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The development of PSMZA ICT maintenance system

Raja Intan Sariah Raja Mahmood^{*)}

Politeknik Sultan Mizan Zainal Abidin, Terengganu, Malaysia

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ABSTRACT

The PSMZA ICT Maintenance System was developed with the aim of helping to solve the management and operational issues faced by the ICT unit at Politeknik Sultan Mizan Zainal Abidin (PSMZA). This system was developed to assist in efficiently and periodically managing ICT maintenance. The objective of developing this system is to replace the manual system with an online system and to aid the ICT management and PSMZA staff in making maintenance complaints faster and more effectively. By developing this system, all maintenance data and information can be recorded and updated properly. The waterfall model was used as a guide for system development, which included planning, analysis, design, implementation, and maintenance phases. This web-based system involved three main scopes: Users (lecturers and administration staff) and Staff (technical support and administrators). The development of this system utilized a web-based platform technology. Software and programming languages used for the development of this system are HTML, CSS, JavaScript, bootstrap, PHP, and MYSQL. In conclusion, this system assists PSMZA staff in making direct, fast, and easy ICT maintenance complaints.



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Corresponding Author:

Raja Intan Sariah Raja Mahmood,
Politeknik Sultan Mizan Zainal Abidin
Email: r.intan.sariah@psmza.edu.my

Introduction

PSMZA ICT Maintenance system consist of tasks such as recording the report of facilities appliance damage, calling for technician support, online report management, located of facilities report and recording the users and type of the damage has been repaired or has not been repaired.

Automation is the utilization of technology to replace human with a machine that can perform more quickly and more continuously. By automating PSMZA ICT maintenance system documents that took up many large storage rooms can be stored on few disks. Transcript images can be annotated. It reduces the time to retrieve old transcripts from hours to seconds.

However, the Polytechnic Sultan Mizan Zainal Abidin (PSMZA) System is not automated, and the record officers generate transcripts and reports manually also collage administrators use their experienced knowledge

of repairing and manage the computer equipment to approaches all the equipment in every lab PSMZA. Sometimes lectures or laboratory staff has to do mutual cooperation on a building of every department to solve or refresh the data on laboratory computer.

Referring to the prior iteration of the booking process, which involved a physical form for reporting ICT hardware corrective maintenance at PSMZA and its facilities, it was necessary to personally engage with a technician to inquire about the damage specifics and its type in order to arrange for repairs.

The PSMZA management also complaints that, the corrective to ICT hardware and facilities still used the traditionally methods so, PSMZA staff need improvement regarding this process. With the increase various complaints about the ICT hardware at PSMZA and facilities at present, traditional methods reservations also need to be fixed.

Traditional methods, users must wait for a few days for confirmation from technical support to fix and repair the complaints received. The process takes a long time and cause a problem especially for users who used ICT hardware.

Our first user scope is User. Our users have two parts, namely students and lecturers. Only students and lecturers at Sultan Zainal Abidin Polytechnic (PSMZA) can make a complaint of damage to the ICT hardware and our facilities. Users want to make a complaint if there is damage to ICT hardware such as printers, Wi-Fi problems, servers and so on to use the facility in any work whether directly or indirectly.

Our second user is technician support (staff). An approval staff is someone who has the right to give approval in every corrective report that will be made by lecturers and staff. If the lecturer has received approval from the technician support, the technician support will immediately go to the location to repair the damage. The role of the approval staff is to approve the application from the user who made the complaint and provide the status during maintenance. Approving staff will also receive a notification from the admin and will immediately go to the damaged location.

Finally for the user scope is the person who operates the system. The person who operates this system is responsible for controlling our system. Is the administrator will manage all the data related to the reservation made by the user into the database. Lastly, the administrative role is that the administration will collect the list of user data such as users who have passed and failed in the application, the type of scrap used, data and time it will be used and all information will be placed in the database controlled by the administration.

Administrative personnel and approval staff can both utilize this system. Each user is provided with a distinct interface accessible through login credentials. This project focuses on complaints if there is a malfunction of ICT hardware. Users need to access our PSMZA ICT Maintenance system to check status whether it has been repaired or not.

The user will perform the important process that has been updated according to the correct: login to the system and can make reservation by online. Staff - technician support: login to the system and update user reservation

Admin. The administrator will organize the system. The staff page and user page is accessible to the admin as is the entire system. The administrative tasks are as follows: User registration, Staff registration, Manage user (reservation), Manage staff (reservation), Viewing the weekly ICT maintenance corrective reports, Update the ICT maintenance Complaint ICT every day to staff

Project significance: 1) Enhance time utilization. The system aids in documenting facility issues and storing the data over an extended duration; 2) User-friendly. This system is designed with a flexible interface that users can readily comprehend; 3) Swift accessibility. This system can be effortlessly reached through a computer or mobile device, enabling staff to efficiently check, report, or record issues; 4) Valuable solution. With inventories dispersed across different locations, a systematic approach is required to effectively manage these inventories in alignment with demand and supply. Employing inventory management techniques can significantly contribute to the effective management of multiple inventories.

Literature Review

Based on the conducted research, several systems with similar functions to the upcoming PSMZA Maintenance System were identified. Consequently, a decision was made to select certain existing systems that can serve as valuable benchmarks for the development process. The chosen systems include Sistem Aduan ICT RTM (Sistem Aduan ICT RTM, 2017), Sistem Aduan ICT SPRM (Sistem Aduan ICT, 2018), Sistem Aduan ICT UiTM (Aduan ICT UiTM, 2017), Sistem Aduan ICT KKD (Sistem Aduan ICT KKD, 2019), and Sistem Aduan ICT PMM (Aduan ICT PMM, 2020).

Sistem Aduan ICT RTM was designed to streamline complaint submissions for RTM employees within their premises. On the other hand, Sistem Aduan ICT UiTM was crafted to accommodate complaints from employees, students, and guests related to facility issues at UiTM.

The selection of (Sistem Aduan ICT RTM, 2017) and (Aduan ICT UiTM, 2017) was based on their straightforward interfaces that refrain from overwhelming color variations. Furthermore, these systems feature organized menu systems. This choice aligns with our aim of creating a system that is user-friendly for diverse user types. The envisioned PSMZA Maintenance System will adopt a single-color scheme and employ a clear font type, ensuring its comprehensibility, usability, and compatibility. Additionally, our system will incorporate appropriate images on its pages.

The purpose of this research are 1) to develop psmza ict maintenance system (pims) web-based system; 2) to replace the traditional method; 3) to aid the ict management and psmza staff in making maintenance complaints faster and more effectively

Method

The software process model used for this system is the waterfall model, the reason is because this model is the simplest and easiest to understand because the system is not complex and large (Casteren & Van Casteren, 2017). It is easy to manage because of the rigidity of the model which means each phase has a specific delivery and review process. The model also focuses on processing and completing each phase one by one and does not overlap with each other and lastly the waterfall model is suitable for smaller projects where the needs are well understood (Petersen et al., n.d.). This model comprises of five phases. Refer figure 1.0 (Petersen et al., n.d.)

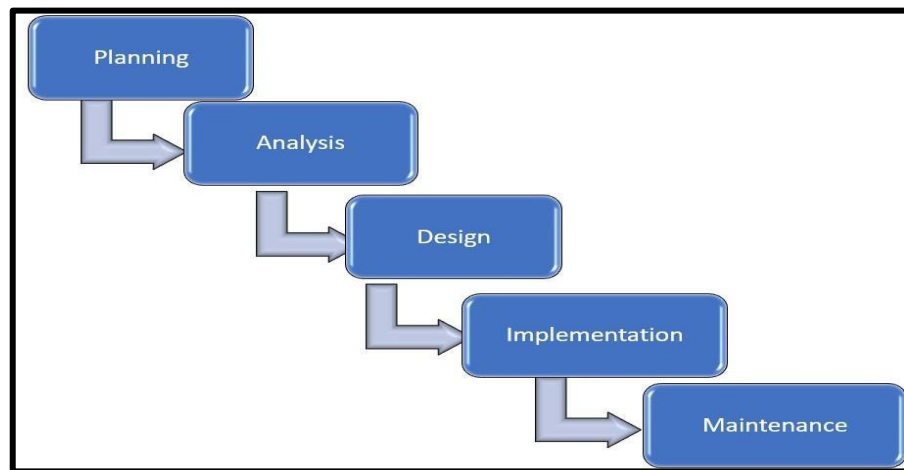


Figure 1 <Waterfall Model>

Planning

This phase includes activities such as problem identifying and analysis, and even predicting potential problems that may arise in the future regarding the system. Gather enough information for the system to be developed by the method of interview, observation and study. Also, determine the needs of the project as the hardware and software requirements.

Analysis

This phase includes activities such as problem identifying and analysis, and even predicting potential problems that may arise in the future regarding the system. Gather enough information for the system to be developed by the method of interview, observation and study. Also, determine the needs of the project as the hardware and software requirements.

In this phase, the current system is studied in detail. A person responsible for the analysis of the system is known as analyst. The most popular and commonly used tools for data analysis are:

Design

The main objective of this phase is to design the new system with is PSMZA ICT Maintenance System. Design is the process to design the user interfaces for this system. After the requirements have been determined, the necessary specifications for the hardware, software and data resources that will satisfy the requirements can be determined. All decisions made from planning and system analysis is converted into computer application. This is to ensure the efficiency and effectiveness of the system. below is the explanations for a phases: 1) User interface design. The interface design of the PSMZA ICT Maintenance System was design to enhance user-friendliness and simplify usability, particularly considering that users might possess limited familiarity with the system during their initial interactions; 2) Database and Design Model. PSMZA ICT Maintenance System is identified to use MySQL for the database. Entity Relationship Diagram (ERD) and Data Flow Diagram are drawn to shows the flow of the system. Refer Figure 2.0 and 3.0.

Implementation

With input from system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.

Maintenance

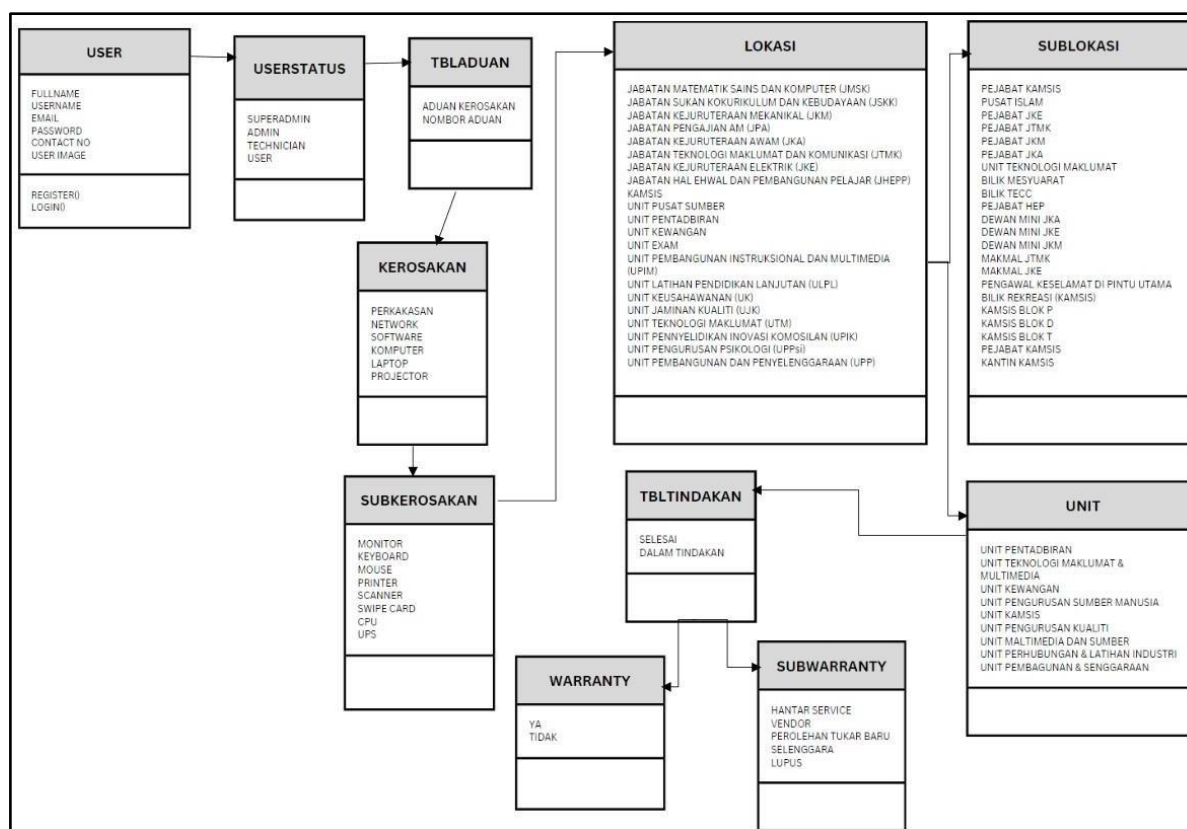


Figure 2 <Entity Relationship Diagram>

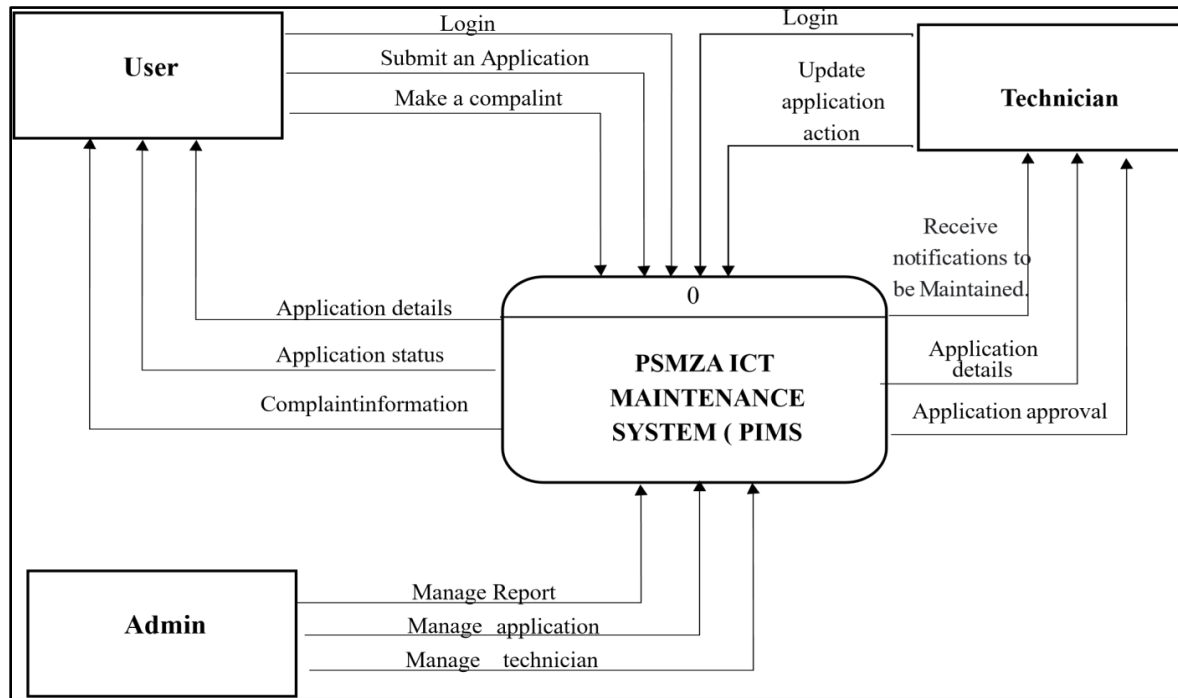


Figure 3 <Data Flow Diagram>

There are some issues which come up in the client environment. To fix those issue patches are released. Also, to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

Results and Discussion

Enhancing staff satisfaction at PSMZA and optimizing corrective procedures can effectively be achieved by enhancing the frequency of repair status updates. This goal can be realized by introducing a dedicated software system that empowers technicians to provide real-time updates whenever advancements are made in the repair process. Timely updates on the repair status enable customers to stay informed about the progress and potential delays. This transparent communication approach, coupled with instantaneous feedback for customers, fosters greater confidence and trust in the PIMS system's capacity to effectively address their requirements. Consequently, enhancing transparency in repair status through regular updates will not only elevate the user experience but also enhance operational efficiency within the organization itself.

The PSMZA ICT Maintenance System serves as a valuable asset, streamlining maintenance and troubleshooting processes for organizations. This system offers an efficient and user-friendly platform for users to submit comprehensive reports concerning hardware, software, or network malfunctions, glitches, or problems. Subsequently, these reports undergo admin approval before being directed to the relevant parties, which includes designated IT personnel capable of promptly addressing the issues at hand. The advantages of such a system are manifold, encompassing swifter issue resolution, heightened organizational efficacy, and reduced periods of inactivity. Additionally, it guarantees the smooth operation of technology-related workflows by empowering all stakeholders to swiftly and accurately report issues, thereby enabling timely resolution with minimal disruption to production timelines.

Granting the ICT administrator the ability to promptly authorize requests is a pivotal aspect in upholding an effective and safeguarded network environment. This capacity empowers the administrator to swiftly assess, grant, or decline requests that might have implications for system performance or security, such as accessing sensitive data resources or installing software. Through this functionality, the administrator can ensure

alignment with organizational regulations and benchmarks, all while maintaining a notable degree of adaptability in managing user accounts and authorizations. By streamlining the process of request approval, the IT team can allocate their focus to other critical responsibilities, free from the burden of manual review procedures. In the end, conferring real-time control over authorizations to the ICT administrator yields improved security measures, heightened employee efficiency, and optimized resource utilization throughout the organization.

Following is the main system interface. This system comprises of three main module which is, user can be staff or student, technician and administrator.

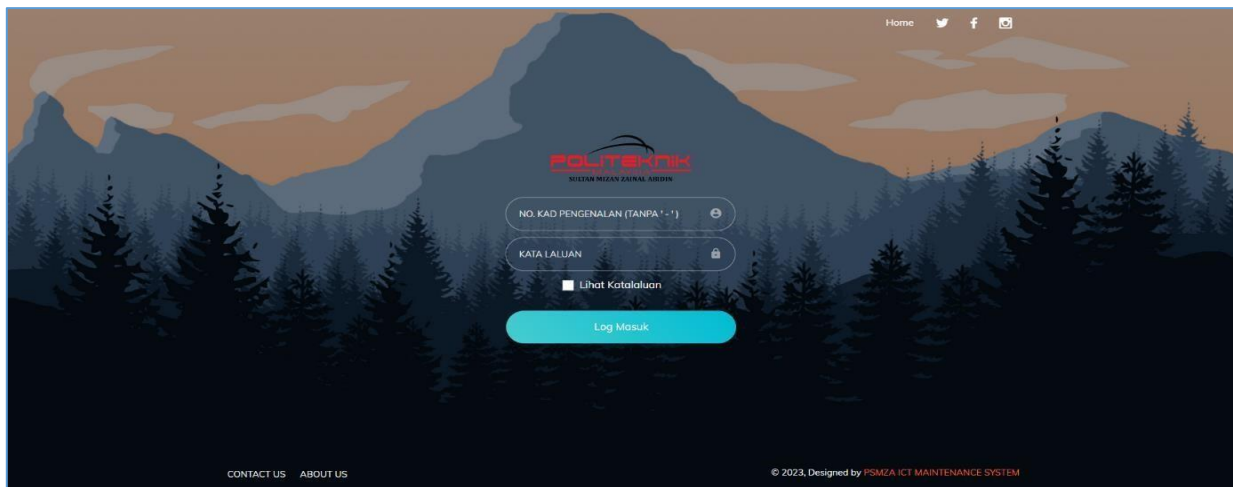


Figure 4 <Login for PSMZA ICT Maintenance System>

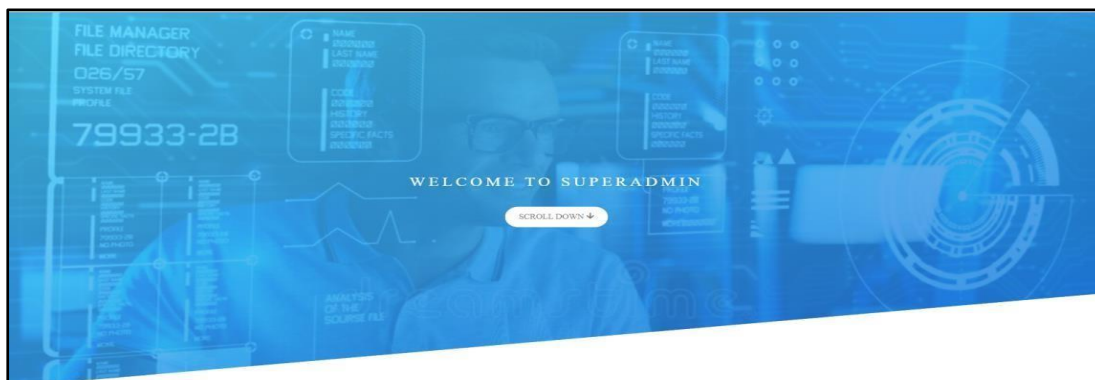


Figure 5 <Administrator Page>

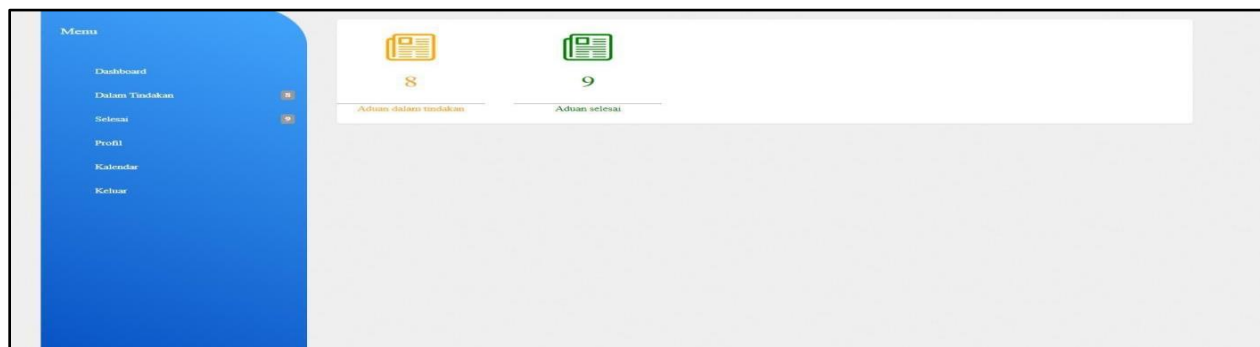


Figure 6 <Technician's Dashboard>

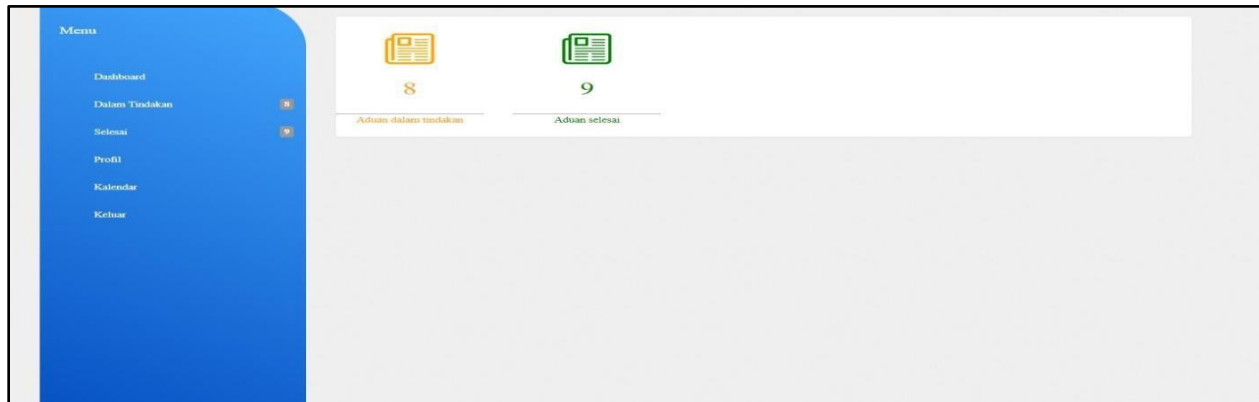


Figure 7 <User's Dashboard>

Conclusion

The project's takeaway underscores the necessity of implementing the system concept to streamline cumbersome tasks. With the introduction of PIMS, the overall project advancement will yield greater benefits and advantages for both PSMZA staff and students, allowing for seamless complaint submissions into the system. Moreover, the user-friendly and comprehensible nature of the system further enhances its usability.

The system's simplicity and effectiveness are likely to capture the attention of both staff and students. Additionally, the system accurately records the complaint's time and date. PIMS, a significant and versatile platform for direct uploads, gains even more prominence and popularity due to the proliferation of smartphones. This accessibility allows staff and students to conveniently utilize the system from their mobile devices. Ultimately, our goal is to create a system that caters to the needs of all PSMZA staff and students.

References

- Aduan *ICT PMM*. (2020). Politeknik Merlimau. <http://www.pmm.edu.my/aduanict>
- Aduan *ICT UiTM*. (2017). Universiti Teknologi Mara. https://units.uitm.edu.my/aduan_add.cfm
- Casteren, W. Van, & Van Casteren, W. (2017). *The Waterfall Model and the Agile Methodologies: A Comparison by Project Characteristics*. <https://doi.org/10.13140/RG.2.2.36825.72805>
- Petersen, K., Wohlin, C., & Baca, D. (n.d.). *The Waterfall Model in Large-Scale Development*.
- Sistem Aduan *ICT*. (2018). Suruhanjaya Pencegahan Rasuah Malaysia. <https://aduanict.sprm.gov.my/>
- Sistem Aduan *ICT KKD*. (2019). Kementerian Komunikasi Dan Digital. <https://aduanict.rtm.gov.my>
- Sistem Aduan *ICT RTM*. (2017). Jabatan Penyiaran Malaysia. <https://aduanict.rtm.gov.my>