



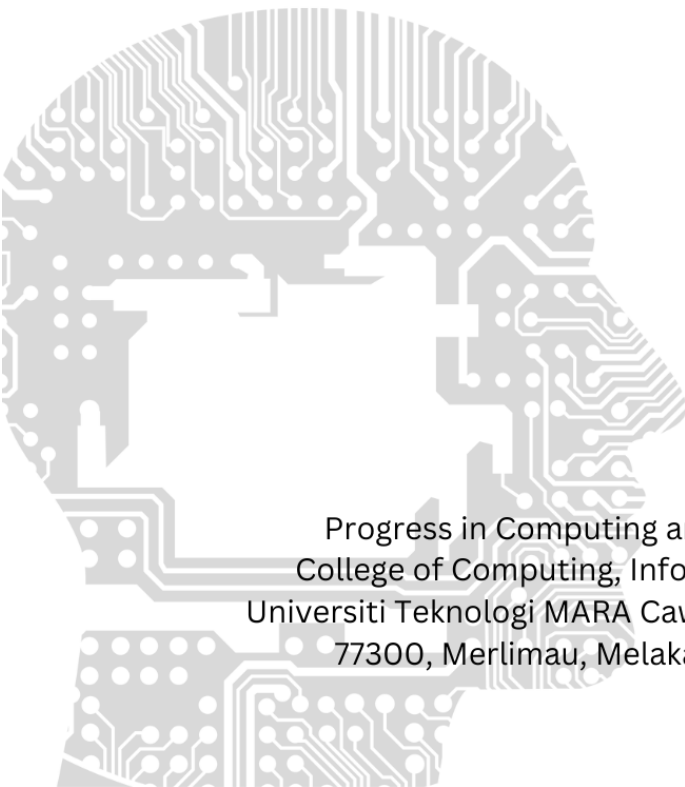
Cawangan Melaka

PCMJ

Progress in Computing and Mathematics Journal

volume 1

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Progress in Computing and Mathematics Journal
College of Computing, Informatics, and Mathematics
Universiti Teknologi MARA Cawangan Melaka, Kampus Jasin
77300, Merlimau, Melaka Bandaraya Bersejarah

PCMJ

Progress in Computing and Mathematics Journal
volume 1



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College of Computing, Informatics, and Mathematics
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PCMJ

Progress in Computing and Mathematics Journal

volume 1

PREFACE

Welcome to the inaugural volume of the **Progress in Computing and Mathematics Journal (PCMJ)**, a publication proudly presented by the College of Computing, Informatics, and Mathematics at UiTM Cawangan Melaka.

This journal represents a significant step in our commitment to fostering a vibrant research culture, initially providing a crucial platform for our undergraduate students to showcase their intellectual curiosity, dedication to scholarly pursuit, and potential to contribute to the broader academic discourse in the fields of computing and mathematics. However, we envision PCMJ evolving into a beacon for researchers both nationally and internationally. We aspire to cultivate a space where groundbreaking research and innovative ideas converge, fostering collaboration and intellectual exchange among established scholars and emerging talents alike.

The manuscripts featured in this first volume, predominantly authored by our undergraduate students, are a testament to the hard work and dedication of these budding researchers, as well as the guidance and support provided by their faculty mentors. They cover a diverse range of topics, reflecting the breadth and depth of research interests within our college, and set the stage for the high-quality scholarship we aim to attract in future volumes.

As editors, we are honored to have played a role in bringing this journal to fruition. We extend our sincere gratitude to all the authors, reviewers, and members of the editorial board for their invaluable contributions. We also acknowledge the unwavering support of the college administration in making this initiative possible.

We hope that PCMJ will inspire future generations of students and researchers to embrace research and innovation, to push the boundaries of knowledge, and to make their mark on the world of computing and mathematics.

Editors

Progress in Computing and Mathematics Journal (PCMJ)
College of Computing, Informatics, and Mathematics
UiTM Cawangan Melaka

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MYUiTM: Mobile App for Efficient Information Sharing

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Article Info

Abstract

This study introduced the MyUiTM Mobile app as a groundbreaking solution tailored specifically for Universiti Teknologi MARA (UiTM) students, with the aim of revolutionizing information access and educational engagement. Developed using the Waterfall method, the app addressed the prevalent issue of fragmented information dissemination within the campus community. By providing a centralized platform, it facilitated seamless sharing of campus-related content, fostering a collaborative environment for knowledge exchange and resource discovery. Notably, its intuitive interface and integration with social media enhanced user experience. Recent testing had confirmed its high usability score of 75.5 on the System Usability Scale (SUS), highlighting its effectiveness in facilitating efficient information transmission. Ultimately, the MyUiTM Mobile app emerged as a pivotal tool in enhancing student learning, engagement, and information literacy at UiTM.

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INTRODUCTION

In today's digital age, information was paramount, acquired through exploration, study, or education, and effective communication was crucial for desired outcomes. Relevant information, directly tied to efficient communication, was essential for addressing specific matters or problems. Social networking sites and mobile apps were key platforms for disseminating knowledge, especially among students. While websites offered detailed information, social media provided quick updates to suit various information consumption preferences (Sansa-Otim et al., 2022).

Integrating social media technologies into education showed promise in enhancing student engagement and efficacy with the subject matter (Ohei, 2019). The widespread use of

mobile devices enabled constant connectivity, allowing students to access information anytime, anywhere. Mobile apps offered flexibility and convenience, enabling students to study at their own pace (Busch & McCarthy, 2021). This shift towards digital learning underscored the importance of equipping students with skills to recognize, evaluate, and effectively use information (Busch et al., 2021).

LITERATURE REVIEW

The study of MyUiTM Mobile application initiated with an exploration of information dissemination, which referred to the process of sharing new or existing knowledge with others through various means such as vocal, written, or technological channels. Effective dissemination ensured that information reached the intended audience, a crucial aspect of communication (Bashir et al., 2021). This practice was commonly associated with news media but extended to other forms of communication like public relations or message advertising (Zhu et al., 2018). Diverse methods such as traditional media (TV, radio, print), new media (social media, internet), and word of mouth contributed to the dissemination process, emphasizing the importance of consulting multiple sources for a comprehensive understanding (Han, 2023).

A significant aspect of information dissemination pertained to its manifestation in social media platforms. Here, the process was often referred to as diffusion, involving the transmission of new ideas, behaviors, or technologies through specific channels within social systems (Yang et al., 2023). Research in this domain primarily focused on two aspects: user dispersion and content sharing. User participation played a central role, with engagement and subscription behaviors shaping information dissemination dynamics (Ray et al., 2014). Similarly, content-related variables such as emotion, visibility, and value strongly influenced sharing behavior (Rudat & Buder, 2015).

Moving beyond information dissemination, the study delved into the realm of social media, encompassing its various dimensions and implications. While social media platforms like Facebook and Twitter served as digital environments for transmitting and receiving content, they also facilitated complex interactions among individuals, businesses, organizations, and institutions (Appel et al., 2020). These platforms had become ubiquitous,

influencing societal norms and cultural practices across diverse demographics (Hardini et al., 2019). Moreover, they were no longer confined to entertainment but played crucial roles in business, education, and civic participation (Al-Rahmi et al., 2021).

A critical aspect of contemporary communication and education was the proliferation of mobile applications, which had become integral to daily life for students both inside and outside the classroom (Alagbela, 2022). Mobile apps offered diverse functionalities, including educational tools, medical assistance, and business solutions, catering to a wide array of user needs (Sayaf et al., 2021). Different approaches to mobile app development, such as cross-platform, native, hybrid, progressive web apps (PWAs), and low-code/no-code solutions, offered varying trade-offs in terms of performance, development time, and user experience (Tinmaz, 2020). Additionally, considerations such as platform compatibility, programming languages, and development environments distinguished major mobile operating systems like Android and iOS (Gajjar, 2017). These insights laid the groundwork for understanding the multifaceted nature of mobile application development and its implications for education and information dissemination.

Resolving Current Challenges in UiTM: Improving Information Accessibility and Student Engagement

The problem at Universiti Teknologi MARA (UiTM) revolved around the dispersal of information and communication. Previously, students faced challenges in staying updated with the latest announcements, events, and important campus information due to the scattered nature of information dissemination. While the university's official website served as a resource, formal and informal information was often spread across multiple platforms, making it difficult for students to access all relevant content efficiently (Warren Mark White & Kayalvizhi Jayavel, 2022). This scattered approach significantly affected students' ability to stay informed about campus life and academic resources.

Furthermore, UiTM lacked a dedicated mobile application tailored to the specific needs and interests of its student population. Without a centralized platform, students missed out on the opportunity to easily share and discover content related to campus events, academic resources, and student achievements. While social media platforms offered some benefits in terms of accessibility and interactivity, they did not provide a comprehensive solution to the

information dispersal problem (Arambewela et al., 2012). As e-learning continued to evolve, there was a growing recognition of the need for more efficient and user-friendly platforms to facilitate information sharing and communication among students.

To address these issues, a preliminary study was conducted during the requirement gathering phase of the project. The aim was to develop a social media platform specifically designed to meet the information needs of UiTM students. By leveraging social media, the project sought to provide students with easy access to relevant information and foster a sense of community where users could share updates and interact with each other. Ultimately, the goal was to create a user-friendly platform that enhanced the overall learning experience and improved communication within the UiTM community.

Exploring the Feasibility of MyUiTM: Preliminary Study on Enhancing Information Dissemination and Student Engagement at UiTM

The preliminary research aimed to assess the feasibility of developing a dedicated mobile app, MyUiTM, to streamline information dissemination among UiTM students. Data was collected through questionnaires distributed via popular social media platforms and messaging apps like WhatsApp and Telegram. A total of 32 respondents participated, aiming for a representative sample to enhance the accuracy of findings. Results revealed several insights: a majority (61.3%) strongly agreed on the difficulty of accessing pertinent campus information, while a significant portion (43.8% strongly agreed, 37.5% agreed) believed mobile apps fostered student cooperation and participation in studies. Additionally, respondents felt that current methods failed to showcase their abilities (Strongly Agreed, 68.8%) and struggled to discover personalized content (Strongly Agreed, 34.4%; Agreed, 59.4%) aligned with their interests and academic disciplines.

Furthermore, respondents expressed a keen interest in a mobile app facilitating student connections and community building (Strongly Agreed, 68.8%), highlighting dissatisfaction with existing communication methods regarding campus affairs (Strongly Agreed, 31.3%; Agreed, 28.1%). They emphasized the importance of visually appealing interfaces (Strongly Agreed, 56.3%; Agreed, 40.6%) and personalized content recommendations (Strongly Agreed, 56.3%; Agreed, 43.8%) in mobile applications. Notably, a significant majority (65.6%) expressed willingness to contribute and share content on a dedicated UiTM mobile app, while

others showed cautious interest (31.3%). These findings underscored the demand for a user-centric, feature-rich mobile app like MyUiTM, offering a comprehensive solution to students' information needs and fostering a vibrant campus community.

Enhancing MyUiTM: Introducing Key Features and Development Tools for Student

The MyUiTM platform was developed with the aim of bolstering user usability and fostering greater engagement among students at UiTM. One of the key features integrated into the platform is the Home Screen, which serves as a dynamic News Feed and Timeline System. This feature, inspired by research findings from (Han, 2023), provides users with real-time updates on campus activities and events. By streamlining the dissemination of information, users can stay informed about important announcements and happenings within the UiTM community. The interactive nature of the news feed timeline, where users can like, comment, and share content uploaded by their peers, enhances engagement, and encourages active participation.

Moreover, the Search Page functionality within MyUiTM enables users to discover and connect with other members of the platform. As highlighted in the research by (Vranešević et al., 2019), this feature plays a crucial role in fostering collaboration and community-building. Users can explore profiles, view uploaded videos, and interact with other users by liking, commenting, and following their content. By facilitating connections between students, the platform creates a vibrant online community where ideas and knowledge can be shared freely.

Another integral aspect of MyUiTM is the Messaging Page, where users can engage in seamless communication through private messages. Users can initiate new chats with other users, and all past conversations are displayed for easy access. Chat bars include the name and profile photo of the other person, simplifying the process of recognizing and resuming conversations. Additionally, the Uploading Video Page empowers students to express themselves through their own crafted videos. This feature, adapted from user preferences and behaviors as observed by (Nóbrega & Oliveira, 2022), allows users to share personalized content with their peers, enriching the learning experience and encouraging self-expression.

Finally, the Profile Page for User Account further enhances the platform's functionality. Users can manage their account settings and preferences, ensuring a smooth user experience. These features, supported by robust backend management tools such as Firebase and Android Studio (Dewi et al., 2022), contribute to the sense of community within MyUiTM. Overall, MyUiTM demonstrates the power of technology in enhancing educational experiences and fostering student engagement, redefining the landscape of higher education at UiTM.

METHODOLOGY

For the development of this project, the chosen methodology is the Waterfall Model, a structured approach widely adopted in software development. Originating as one of the earliest methodologies, the Waterfall Model offers a systematic way to progress through project phases with clear objectives and defined tasks. This approach emphasizes thorough planning and documentation, ensuring that each phase is completed before moving on to the next. The model's sequential nature allows for testing and validation at each stage, ensuring high-quality outcomes.

The project methodology consists of five key phases: requirements gathering, design, implementation, verification, and maintenance. In the requirements gathering phase, the primary goal is to identify and document the necessary features and functionalities of the mobile application. This phase involves analyzing the problem statements, project objectives, scope, and significance gathered from literature reviews and preliminary analyses. By defining clear requirements, the project team can establish a solid foundation for subsequent phases.

Following the requirements gathering phase, the project progresses through design, implementation, verification, and maintenance stages, each building upon the work completed in the previous phase. The design phase focuses on creating detailed specifications and architectural plans for the application, while implementation involves actual coding and development. Verification ensures that the developed application meets the specified requirements, while maintenance involves ongoing support and updates. By adhering to the Waterfall Model and its structured approach, this project aims to deliver a well-defined and high-quality mobile application tailored to the needs of its users.

RESULT AND DISCUSSION

In this section, this project examined the results of the project evaluation, focusing on the usability of the MyUiTM mobile application. The evaluation utilized the System Usability Scale (SUS) to gauge the application's effectiveness and user-friendliness. Through active interaction with the application, users provided feedback and identified any usability issues, which were then analyzed to improve the application's design and functionality. This approach was crucial for ensuring that the MyUiTM application effectively met the needs of its users and aligned with the project's objectives.

The findings of the evaluation revealed valuable insights into the application's performance and impact on users. Through user testing and detailed analysis, it became evident that the MyUiTM application resonated positively with its users, enhancing their understanding and experience. Additionally, demographic analysis provided important context, indicating the distribution of educational levels among the participants. This information enriched our understanding of the research results and aided in practical application.

Furthermore, the analysis of the SUS questionnaire offered a comprehensive assessment of the application's usability. The questionnaire consisted of ten questions assessing various aspects of user-friendliness, with responses ranging from strongly disagree to strongly agree. By involving a group of frequent users in the SUS process and utilizing a scale range from 1 to 5, we could effectively evaluate and interpret the usability of the MyUiTM mobile application. Table 1 further illustrated this assessment by presenting the SUS adjective rating derived from each user's feedback score, providing valuable insights into the application's usability.

Table 1: SUS Score Result

Person	Raw Score	Final Score (Score x 2.5)
P1	32	80.0
P2	32	80.0
P3	32	80.0
P4	30	75.0
P5	32	80.0
P6	26	65.0
P7	32	80.0
P8	32	80.0
P9	32	80.0
P10	32	80.0
P11	32	80.0
P12	28	70.0
P13	32	80.0
P14	32	80.0
P15	28	70.0
P16	26	65.0
P17	28	70.0
P18	28	70.0
P19	26	65.0
P20	30	75.0
P21	28	70.0
P22	26	65.0
P23	26	65.0
P24	31	77.0
P25	28	70.0
P26	27	67.5
P27	28	70.0
P28	25	62.5
P29	26	65.0
P30	28	70.0
P31	26	65.0
P32	27	67.5
P33	27	67.5
P34	25	62.5
P35	26	65.5
P36	26	65.5
Total Score, Average (n=36)		75.5

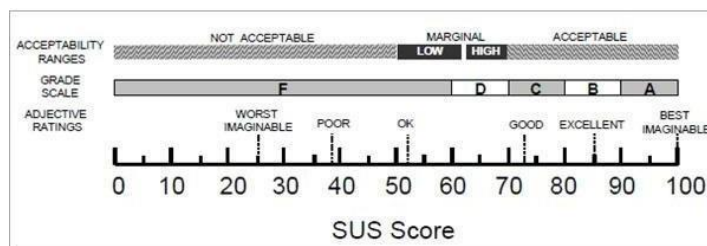


Figure 1 Interpretation of SUS Score Source(Brooke, 2013)

In this section, this project examined the results of the usability testing conducted on the MyUiTM mobile application. Through the System Usability Scale (SUS), users provided feedback on various aspects of the application's usability. For instance, 58.3% strongly agreed, and 47.7% agreed to use the application frequently (Question 1). However, concerning the application's complexity (Question 2), 38.9% of respondents strongly disagreed, and 61.1% disagreed, indicating that the application was perceived as unnecessarily complex.

Regarding ease of use (Question 3), 63.9% of respondents strongly agreed, while 36.1% agreed that the application was easy to use. Similarly, for the need for technical support (Question 4), 36.1% strongly disagreed, and 63.9% disagreed, suggesting that users did not require technical assistance. The integration of various functions (Question 5) was well-received, with 36.1% strongly agreeing and 63.9% agreeing.

Additionally, concerning consistency (Question 6), 36.1% strongly disagreed, and 63.9% disagreed about the presence of too much inconsistency in the application. Most users (72.2%) believed that people would quickly learn to use the application (Question 7). However, regarding the application's awkwardness (Question 8), 36.1% strongly disagreed, and 61.1% disagreed, while 2.8% remained neutral.

Moreover, regarding the need for extensive learning (Question 9), 36.1% strongly disagreed, and 63.9% disagreed, indicating that users found the application easy to use without extensive learning. Finally, concerning user confidence (Question 10), 77.8% strongly agreed, and 22.2% agreed that they were confident in using the application.

CONCLUSION

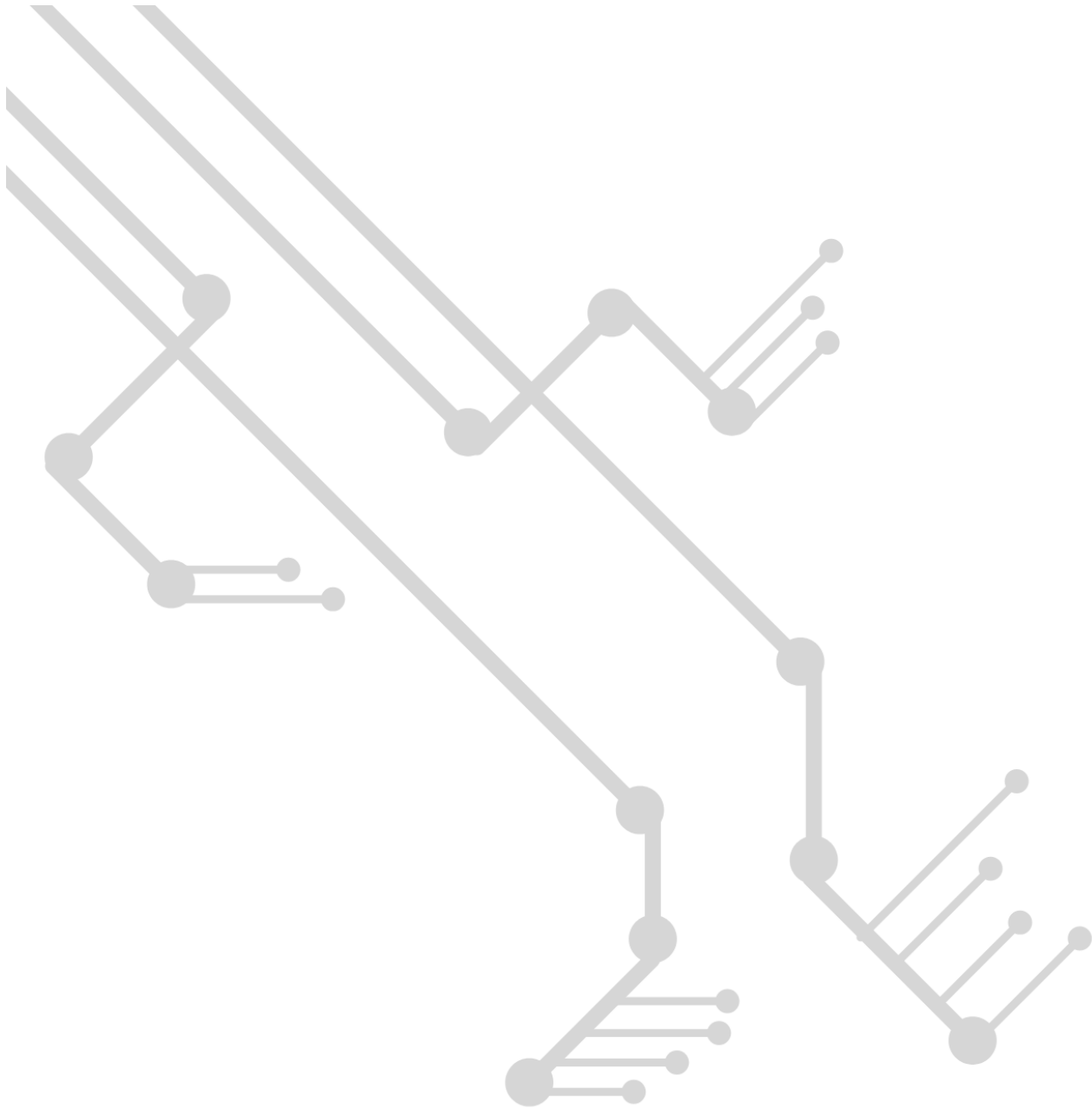
In summary, the System Usability Scale (SUS) score of 75.5 obtained by the MyUiTM Mobile application signified its effectiveness in facilitating information dissemination, reflecting its intuitive user interface and potential to enhance information accessibility. While this score indicated a positive user experience, it was crucial to interpret these findings within the broader context of the research and recognize potential areas for improvement. By conducting comprehensive usability testing, the study gained valuable insights into the application's usability, which aligned with the project's objectives of assessing usability and ensuring user satisfaction. Moving forward, these insights could inform future enhancements in the application's design and functionality, thereby optimizing its usability and overall effectiveness in meeting user needs and expectations.

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