka bentuk sendiri
6	Tujuan utama membeli hartanah lot lidi kerana belum memiliki rumah
7	Saya telah teliti status sebelum beli hartanah lot lidi
8	Menyesal membeli hartanah lot lidi setelah mengetahui hakmilik tidak sah
9	Tujuan utama kerana membeli hartanah lot lidi ini sangat mudah, cepat tiada prosedur rumit.
10	Ingin menjual semula hartanah lot lidi tetapi tidak tahu cara sebenar

Merujuk kepada hasil analisis ini telah menunjukkan bahawa pandangan komuniti adalah untuk membina rumah bertanah dengan mengemukakan KM ke PBT. Komuniti juga tidak tahu mengenai proses dan prosedur untuk mengemukakan permohonan KM bagi mendapatkan kelulusan yang sah.

a. Tahap Pengetahuan

ketebalan *path* tertinggi menunjukkan tahap pengetahuan (0.69) adalah *significant* kepada pandangan komuniti terhadap pembangunan lot lidi. Pengetahuan merangkumi aspek saiz dan bentuk hartanah lot lidi. Ketiadaan nama **tiada dalam geran. Kesalahan** langgar syarat tanah. Wang pampasan akan diberikan kepada pemegang amanah sahaja jika ada pengambilan balik tanah oleh Kerajaan. Tanah **tidak boleh diwariskan** jika ada berlaku kematian. Prosedur yang **rumit** jika pemegang amanah meninggal dunia. Bentuk hartanah lot lidi **yang tidak seragam** dan berbagai-bagai. Isu penyediaan **infrastruktur** dan kemudahan masyarakat. **Pengenaan Kebenaran merancang** menyebabkan kos yang tinggi kepada pembeli untuk mendapatkan kelulusan PBT. Responden juga tahu pihak terbabit yang membuat urusan jual beli tanah lot lidi sukar diheret ke mahkamah.

b. Faktor Sosial

Faktor sosial (0.54) kedua tertinggi selepas faktor pengetahuan. Pembolehubah sosial mempunyai hubungan yang lebih kuat dengan pembolehubah pengetahuan. Persepsi komuniti terhadap kesan kepada aspek sosial dalam penyediaan kemudahan awam dan asas yang tidak mencukupi dan lain-lain impak sosial.

c. Faktor Ekonomi

Faktor ekonomi (0.49) kedua tertinggi selepas faktor pengetahuan. Persepsi komuniti adalah membeli hartanah lot lidi memberi signifikan kepada faktor ekonomi. Dengan membina rumah dengan kos yang lebih rendah ia lebih berbaloi dan menguntungkan membeli lot lidi.

d. Faktor Alam Sekitar

Faktor alam sekitar (0.42) adalah lebih rendah dengan faktor lain kemungkinan aspek alam sekitar tidak signifikan dalam konteks pembangunan lot lidi dan bukanlah pertimbangan utama. Pembeli lot lidi mementingkan faktor-faktor seperti harga yang murah, lokasi strategik dan kemudahan akses jalan keluar masuk.

e. Cadangan

Cadangan (0.37) mempunyai hubungan yang lemah dengan pembolehubah lain. Apabila pengetahuan, sosial, ekonomi lebih dominan dalam mempengaruhi keputusan pembelian lot lidi maka cadangan menunjukkan nilai R^2 yang lebih rendah. Cadangan adalah merujuk kepada takrifan, proses dan prosedur perancangan bagi Pembangunan lot lidi di PBT.

4.3 Penemuan

Berdasarkan analisis penemuan merujuk kepada objektif *adalah* 1) Tahap pengetahuan mengenai takrifan lot lidi yang sebenar adalah rendah 2) Tahap kepuasan komuniti dari tahap pengetahuan (0.69) adalah significant terhadap pemilikan lot lidi 3) Mencadangkan strategi dan tindakan kepada pemilikan lot lidi untuk proses mendapatkan kelulusan kebenaran merancang dengan memberikan pengetahuan takrifan yang jelas dan kesedaran kepada mendapatkan kebenaran dari Pihak Berkuasa Tempatan dalam pembangunan lot lidi.

4.4 Cabaran dalam Pelaksanaan

Terdapat beberapa cabaran yang dihadapi oleh komuniti dalam pemilikan dan pembangunan lot lidi, antaranya ialah:

Cabaran dalam pelaksanaan definisi lot lidi dari perspektif perancangan bandar melibatkan beberapa isu utama yang perlu diberi perhatian oleh komuniti. Berikut adalah beberapa cabaran yang dihadapi

1. **Ketidaktirafan Undang-Undang:** Lot lidi tidak diiktiraf oleh undang-undang tanah Malaysia, kerana tiada geran individu yang sah. Ini menyebabkan risiko tinggi kepada pembeli, termasuk kemungkinan kehilangan hak milik tanah (Aminah et al, 2021).

2. **Proses Kelulusan Yang Panjang:** Proses untuk menukar syarat tanah adalah rumit dan memakan masa, di mana pemilik tanah terpaksa menunggu kelulusan daripada pelbagai jabatan serta agensi yang berkaitan sebelum dapat membangunkan tanah mereka. Kelonggaran dalam proses ini sering kali membawa kepada pembangunan lot lidi yang tidak sah.

3. **Kos Tinggi:** Terdapat kos tambahan yang perlu ditanggung oleh pemilik tanah untuk mendapatkan kelulusan dan perundingan profesional. Kos ini sering menjadi halangan bagi pemilik untuk mematuhi undang-undang dan menyebabkan mereka lebih cenderung untuk menjual lot lidi secara tidak sah (Aminah et al, 2021).

4. **Kurangnya Pengetahuan:** Banyak pembeli dan pemilik tanah kurang memahami proses dan risiko yang terlibat dalam pembelian lot lidi. Ini boleh menyebabkan mereka terjebak dalam situasi yang merugikan pada masa hadapan.

5. **Permintaan Tinggi:** Walaupun terdapat risiko, permintaan untuk lot lidi tetap tinggi kerana harga rumah semasa yang mahal, menjadikan lot lidi sebagai pilihan alternatif bagi golongan berpendapatan rendah.

6. **Kelemahan Pemantauan:** Kurangnya penguatkuasaan undang-undang oleh pihak berkuasa tempatan membolehkan penjualan lot lidi berleluasa tanpa sebarang tindakan yang diambil terhadap pelanggaran peraturan

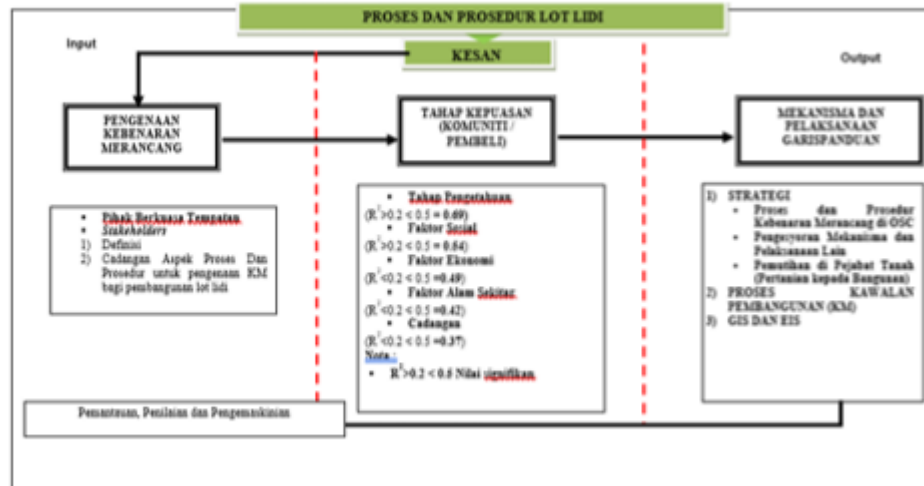
Mengatasi cabaran-cabaran ini memerlukan kerjasama antara pihak berkuasa, pemilik tanah, dan komuniti untuk meningkatkan kesedaran tentang risiko serta menggalakkan pematuhan kepada undang-undang tanah.

4.4 Cadangan untuk Penambahbaikan

Cadangan dan penambahbaikan dari aspek Persepsi komuniti terhadap pembangunan dan risiko pemilikan lot lidi adalah berdasarkan kerangka konsep dan validasi yang telah dibuat. Tujuan validasi kerangka konsep ini adalah

memastikan kerangka yang dibangunkan dapat memberikan panduan yang jelas dan berkesan dalam mencapai matlamat dan objektif penyelidikan.

Rajah 4.1 Validasi Kerangka Proses dan Prosedur Lot Lidi



Validasi Kerangka Proses dan Prosedur Lot Lidi. Tujuan validasi kerangka konsep ini adalah memastikan kerangka yang dibangunkan dapat memberikan panduan yang jelas dan berkesan dalam mencapai matlamat dan objektif penyelidikan. Selain itu validasi penerimaan kerangka konsep ini bertujuan untuk menjamin keberkesanan model, mengukur kualiti dan ketepatan, membimbing proses penyelidikan, menunjukkan hubungan antara pemboleh ubah, meningkatkan kebolehpercayaan stakeholder dan menyediakan asas penambahbaikan.

Lot Lidi dari Proses dan Prosedur Perancangan Persepsi Komuniti

Pelaksanaan proses dan prosedur perancangan pembangunan lot lidi adalah perlu mengemukakan permohonan KM melalui OSC 3.0 plus di PBT. Tiada keperluan minima yang diberikan kepada pemilik lot lidi sekiranya ingin mengemukakan permohonan KM.

Persepsi Komuniti Terhadap Lot Lidi

Persepsi komuniti adalah pandangan komuniti terhadap pembangunan dan risiko pemilikan lot lidi. Pandangan komuniti memiliki hartanah lot lidi dengan tujuan membina rumah bertanah.

a. Tahap Pengetahuan

Tahap Pengetahuan mempunyai ketebalan path tertinggi (0.69), menunjukkan ia adalah signifikan kepada pandangan komuniti mengenai pembangunan lot lidi. Pengetahuan ini merangkumi beberapa aspek penting, termasuk saiz dan bentuk hartanah lot lidi, di mana banyak lot tidak mempunyai geran individu, menyebabkan ketidakpastian dalam pemilikan. Ketiadaan nama dalam geran juga menimbulkan masalah, kerana tanah tidak dapat diwariskan dan proses menjadi rumit jika pemegang amanah meninggal dunia. Selain itu, terdapat isu kesalahan langgar syarat tanah yang sering berlaku dalam pembangunan lot lidi. Wang pampasan hanya diberikan kepada pemegang amanah jika tanah diambil balik oleh kerajaan, yang menambah lagi kerumitan. Isu penyediaan infrastruktur dan kemudahan masyarakat di kawasan lot lidi juga menjadi kebimbangan, di mana kekurangan infrastruktur dapat menjejaskan kualiti hidup penduduk. Pengenaan KM oleh PBT menyebabkan kos yang tinggi bagi pembeli untuk mendapatkan kelulusan, yang boleh menjadi halangan dalam proses pembelian. Responden juga menyedari bahawa pihak yang terlibat dalam urusan jual beli tanah lot lidi sukar untuk diheret ke mahkamah jika berlaku masalah. Secara keseluruhan, tahap pengetahuan yang tinggi mengenai isu-isu ini adalah penting untuk

membantu komuniti memahami risiko dan cabaran yang berkaitan dengan pembangunan lot lidi.

b. Faktor Sosial

Nilai *R-Square* (R^2) untuk Pembolehubah Sosial adalah 0.54, yang merupakan nilai kedua tertinggi selepas pembolehubah Pengetahuan (0.69). Salah satu perkara yang menyokong validasi faktor Sosial sebagai kedua tertinggi ialah hubungannya yang lebih kuat dengan pembolehubah Pengetahuan berbanding pembolehubah lain dalam model ini. Ini bermakna Pengetahuan memberi impak yang lebih besar terhadap aspek sosial dalam konteks pembangunan lot lidi, di mana peningkatan tahap pengetahuan komuniti berkait rapat dengan persepsi mereka terhadap kesan sosial pembangunan tersebut. Persepsi komuniti terhadap kesan sosial pembangunan lot lidi adalah penting kerana penyediaan kemudahan awam dan asas yang tidak mencukupi di kawasan lot lidi boleh memberi impak negatif kepada kehidupan sosial penduduk.

c. Faktor Ekonomi

Nilai *R-Square* (R^2) untuk pembolehubah Ekonomi adalah 0.49, yang meletakkannya sebagai faktor ketiga tertinggi selepas Pengetahuan (0.69) dan Sosial (0.54). Walaupun nilainya adalah rendah sedikit daripada sosial, ia masih menunjukkan bahawa model mampu menjelaskan hampir separuh varians dalam pembolehubah Ekonomi.

d. Faktor Alam Sekitar

Faktor Alam Sekitar adalah yang paling rendah berbanding faktor lain. Kemungkinan kerana aspek alam sekitar tidak dianggap signifikan dalam konteks pembangunan lot lidi dan bukanlah pertimbangan utama bagi pembeli. Sebaliknya, pembeli lot lidi lebih mementingkan faktor-faktor lain seperti harga yang murah, lokasi yang strategik dan kemudahan akses jalan keluar masuk. Persepsi komuniti adalah bahawa isu-isu alam sekitar kurang diberi perhatian dalam pembangunan lot lidi. Fokus utama pembeli adalah untuk mendapatkan lot lidi dengan harga yang berpatutan, terletak di lokasi yang mudah diakses dan berhampiran dengan kemudahan awam dan asas. Impak pembangunan terhadap alam sekitar seolah-olah bukan menjadi keutamaan dan signifikan. Selain itu, kurangnya kesedaran mengenai implikasi jangka panjang pembangunan lot lidi terhadap alam sekitar juga mungkin menyumbang kepada nilai *R-Square* yang rendah bagi pembolehubah ini. Pembeli lebih tertumpu kepada keuntungan segera tanpa memikirkan kesan negatif yang mungkin timbul kepada alam sekitar. Secara keseluruhan, validasi faktor Alam Sekitar sebagai yang paling rendah dan tidak signifikan berbanding pembolehubah lain adalah disebabkan ia bukanlah menjadi keutamaan kepada pembeli lot lidi. Fokus mereka lebih kepada faktor-faktor lain memberi manfaat segera, tanpa memikirkan implikasi alam sekitar dalam jangka masa panjang.

Cadangan

Faktor Cadangan mempunyai nilai *R-Square* (R^2) yang rendah pada 0.37, menunjukkan bahawa ia mempunyai hubungan yang lemah dengan pemboleh ubah lain dalam model kerangka konsep ini. Apabila Pengetahuan, Sosial dan Ekonomi lebih dominan dalam mempengaruhi keputusan pembelian lot lidi. Nilai *R-Square* (R^2) untuk Cadangan menjadi lebih rendah. Ini menunjukkan bahawa Cadangan, yang merujuk kepada takrifan, proses, dan prosedur perencanaan bagi pembangunan lot lidi di PBT, tidak menjadi keutamaan yang signifikan bagi pembeli. Keadaan ini mungkin kurangnya kesedaran atau pemahaman mengenai proses dan prosedur perancangan serta implikasi yang berkaitan dengan pembelian lot lidi. Pembeli lebih cenderung memberi tumpuan kepada faktor-faktor lain yang lebih langsung mempengaruhi keputusan mereka, seperti harga yang rendah, lokasi strategik, dan kemudahan akses, berbanding dengan aspek cadangan yang lebih teknikal dan kompleks. Oleh itu, rendahnya nilai *R-Square* (R^2) untuk faktor Cadangan mencerminkan bahawa ia tidak memainkan peranan yang signifikan dalam mempengaruhi keputusan pembelian lot lidi, berbanding dengan pembolehubah lain yang lebih dominan.

Kesimpulan

Secara keseluruhannya tinjauan persepsi masyarakat dalam hartanah lot lidi berdasarkan model pengukuran menggunakan PLS Sem menunjukkan penemuan adalah pembolehubah pengetahuan memiliki nilai R² tertinggi (0.9) dalam masyarakat. Faktor pengetahuan mempunyai pengaruh terbesar dengan jalur (path) yang paling tebal berbanding pembolehubah lain. Apabila pengetahuan yang kurang ia akan memberikan implikasi kepada aspek proses dan prosedur untuk mengemukakan KM sebelum membina rumah di atas hartanah lot lidi. Kesimpulannya, pembangunan lot lidi di Malaysia terus berleluasa walaupun terdapat banyak implikasi negatif yang berkaitan. Lot lidi, yang merupakan tanah kecil tanpa geran individu dan sering kali berstatus tanah pertanian, menjadi pilihan bagi golongan B40 dan M40 disebabkan harga yang lebih rendah berbanding rumah biasa. Namun, pembeli sering kali kurang pengetahuan mengenai risiko pemilikan dan proses perundangan, yang boleh menyebabkan masalah serius seperti ketidakpastian hak milik dan kesulitan dalam pewarisan. Ketiadaan garis panduan yang jelas serta proses kelulusan yang panjang juga menyumbang kepada situasi ini. Oleh itu, perlu ada usaha untuk meningkatkan kesedaran mengenai risiko-risiko ini dan memperkenalkan garis panduan serta mekanisme yang lebih baik untuk mengawal pembangunan lot lidi agar selaras dengan undang-undang dan keperluan masyarakat.

Penghargaan

Pengkaji ingin merakamkan ucapan terima kasih kepada Institut Penilaian Negara (INSPEN) atas pembiayaan di bawah Geran NAPREC (100-TNCPI/GOV 16/6/2 (015/2023), *Research Management Centre* (RMC), Kolej Alam Bina, Universiti Teknologi Mara (UiTM), semua jabatan kerajaan, organisasi, dan individu yang bermurah hati memberikan sumbangan idea terhadap penyelidikan ini.

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LOT LIDI DARI ASPEK PROSES DAN PROSEDUR DI PIHAK BERKUASA TEMPATAN

Siti Kartina Juhari^{1*}, Ishak Che Abdullah², Noraini Omar Chong², Ihfasuziella Ibrahim⁴, Rohana Ramli⁵

¹⁻³ *Studies for Town Planning & Landscape Architecture, College of Built Environment, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, Malaysia*

⁴ *CREAM, Malaysia*

⁵ *MBSJ, Malaysia*

*Pengarang Koresponden: kartinajuhari@uitm.edu.my

Abstrak:

Lot lidi adalah tanah yang dipecah kecil tanpa melalui proses kebenaran merancang dan pecah sempadan yang sah (tidak mempunyai geran individu) kerana tidak memenuhi saiz standard yang ditetapkan dalam piawaian dan garis panduan, dan dijual dalam bentuk pecahan kepada pembeli. Walau bagaimanapun, terdapat keadaan di mana Pihak Berkuasa Tempatan (PBT) memproses permohonan kebenaran merancang bagi lot lidi. Kertas ini bertujuan untuk mengkaji dan mengenal pasti mekanisme pelaksanaan proses dan prosedur perancangan di PBT. Objektif kajian adalah 1) Menenalpasti takrifan, isu dan masalah lot lidi 2) Mengkaji mekanisme pelaksanaan lot lidi dari aspek prosedur pembangunan di PBT 3) Mencadangkan kerangka konsep dan garis panduan pembangunan lot lidi dari aspek proses dan prosedur di PBT. Skop kajian adalah menenalpasti definisi lot lidi berdasarkan beberapa tafsiran agensi terlibat, isu dan masalah, Menenalpasti dan membuat semakan terhadap proses dan prosedur Kebenaran Merancang di kawasan kajian iaitu Majlis Perbandaran Sepang dan menyediakan panduan perancangan dan mekanisme pembangunan khusus lot lidi di PBT dalam penerapan syarat-syarat Kebenaran Merancang. Kajian Literatur adalah melibatkan definisi, amalan terbaik, proses dan prosedur perancangan, pekeliling dan perundangan yang berkaitan. Metodologi kajian adalah mixed method iaitu kualitatif dan kuantitatif serta Kajian Kes. Data kualitatif adalah melalui Focus Group Discussion (FGD) dan Expert survey. Manakala kuantitatif adalah mengkaji tahap kepuasan komuniti dalam pembangunan lot lidi. Kajian kes adalah Majlis Perbandaran Sepang (MPS) kerana MPS adalah PBT yang merekodkan 81 permohonan lot lidi iaitu yang tertinggi di Negeri Selangor. Analisis penemuan dari aspek dan prosedur untuk kemukakan kebenaran merancang di PBT. Cadangan adalah menghasilkan kerangka konsep dan garis panduan untuk penerapan Kebenaran Merancang bagi pembangunan lot lidi. Kesimpulannya, pemilik yang ingin memajukan tanah perlulah mengemukakan Kebenaran Merancang di PBT. Ditambahbaik dengan aplikasi GIS dan EIS sebagai pembuat Keputusan.

Kata kunci: Definisi Lot lidi, Proses Dan Prosedur, Kebenaran Merancang, Pihak Berkuasa Tempatan

1.0 Pengenalan

Lot lidi di Negeri Selangor, dikaitkan dengan ‘melting pot of the nation’ telah menarik perhatian pelbagai lapisan masyarakat untuk memiliki rumah sendiri. Fenomena ini mencerminkan masyarakat ingin memiliki hartanah di kala peningkatan harga rumah yang ketara. Pernyataan masalah daripada aspek perancangan ketiadaan Kebenaran Merancang (KM) yang diberikan. Tanah yang dijual berstatus pertanian dan tidak seharusnya digunakan untuk tujuan perumahan tanpa kelulusan pertukaran kategori tanah dan syarat nyata yang sah. Kajian ini adalah bertujuan untuk mengkaji lot lidi dari aspek proses dan prosedur perancangan di Pihak Berkuasa Tempatan (PBT): Kajian Kes Majlis Perbandaran Sepang. Selain itu kajian ini turut mengambilkira persepsi komuniti dalam pemilikan dan risiko lot lidi. Tanpa pengenalan, ianya akan menyukarkan pembaca anda untuk mengetahui apa yang anda cuba sampaikan (Harrington, 2005).

Kertas ini bertujuan untuk mengkaji dan mengenal pasti mekanisme pelaksanaan proses dan prosedur perancangan di PBT. Objektif kajian adalah 1) Menenalpasti takrifan, isu dan masalah lot lidi 2) Mengkaji mekanisme

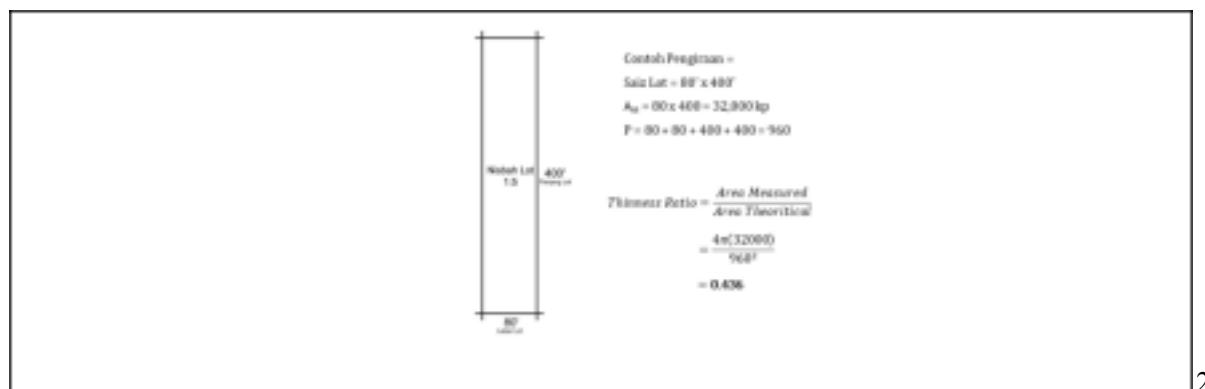
pelaksanaan lot lidi dari aspek prosedur pembangunan di PBT 3) Mencadangkan kerangka konsep dan garis panduan pembangunan lot lidi dari aspek proses dan prosedur di PBT. Skop kajian adalah mengenalpasti definisi lot lidi berdasarkan beberapa tafsiran agensi terlibat, isu dan masalah, Mengenalpasti dan membuat semakan terhadap proses dan prosedur Kebenaran Merancang di kawasan kajian iaitu Majlis Perbandaran Sepang dan menyediakan panduan perancangan dan mekanisme pembangunan khusus lot lidi di PBT dalam pengenaan syarat-syarat Kebenaran Merancang (Siti Kartina, 2024). Aplikasi GIS dan EIS memainkan peranan dengan mudah dan cepat dalam capaian maklumat dengan pantas bagi keperluan infrastruktur dan kemudahan awam.

2.0 Tinjauan Literatur

Latar Belakang Kajian

Berdasarkan takrifan lot lidi dari sudut orang awam adalah dikenali sebagai lot-lot kecil tanah yang belum dipecah sempadankan kepada geran individu secara berasingan (Norfazila, 2021). Ia telah dijual kepada pembeli tanpa urusan pindah milik tanah yang sah dan hanya dibuat perjanjian melalui surat ikatan amanah. Lot lidi kebanyakannya berstatus tanah pertanian, namun dijual atas nama lot bangunan yang dilakar atas pelan yang belum diluluskan pertukaran kategori dan syarat nyatanya oleh pihak berkuasa.

Takrifan dari sudut perancangan lot lidi merujuk pada lot yang berkeluasan 5 ekar dan ke bawah, berbentuk segi empat yang kurus dan memanjang dengan nisbah 1:5 atau lebih serta panjang maksimum salah satu sisi adalah 80 hingga 100 kaki.



Rajah 2.1 : Ilustrasi plot-plot kediaman

Sumber : Jabatan Perancangan Bandar dan Desa (2019)

Kediaman bertanah merujuk kepada skim kediaman jenis sesebuah, berkembar dan teres bukan strata. Ada beberapa punca-punca peningkatan pembangunan plot-plot kediaman antaranya adalah didorong oleh pembeli yang ingin memiliki rumah bertanah dengan kos lebih rendah daripada dibeli terus melalui pemaju. Selain itu pemilik tanah juga tidak mahu mengusahakan tanah tersebut dan ingin pulang ke kampung. Oleh itu pemilik tanah telah menjual tanahnya secara lot-lot kecil yang mendapat keuntungan berlipat ganda berbanding secara keseluruhannya (Aminah et al, 2022).

Amirudin Shari, Dato' Menteri Besar telah mengisytiharkan dalam Sidang Dewan Negeri Selangor pada 5 Disember 2018 bahawa semua permohonan Surat Ikatan Amanah bagi plot-plot kediaman atas semua alasan ditolak berkuatkuasa 28 September 2018 sehingga satu dasar berkaitan dirangka dan diluluskan Pihak Berkuasa Negeri (PBN) (Norhayati Umor, 2018). Menurutnya, penolakan itu terpakai di Pejabat Tanah dan Galian Selangor (PTGS) serta sembilan (9) Pejabat Daerah dan Tanah (PDT) di Negeri Selangor. Langkah ini diambil bagi mengekang penipuan penjualan tanah lot di Selangor berikutan statistik kes penipuan urusan tanah menunjukkan sebanyak 136 kes berlaku membabitkan urusan pindahtanah dari tahun 2010 hingga 30 September 2018 (Norhayati Umor, 2018). Walaupun urusan penjualan tanah sebegini telah dihalang, namun mereka masih bergerak secara aktif malah tidak berdaftar di Pejabat Tanah dan Daerah (PTDP).

Selain daripada risiko yang ditanggung oleh pembeli apabila membeli lot lidi, kesan dari pembangunan lot lidi ini

turut mengakibatkan kekurangan kemudahan awam dan asas yang mencukupi bagi menampung keperluan penduduk yang meningkat hasil daripada pembangunan lot-lot lidi ini. Situasi ini telah menyukarkan PBT apabila ketiadaan garis panduan yang jelas dalam penyediaan kemudahan asas dan awam bagi pembangunan yang melibatkan lot-lot lidi (Rusmiyati Binti Ahmad, 2021). Ketiadaan kemudahan awam yang mencukupi hasil dari pembangunan lot lidi ini telah menjejaskan kualiti hidup penduduk.

Oleh yang demikian, kajian ini bertujuan untuk menghasilkan kerangka konsep bagi menjadi panduan kepada pemilik tanah khususnya dan PBT dalam pembangunan lot lidi serta pihak-pihak berkepentingan yang lain seperti PBN dan agensi teknikal yang berkaitan. Dengan adanya garis panduan yang jelas ini, ianya akan dapat membantu PBT sebagai agensi pelaksana dalam melaksanakan penilaian serta membantu PBT dalam membuat keputusan dalam aspek-aspek teknikal yang berkaitan dalam pembangunan lot lidi, antaranya penyediaan infrastruktur, kemudahan awam dan asas kepada penduduk.

Aplikasi GIS dan EIS adalah suatu kaedah yang dapat membantu PBT dalam membuat keputusan dengan capaian maklumat yang lebih tepat, cepat dan menjimatkan masa. GIS adalah Sistem Maklumat Geografi (*Geographical Information System*) Sistem untuk menyimpan, mengurus, mengemaskini, menganalisis dan membekalkan maklumat dan data guna tanah negara. Sistem ini memudahcara pengurusan maklumat guna tanah perancangan melalui aktiviti penyeragaman, pengemaskinian, perkongsian dan capaian maklumat data guna tanah perancangan. Manual Sistem Maklumat Geografi (GIS) adalah merupakan satu dokumen yang dihasilkan untuk memberi panduan dan rujukan kepada semua pihak yang terlibat dalam pembangunan data geospasial Rancangan Pemajuan (Rancangan Struktur dan Rancangan Tempatan). GIS dalam Perancangan di Pihak Berkuasa Tempatan (PBT) (PLANMalaysia, 2023). Menfaat dan kepentingan penggunaan GIS di PBT adalah mengumpul data, menyimpan data, pemantauan guna tanah, penghasilan peta, analisis data. pengurusan maklumat dan seterusnya pembuat keputusan (Zarinah et. al, 2017: Mohamad Zaki et. al, 2023).

Manakala EIS adalah sistem informasi yang mempunyai data atribut dari maklumat guna tanah dan diperincikan dalam format yang ringkas bagi tujuan untuk analisis dan memudahkan capaian data dan membuat keputusan. EIS merupakan sistem bantuan komputer yang dapat digunakan sebagai alat pengurusan dan perancangan, pengawalan dan pemantauan pembangunan. EIS ini akan memaparkan maklumat 'spatial' dan 'non-spatial' dalam bentuk aplikasi yang interaktif dan bersifat mesra pengguna dalam membuat rujukan, carian, analisa, mencetak dan seumpamanya (Portal MBSJ, 2024). Data EIS di PBT juga merujuk kepada perkongsian maklumat yang dapat diakses oleh pihak yang memerlukan data. Walau bagaimanapun untuk memasukkan data atribut di dalam GIS memerlukan sumber maklumat terlebih dahulu. Sistem I-Plan merupakan Sistem berbasis GIS yang digunakan oleh PBT di Malaysia untuk pengelolaan data guna tanah perancangan. Tidak semua PBT yang mempunyai maklumat EIS sendiri. EIS memainkan peranan penting dalam meningkatkan perancangan guna tanah yang efektif di PBT dalam memproses permohonan Kebenaran Merancang dan lain-lain pelan berkaitan. (PLANMalaysia, 2024)

Takrifan lot lidi dan Pihak Berkuasa Tempatan

Perlu mengenal pasti takrifan lot lidi sebelum proses dan prosedur untuk memproses permohonan KM. Berdasarkan PLAN Malaysia dalam taklimat Pengenaan Syarat-Syarat Kebenaran Merancang Bagi Lot Lidi beberapa Pihak Berkuasa Tempatan seperti Johor, Kedah, Kelantan, Melaka, Negeri Sembilan dan Pahang telah memberi takrifan yang berbeza-beza. Merujuk kepada *Focus Group Discussion* (FGD) yang telah diadakan pihak PTG memaklumkan bahawa takrifan lot lidi berbeza dengan pihak PLANMalaysia. Kekeliruan takrifan lot lidi telah menyumbang kepada berkembangnya lot lidi iaitu melibatkan kediaman bertanah. (Mohd Marbawi Bin Taha et al., 2022). Manakala pihak Berkuasa Tempatan merupakan pihak yang bertanggungjawab terhadap pentadbiran dan memberi perkhidmatan bandar serta pembangunan sesuatu kawasan atau daerah dalam kawasan kerajaan tempatan berkenaan yang ditubuhkan di bawah Akta Kerajaan Tempatan Akta 171 (Akta 171, 1976) iaitu Majlis Bandaraya, Majlis Perbandaran, Majlis Daerah, mengikut mana mana berkenaan, dan berhubungan dengan Wilayah Persekutuan ertinya Datuk Bandar Kuala Lumpur yang dilantik di bawah seksyen 4 Akta Ibu Kota Persekutuan 1960 (Akta 190, 1960)

Isu dan Masalah

a. Isu Perundangan

Isu perundangan di mana lot lidi tidak melepasi keperluan dan syarat-syarat penetapan pemajuan dan pemakaian prosedur berbeza. Contoh perundangan termasuk Akta Perancangan Bandar dan Desa 1976 (Akta 172, 1976) di mana penuntukan seksyen 18(1) menggariskan bahawa “tiada seorang pun boleh menggunakan atau membenarkan digunakan mana-mana tanah atau bangunan melainkan menurut RANCANGAN TEMPATAN.” Malah, seksyen 22 (1), (2), (3) dan (4) Akta 172 juga menggariskan layanan terhadap permohonan. Selain itu, ia juga menyalahi kategori penggunaan tanah, syarat nyata tanah dan sekatan kepentingan tanah pertanian.

b. Tiada Kawalan Ke Atas Pembangunan dan Ketiadaan Data GIS

Trend pembangunan di atas lot kecil dan lot lidi di bandar tiada kawalan pembangunan yang nilai harga hartanah lebih rendah (*urban sprawl*). Nilai ekonomi yang lebih rendah berbanding dengan pembangunan berskala besar. Ketiadaan data lot-lot yang dikategorikan sebagai lot lidi dalam GIS menyebabkan analisis tidak dapat dibuat dengan cepat.

c. Permohonan Kebenaran Merancang

Isu pelaksanaan, takrifan dan garis panduan khusus dalam permohonan KM. Pemohon tidak berupaya menyediakan kawasan lapang, kemudahan awam dan infrastruktur yang lengkap. Merujuk kepada Eddy (2022), Majlis Bandaraya Kuala Terengganu telah menerima permohonan KM (2018) bagi lot kecil dan lot lidi adalah sebanyak 501 berbanding Negeri lain.

d. Sukar Patuhi Aspek Teknikal

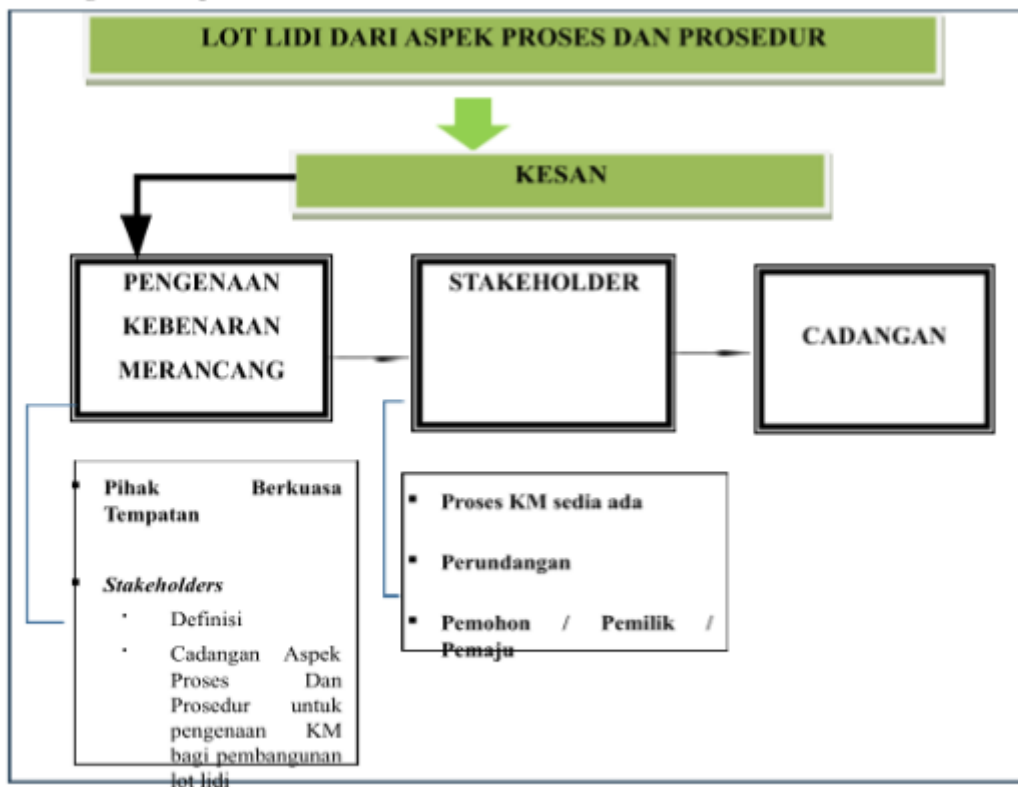
Kesukaran mematuhi aspek teknikal bagi pemajuan lot kecil dan lot lidi. Bentuk lot lidi yang tidak seragam, janggal dan berbagai-bagai menyebabkan sukar untuk mematuhi aspek teknikal untuk pembangunan. Kesannya apabila tukar syarat tanah telah dibuat untuk pembangunan, terdapat kekangan keperluan teknikal untuk dibangunkan setelah keluasan lot-lot telah dipecah bahagian. Oleh itu, peningkatan lot kosong (lot lidi) tanah terbiar apabila tidak dibangunkan seterusnya menimbulkan isu kesihatan dan masalah sosial.

e. Tiada Garis Panduan Khusus

Setiap PBT yang mempunyai permohonan pembangunan lot lidi ini telah memproses mengikut PBT masing-masing kerana tiada garis panduan khusus yang memandu hala tuju di peringkat PBN, PBT dan agensi pelaksana yang berkaitan (MPSepang, 2023). Ketiadaan garis panduan menyebabkan penyediaan infrastruktur dan kemudahan masyarakat termasuk untuk mengatasi masalah banjir atau bencana alam setelah membuat pembangunan secara *piecemeal*.

Kerangka Konsep

Kerangka konsep lot lidi dari aspek proses dan prosedur adalah di dalam pengenalan KM oleh PBT. Definisi mengenai lot lidi haruslah jelas supaya pihak PBT dapat menerima dan memproses permohonan KM. Cadangan aspek proses dan prosedur untuk pengenalan KM untuk pembangunan lot lidi perlu dilihat dari berbagai aspek supaya ia dapat menghasilkan suatu keputusan yang holistik. Manakala tahap kepuasan kepada komuniti atau pemilik tanah lot lidi adalah dikaitkan juga sekiranya perlu mengemukakan KM di PBT. Pemboleh ubah seperti tahap pengetahuan, faktor sosial, faktor ekonomi, faktor alam sekitar serta cadangan haruslah dikaji supaya dapat dilihat dari sudut yang menyeluruh. Secara keseluruhannya dalam kerangka konsep ini akan menghasilkan cadangan kepada mekanisma terbaik pelaksanaan lot lidi dari aspek proses dan prosedur.

Kerangka Konsep**Rajah 2.2 : Kerangka Konsep Lot lidi Dari Aspek Proses dan Prosedur****3.0 Metodologi**

Metodologi kajian adalah *mixed method* iaitu kuantitatif, kualitatif dan Kajian Kes. Data kualitatif adalah melalui Focus Group Discussion (FGD) dan Expert survey. Manakala kuantitatif adalah mengkaji tahap kepuasan komuniti dalam pembangunan lot lidi. Kajian kes adalah Majlis Perbandaran Sepang (MPS) kerana MPS adalah PBT yang merekodkan 81 permohonan lot lidi iaitu yang tertinggi di Negeri Selangor (PLANMalaysia, (2021). Kawasan kajian adalah berdasarkan Rancangan Tempatan Majlis Perbandaran Sepang.

Jadual 3.1 : Jadual Guna Tanah

Bil	Blok	Keluasan
1.	Pinggiran Cyberjaya	6,199.81
2.	Cyberjaya	2,816.91
3.	Sungai Merab	8,631.98
4.	Ampar Tenang	4,520.37
5.	Salak Tinggi	2,403.05
6.	KLIA	9,844.00
7.	Pinggiran KLIA	3,657.17
8.	Sungai Pelek	23,826.71
Jumlah Keseluruhan		61,900.00

Sumber : Rancangan Tempatan Majlis Perbandaran Sepang

Manakala data Kuantitatif dari pembentukan borang soal selidik adalah melibatkan masyarakat di dalam Kawasan PBT di Negeri Selangor.

4.0 Perbincangan dan Kesimpulan

4.1 Analisis Kualitatif dan Kajian Kes

Analisis mengenai mekanisme pelaksanaan lot lidi dari aspek prosedur pembangunan di PBT melibatkan beberapa elemen penting yang perlu dipertimbangkan. Berikut adalah analisis terperinci berdasarkan maklumat yang diperoleh:

1. Definisi dan Ciri-ciri Lot Lidi

Lot lidi adalah tanah yang dipecah kecil tanpa melalui proses KM dan tidak mempunyai geran individu. Tanah ini sering dijual dalam bentuk pecahan kepada pembeli, yang berisiko menghadapi masalah pemilikan dan legaliti. Pembeli lot lidi tidak dapat memindah milik tanah tersebut secara sah, dan ini menjadi isu utama dalam pengurusan dan pembangunan tanah di bawah PBT.

2. Proses dan Prosedur Pembangunan

a. Kebenaran Merancang

Setiap pemajuan tanah, termasuk lot lidi, memerlukan kebenaran merancang daripada PBT. Proses ini melibatkan beberapa langkah:

- **Pengemukaan Permohonan:** Pemohon perlu mengemukakan borang permohonan KM kepada PBT, lengkap dengan dokumen sokongan yang diperlukan.
- **Penilaian Permohonan:** PBT akan menilai permohonan berdasarkan garis panduan dan undang-undang yang berkuat kuasa, termasuk Akta Perancangan Bandar dan Desa 1976 (Akta 172) dan Kanun Tanah Negara (Akta 828).
- **Keputusan:** Setelah penilaian, PBT akan memberikan keputusan sama ada permohonan diluluskan atau ditolak. Penolakan biasanya berlaku jika permohonan tidak memenuhi syarat yang ditetapkan, seperti keperluan untuk menyediakan kemudahan asas dan akses.

Berdasarkan isu dan masalah pemohon tidak berupaya menyediakan Kawasan lapang, kemudahan awam dan infrastruktur yang lengkap dapat disediakan melalui GIS. Berikut adalah hasil dapatan drone untuk menangani isu ini.



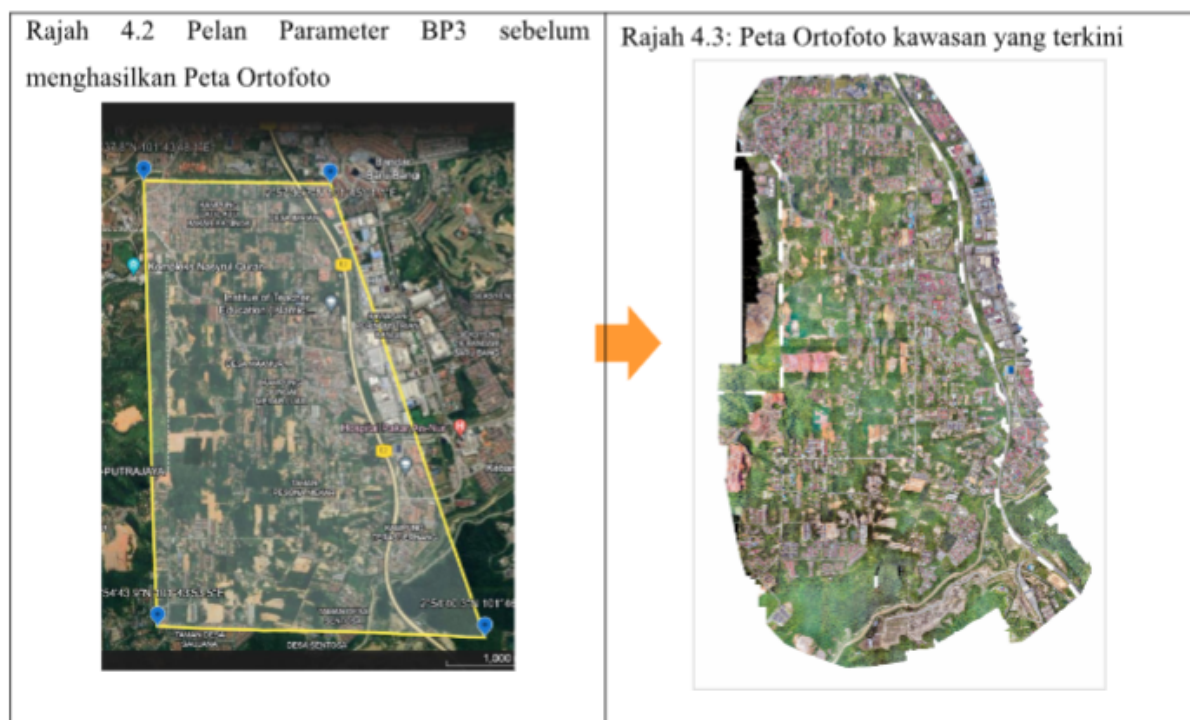
Peta Ortofoto adalah merupakan pelan yang dihasilkan dari foto udara yang telah diambil menggunakan dron pada resolusi tinggi iaitu 5cm GSD. Pelan ini menunjukkan gambaran visual yang terkini untuk Blok Perancangan 3 Sungai Merab. Pelan ortofoto ini dapat membantu dalam menunjukkan kawasan yang mempunyai pembangunan lot lidi di BP3 Sungai Merab. Bagi memastikan ketepatan koordinat dalam pelan ortofoto yang telah dihasilkan, satu cerapan koordinat GPS telah dijalankan ke atas titik kawalan mendarat di kawasan kajian. Hasil cerapan koordinat di titik kawalan mendarat ini telah digunakan semasa proses *georeferencing* bagi membolehkan pelarasan

koordinat dibuat semasa proses menghasilkan ortomozek.

Seterusnya imej ini telah dibuat analisis *overlay* dengan menggunakan data taburan pembangunan lot lidi yang diperolehi dari Majlis Perbandaran Sepang. Analisa *overlay* ini telah dijalankan dengan menggunakan perisian ArcGIS Pro. Ianya adalah bertujuan untuk mengenalpasti status semasa pembangunan lot lidi di tapak serta menentukan taburan infrastruktur sedia ada yang telah dibina di tapak.

Rajah 4.3 menunjukkan imej ortofoto yang telah dihasilkan daripada penerbangan UAV dengan menggunakan perisian Pix4D. Imej ortofoto ini telah melalui proses penyusunan foto bagi menghasilkan ortomozek yang akan digunakan semasa proses analisa visual. Teknik analisa visual ini telah menggunakan perisian ArcGIS Pro bagi mengenalpasti status pembangunan lot lidi di lapangan dengan menggunakan data imej ortofoto dan data lapisan GIS taburan pembangunan lot lidi.

Perisian GIS telah dipilih bagi melakukan analisa ini kerana kelebihan perisian dan kaedah ini dalam menyimpan dan menerima data dalam format spatial. Memandangkan data lot lidi dan imej ortofoto adalah merupakan data dalam bentuk spatial, teknik GIS adalah lebih sesuai bagi menganalisa data tersebut terutamanya dalam mengenalpasti taburan dan status pembangunan.



b. Pengawasan Pembangunan

PBT bertanggungjawab untuk mengawal pembangunan lot lidi bagi memastikan pematuhan kepada undang-undang dan garis panduan. Ini termasuk:

- Kawalan Kualiti (Analisis menggunakan GIS dan Drone): PBT perlu memastikan bahawa semua pembangunan yang dilakukan mematuhi spesifikasi yang ditetapkan dan tidak menjejaskan perancangan bandar berdasarkan kepada keperluan akta dan garis panduan sedia ada. Manakala analisis menggunakan drone di kajian lapangan melibatkan 40 lot KM yang diproses adalah lot-lot kecil. Aspek aksesibiliti sebanyak 37 lot mempunyai akses sedia ada. Manakala bakinya tidak mempunyai akses. Cadangan awal adalah PBT perlu menyediakan data GIS dan EIS bagi lot lidi ini bagi memudahkan menyediakan data atribut dan capaian data untuk agensi-agensi berkaitan. Selain daripada itu dapatan kajian lot lidi bagi

pemohon individu tidak komprehensif kerana tidak dapat menyediakan kemudahan awam. Sekiranya pemaju yang membangunkan pembangunan ini kemudahan yang inklusif dapat disediakan.

- **Pemantauan dan Penguatkuasaan:** PBT juga perlu melaksanakan pemantauan berterusan terhadap pembangunan yang sedang dijalankan untuk memastikan tiada pelanggaran terhadap kebenaran merancang yang diberikan.

4.2 Kuantitatif

Berdasarkan analisis kuantitatif menunjukkan kekurangan pengetahuan terhadap prosedur perancangan di PBT berdasarkan soal selidik yang telah dijalankan.

4.3 Penemuan

Berdasarkan analisis penemuan merujuk kepada objektif 1) takrifan, isu dan masalah lot lidi perlulah menambahbaik takrifan dengan mengambil kira takrifan lot lidi berdasarkan PLAN Malaysia dan Pejabat Tanah dan Galian. Penyelarasan secara bersepadu perlulah dibuat supaya pemilik atau pemaju dapat mengemukakan permohonan Kebenaran Merancang. 2) Objektif kedua *mekanisme pelaksanaan lot lidi dari aspek prosedur pembangunan di PBT adalah* tiada pengecualian KM atau pun keperluan minima semasa mengemukakan KM. Pemohon dikehendaki mengemukakan ke PBT melalui OSC 3 Plus dengan berpandukan garis panduan sedia ada yang digunapakai di PBT. Manakala objektif 3) kerangka konsep dan garis panduan pembangunan lot lidi dari aspek proses dan prosedur di PBT yang telah dibentuk adalah dengan cadangan GIS dan EIS untuk inventori data.

4.3 Cabaran dalam Pelaksanaan

Terdapat beberapa cabaran yang dihadapi oleh PBT dalam pelaksanaan mekanisme pembangunan lot lidi, termasuk:

- **Risiko Perundangan:** Pembeli lot lidi seringkali menghadapi risiko pemilikan dan pewarisan, yang boleh membawa kepada konflik dan masalah undang-undang di kemudian hari. Berdasarkan penemuan pemohon yang telah membeli lot lidi tidak dapat mengemukakan permohonan secara sah mengikut proses dan prosedur kerana tertakluk kepada garis panduan sedia ada.
- **Proses dan Prosedur di PBT**
Di peringkat PBT pula untuk proses dan prosedur akan menghadapi masalah ketika ingin menerima permohonan KM kerana definisi yang tidak jelas akan menyukarkan untuk menerima permohonan kerana ketiadaan garis panduan khusus untuk lot lidi. Ini kerana kebanyakan lot lidi tidak memenuhi keperluan garis panduan sedia ada yang telah diluluskan untuk digunapakai.
- **Kos Pembangunan:** Pembangunan lot lidi memerlukan pembeli untuk menanggung kos penyediaan infrastruktur asas, yang sering kali tidak diambil kira sebelum pembelian.
- **Kekurangan Kesedaran:** Terdapat kekurangan kesedaran di kalangan pembeli tentang risiko yang terlibat dalam membeli lot lidi, yang menyebabkan mereka terjebak dalam situasi yang merugikan.

4.4 Cadangan untuk Penambahbaikan

Untuk meningkatkan mekanisme pelaksanaan lot lidi, beberapa cadangan boleh dipertimbangkan:

- **Aplikasi GIS dan EIS:** Aplikasi GIS dan EIS di setiap PBT adalah bertujuan sekiranya permohonan lot lidi terdapat di dalam data GIS dan EIS maka memudahkan PBT untuk membuat keputusan. Secara tidak langsung dapat menganalisis dengan mudah dan capaian maklumat yang pantas bagi tujuan keperluan infrastruktur dan kemudahan awam. Oleh itu proses seterusnya perlulah membuat pemantauan, penilaian dan pengemaskinian dalam aspek proses dan prosedur perancangan lot lidi di PBT.

- **Penyusunan Garis Panduan** yang Jelas: PBT perlu menyediakan garis panduan yang lebih jelas dan terperinci mengenai prosedur permohonan kebenaran merancang untuk lot lidi. Penyelarasan Bersama di peringkat penyedia garis panduan (PLANMalaysia) dan memproses Kebenaran Merancang (PBT) secara bersepadu. Manakala di peringkat Kerajaan Negeri perlulah memainkan peranan untuk hakmilik tanah melibatkan Pejabat Tanah dan Pejabat Tanah Galian yang mana perbezaan di setiap negeri.
- **Pendidikan dan Kesedaran:** Meningkatkan program pendidikan untuk pembeli tentang risiko dan proses yang terlibat dalam pembelian lot lidi.
- **Penguatkuasaan Undang-undang yang Tegas:** Memastikan penguatkuasaan undang-undang yang lebih ketat terhadap pemohon atau pemaju yang melanggar peraturan dan syarat Pembangunan setelah suatu mekanisme terbaik dicapai.

Kesimpulan

Secara keseluruhannya mekanisme pelaksanaan lot lidi di PBT melibatkan proses dan prosedur yang kompleks yang memerlukan pematuhan kepada undang-undang dan garis panduan dan polisi yang ditetapkan. Pelaksanaan yang telah dipersetujui adalah menggunakan tatacara proses permohonan KM melalui OSC 3.0 plus dan juga melalui pemaju. Manakala tidak mempersetujui pelaksanaan pembangunan lot lidi dari aspek dan prosedur dengan tatacara permohonan KM Khusus (minimum requirement) dan pengecualian KM (ExPA). Manakala pemutihan perlulah dilakukan terlebih dahulu di Pejabat Tanah sebelum dikemukakan ke Pihak Berkuasa Tempatan. Selain itu aplikasi GIS dan EIS berperanan dan membantu PBT sebagai pembuat keputusan di dalam Kebenaran Merancang Walau bagaimanapun, cabaran seperti risiko perundangan dan kekurangan kesedaran di kalangan pembeli perlu ditangani untuk memastikan pembangunan yang berkesan di samping dapat menyelesaikan isu dan masalah lot lidi sedia ada.

Penghargaan

Pengkaji ingin merakamkan ucapan terima kasih kepada Institut Penilaian Negara (INSPEN) atas pembiayaan di bawah Geran NAPREC (100-TNCPI/GOV 16/6/2 (015/2023), *Research Management Centre* (RMC), Kolej Alam Bina, Universiti Teknologi Mara (UiTM), semua jabatan kerajaan, organisasi, dan individu yang bermurah hati memberikan sumbangan idea terhadap penyelidikan ini.

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