APPLIED INFORMATION TECHNOLOGY AND COMPUTER SCIENCE
e-ISSN: 2773-5141

AITCS

Vol. 6 No. 2 (2025) 208-227
https://publisher.uthm.edu.my/periodicals/index.php/aitcs

The Development of a Web Based UTHM Event Central Management System

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DOI: https://doi.org/10.30880/aitcs.2025.06.02.012

Article Info

Received: 12 June 2025
Accepted: 3 November 2025
Available online: 30 November 2025

Keywords

UTHM Event Central Management System, Event Management System, Event Promotion, Secretariat Recruitment, Student Engagement Platform, University Event Coordination, Web-based, Administrative Software, Academic Event Planning, University Event Management

Abstract

The UTHM Event Central Management System project is designed to revolutionize the management and promotion of campus events at Universiti Tun Hussein Onn Malaysia by addressing significant challenges such as limited event visibility and fragmented communication channels. Utilizing the Agile methodology, this project introduces a centralized digital platform that enhances event visibility, simplifies the process of secretariat recruitment, and boosts student participation. The platform incorporates user-centric functionalities like advanced search options, push notifications and interactive event listings, ensuring timely and relevant information is delivered to different user categories including students and university staff. Preliminary testing has demonstrated significant improvements in event visibility and management efficiency, with positive feedback from users indicating increased participation and satisfaction. This project not only streamlines the organization of events but also fosters a more vibrant and connected campus community.

1. Introduction

In recent years, the integration of digital platforms in educational settings has become increasingly important, particularly in enhancing the management and participation in university events. Universiti Tun Hussein Onn Malaysia (UTHM) has experienced significant challenges with traditional event management methods, which often fail to effectively engage the student body and staff due to limited reach and inefficient communication strategies [1]. These challenges underline the necessity for a more streamlined and accessible approach, leading to the development of the UTHM Event Central Management System platform.

This project aims to revolutionize how events are promoted, discovered, and managed through the implementation of a centralized digital system. By consolidating event information and resources into a single platform, UTHM Event Central Management System seeks to improve visibility, accessibility, and engagement, thereby fostering a more vibrant campus environment. The objective of this system is to provide seamless interaction for students, fostering a strong sense of community and enhancing participation in campus life [2].

The approach adopted for this project involved a combination of quantitative and qualitative methods to ensure the platform was user-centered and met the diverse needs of its users. Key features of UTHM Event Central Management System include real-time notifications, personalized event recommendations based on user preferences, and interactive tools for event management. Initial feedback has indicated a substantial improvement in user engagement and satisfaction, highlighting the platform's potential in transforming campus event culture.

Reflecting on these developments, this paper discusses the impact of UTHM Event Central Management System on the overall event management process at UTHM, identifying both the successes and areas for future

enhancement. The subsequent sections will detail the methodology employed, the system's architecture, the implementation process, and the outcomes of this transformative project.

The UTHM Event Central Management System project addresses the pressing challenges in event management at Universiti Tun Hussein Onn Malaysia, particularly focusing on improving event promotion, secretariat recruitment, and information dissemination to foster enhanced student participation. Traditional methods such as flyers and social media posts are often ineffective, leading to limited event visibility and engagement. Furthermore, the current system's inefficiencies in secretariat recruitment and fragmented communication channels result in low student turnout and diminished campus vibrancy.

The objectives of this system are to design a centralized event information for UTHM Event Central Management System, to develop a web-based platform UTHM Event Central Management System, and to test UTHM Event Central Management System.

The scope of UTHM Event Central Management System encompasses the creation of a comprehensive platform aimed at revolutionizing event management, promotion, and participation at UTHM. The project will deliver a web-based platform equipped with user-friendly tools for event listing, advanced search and filtering, and streamlined secretariat recruitment. Key features include automated notifications to keep participants informed and an analytics dashboard to provide insights for continuous improvement.

2. Related Work

This section examines the landscape of event management systems within higher education settings, identifying the unique challenges these institutions face and how the UTHM Event Central Management System platform is positioned to address these gaps effectively. The platform is developed using PHP for handling backend logic and database interactions with MySQL, while Python and the Flask framework are integrated to support machine learning features such as event recommendations and participation rate predictions. The frontend is built with HTML, CSS, and JavaScript, ensuring a responsive and user-friendly interface. This combination of technologies enables the system to efficiently support both administrative operations and student engagement.

2.1 Domain Background

Universiti Tun Hussein Onn Malaysia (UTHM) strives to enhance the student experience through comprehensive engagement and robust support systems facilitated by the Student Affairs Office. The role of this office is crucial in coordinating campus activities that promote academic, social, and personal growth among students. The Student Affairs Office also aims to form a conducive ecosystem for providing welfare, services and student development to support the university's vision and mission[3]. Existing event management solutions often fail to meet the nuanced requirements of such educational environments, particularly in areas like tailored communication, event accessibility, and integration with academic calendars. UTHM Event Central Management System emerges as a necessary evolution in this domain, proposing an integrated approach to manage and promote university events that cater specifically to the needs of students and administrators alike. This system aims to consolidate various event-related functions into a single platform, thereby streamlining operations and improving participation rates.

2.2 Comparison Between Existing Systems and Proposed System

To assess the effectiveness of the UTHM Event Central Management System, it is compared with three widely used event management platforms which are Eventbrite, Meetup and Anthology.

Eventbrite is a global platform used for managing public and private events. It offers features like event promotion, ticketing and analytics, but lacks academic-specific tools such as secretariat recruitment or paperwork approval. Meetup focuses on building communities around shared interests. It is suitable for informal gatherings but lacks structured administrative features like analytics dashboards and documentation workflows. Anthology is tailored to higher education and offers tools for engagement tracking and event branding, but does not support key functionalities such as automated certificate generation, secretariat recruitment or predictive participation analytics.

While these platforms offer robust features for general event management, they often lack specific functionalities critical for university settings such as tailored secretariat management, academic calendar integration and participant-specific tracking tools. Table 1 Systems Comparison outlines the strengths and weaknesses of each system relative to UTHM Event Central Management System. "Yes" indicates the feature is available, while "No" indicates it is not.

Table 1 *Systems Comparison*

No.	Features/ System	Eventbrite	Meetup	Anthology	UTHM Event Central Management System
1)	Event Listing and Promotion	Yes	Yes	Yes	Yes
2)	Secretariat Recruitment	No	No	No	Yes
3)	Participant Recruitment	Yes	Yes	Yes	Yes
4)	Paperwork submission	No	No	No	Yes
5)	Analytic Dashboard	Yes	Yes	Yes	Yes
6)	Generate E-Certificate	No	No	Yes	Yes
7)	Event Recommendations	Yes	Yes	Yes	Yes
8)	Predict Participation Rate	No	No	No	Yes

3. Methodology

The development of UTHM Event Central Management System employs the Agile methodology, focusing on flexibility, stakeholder engagement, and iterative progress to ensure the platform meets the dynamic needs of the university community. This approach involves continuous collaboration with key stakeholders students, faculty, and administrative staff to refine the system's functionality throughout its development cycle. The process begins with system analysis and design, where requirements are collected and analyzed to formulate a comprehensive design that addresses both functional and non-functional needs. The implementation phase follows, utilizing technologies like JavaScript for frontend development and Python with Django for backend processes, ensuring robust and scalable solutions. Testing phases such as unit, integration, and user acceptance testing are critical to verify that the system meets all specified requirements and operates flawlessly. The final deployment and review phase ensures that the system is seamlessly integrated into the existing university environment, with ongoing evaluations to guide future enhancements. This methodical application of Agile practices guarantees that UTHM Event Central Management System not only supports but enhances the event management processes at UTHM, providing a responsive and user-centric platform. This methodical application of Agile practices guarantees that UTHM Event Central Management System not only supports but enhances the event management processes at UTHM, providing a responsive and user-centric platform. The Agile methodology's adaptability and structure make it well-suited for dynamic university environments, where continuous assessment and stakeholder involvement are crucial for success [4].

3.1 System Development Process

This section details the **system development process** for UTHM Event Central Management System, structured according to the Agile methodology. Each phase of the development is designed to ensure that the project meets the needs of its stakeholders efficiently and effectively. The workflow is broken down into several key phases, each with specific tasks and outputs that contribute to the project's progression from concept to deployment as shown in Table 3.

Table 2 *System Development Process*

Phase	Task	Output	Tools
Planning	Gather Project Requirements	Specifications And Engagement Reports	Interview
Design	Create System Design And UI Prototypes	Design Documents And UI Prototypes	Canva, Lucidchart
Development	Build Backend And Setup Database	Integrated System With Core Features	PHP, MySQL, Python, Flask, SMTP
Testing	Perform System And User Tests	Test Reports And User Feedback	UAT Tools
Deployment	Setup And Launch System	Operational System And Server Setup	Production Server Environment
Review And Launch	Evaluate And Train Users	Performance Reports And User Training	Training Materials

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3.2 System Requirement Gathering

For UTHM Event Central Management System, the system requirements were meticulously gathered and categorized into functional and non-functional requirements. These were developed through discussions with key stakeholders, including university administrators, event coordinators, and students, to ensure the system comprehensively addresses the needs of all users. Table 4 shows Functional Requirements and Table 5 shows Non-Functional Requirements.

Table 3 *Funtional Requirements*

No.	Module	Description
1)	User Registration	Secure system registration with role-based access.
2)	Event Management	Tools for creating, managing, and promoting events.
3)	Notification System	Automated alerts and reminders for event updates.
4)	Feedback Collection	Mechanisms for gathering participant feedback.
5)	Reporting and Analytics	Detailed event analytics and reporting capabilities.

Table 4 *Non-FuntionalRequirements*

No.	Category	Requirements
1)	Performance	Ensure fast loading times and responsive interaction.
2)	Security	Robust data protection and secure user authentication.
3)	Usability	Intuitive user interface and easy navigation.
4)	Reliability	Dependable performance with minimal downtime.
5)	Scalability	Ability to accommodate increasing numbers of users and events.

4.0 System Analysis

UTHM Event Central Management System is designed as a comprehensive system to manage and enhance university events through a user-friendly, web-based platform. This system is structured to support event creation, management, and promotion while integrating user feedback to refine functionalities continuously. It employs a modular architecture that ensures flexibility and scalability, addressing various administrative and user needs effectively.

4.1 Flowchart

UTHM Event Central Management System utilizes two flowcharts to clarify the system's functionality for different user roles. The Administrator Flowchart outlines the tasks for system management as shown in Figure 1, including user permissions and event approvals, illustrating how administrators maintain operational efficiency. The Student Flowchart focuses on student interactions, detailing the process for event registration and feedback submission, emphasizing ease of use and accessibility. Together, these flowcharts help both administrators and students navigate the system effectively, ensuring a clear understanding of their respective roles and interactions within the platform. This visual representation will be able enhance cognitive processes, as it provides a framework for beginners to develop their problem-solving skills without being overwhelmed by the syntax of programming languages [5]. The flowchart for Admin and Student are attached in Appendix A.

4.2 Context Diagram (CD)

The Context Diagram for UTHM Event Central Management System illustrates the high-level overview of the system, focusing on how it interacts with external entities. This diagram shows the system as a single process with flows to and from external agents such as administrators, students, and other systems. Administrators manage events and users, while students able view, join, and give feedback on events. Setiyani and Tjandra

emphasize that DFDs are instrumental in depicting the flow of data within a business process, utilizing specific symbols to represent data transfers effectively [6].

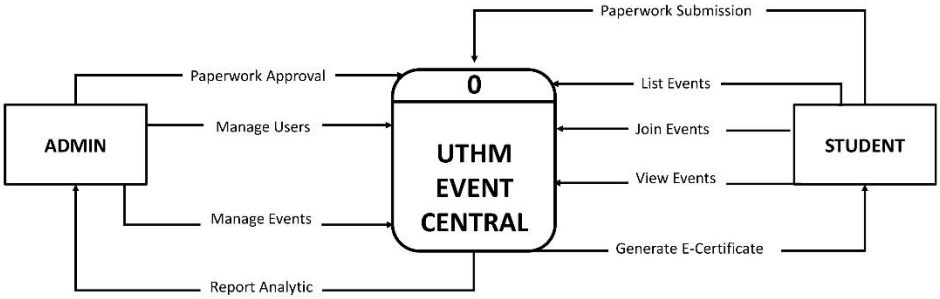

Fig. 1 *Data Flow Diagram Context Diagram (DFD CD)*

4.3 Data Flow Diagram (DFD)

The Data Flow Diagram for UTHM Event Central Management System provides a detailed representation of the data flow within the system, showing how information moves between processes, data stores, and external entities. It details various processes such as account creation, event management, and report generation, showing how data is input, processed, and output in the system. This diagram helps in understanding the paths through which data travels, and how data is maintained within the system. Salma highlights that the design phase involves recognizing users and their functional needs, which is vital for creating an effective system that aligns with stakeholder expectations[7]. The Data Flow Diagram is attached in Appendix B.

4.4 Entity-Relationship Diagram (ERD)

The Entity-Relationship Diagram (ERD) for UTHM Event Central Management System displays the data structure of the system, illustrating how entities such as Admin, Events, Students, and Secretariats are interrelated. This diagram highlights the relationships and dependencies between entities like how students participate in events, how events are managed by admins, and how notifications are generated and linked to specific events and users. This ERD is crucial for understanding the database schema and how different sections of the system interact at a data level. According to Pulungan, ERDs are a key component in database design, representing the relationships between entities and attributes in a clear and systematic manner [8]. Afiifah et al. further emphasize that ERDs are one of the main diagrammatic representations used to capture user data requirements, thereby aiding in the effective design of databases [9]. The Entity-Relationship Diagram is attached in Appendix B.

4.5 System Interfaces Design

The interface design of UTHM Event Central Management System focuses on simplicity and ease of use to ensure both administrators and students able efficiently manage and participate in events. It features a clear and intuitive layout that guides users through event creation, management, and participation processes seamlessly. For administrators, the design includes robust management tools for overseeing events and user activities. Students benefit from straightforward navigation for viewing events, registering, and managing their profiles. This approach enhances user experience, making the platform accessible and effective for the university's needs. The integration of UI and UX design principles is fundamental to creating applications that meet user needs and expectations [10].

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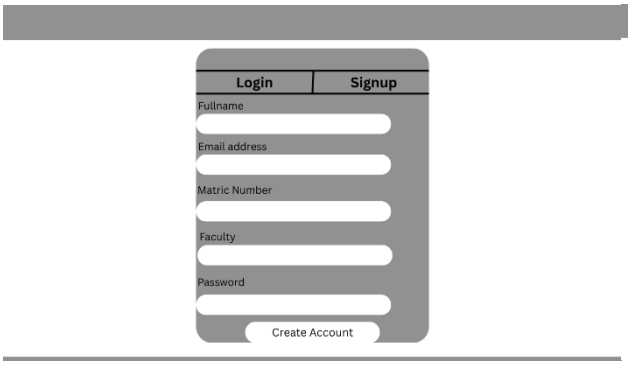

Fig. 2 *Register page*

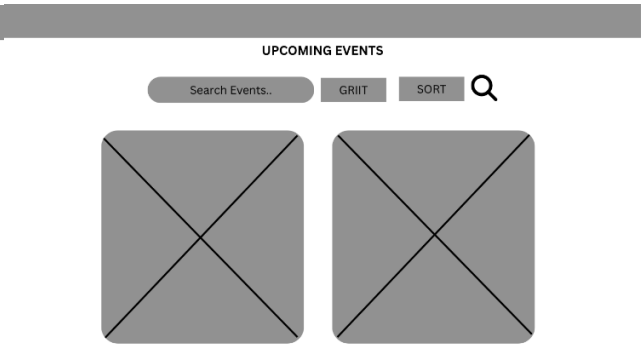

Fig. 3 *Events Page*

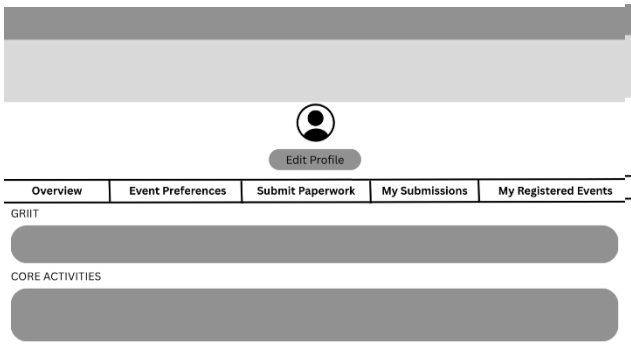

Fig. 4 *Events Preferences Page*

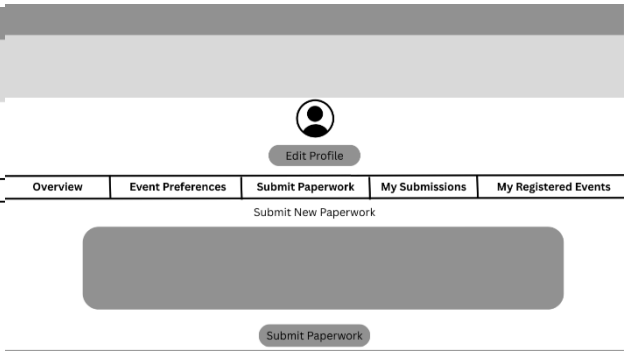

Fig. 5 *Submit Paperwork Page*

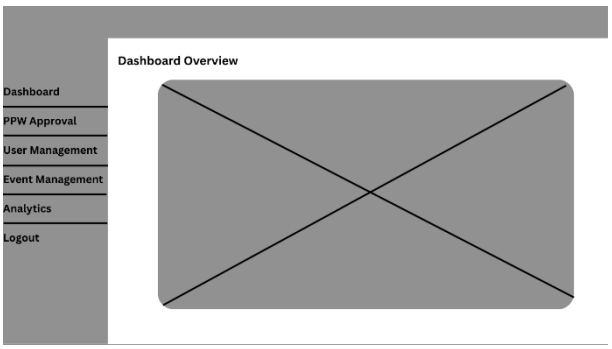

Fig. 6 *Admin's Dashboard*

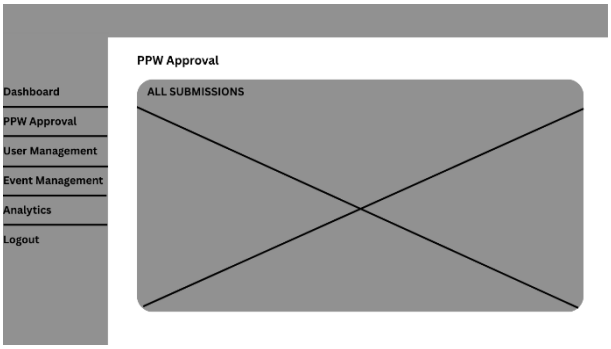

Fig. 7 *Paperwork Approval Page*

Figure 2 shows the Register Page, where new users can sign up by entering personal and academic information such as name, matric number, faculty, and email. Figure 3 displays the Events Page, which lists upcoming events along with search and filter functions; each event card includes essential details and a registration button. Figure 4 presents the Events Preferences Page, allowing students to select preferred event categories like club and GRIIT to receive personalized recommendations. Figure 5 illustrates the Submit Paperwork Page, where students can upload required documents such as PPW or justification PDFs linked to specific events. Figure 6 shows the Admin's Dashboard, which provides centralized access to event management, user accounts, analytics, notifications, and paperwork approvals. Lastly, Figure 7 highlights the Paperwork Approval Page, enabling admins to view, approve, or reject submitted documents, with features to preview files and give feedback efficiently.

5.0 Implementation and Testing

This section outlines the implementation and testing of the UTHM Event Central Management System. These phases play a vital role in the system development process, as they help determine whether the system's features meet user requirements. Ensuring a smooth system flow is also important so that all modules developed during the design and analysis stages operate efficiently. To verify that the system functions as expected, the UTHM Event Central Management System is thoroughly developed and tested in this phase.

5.1 Implementation Phase

The UTHM Event Central Management System was developed as a web-based application that acts as a centralized platform to manage university event activities. The system allows students to browse upcoming programs, register as participants or secretariats, and submit event paperwork, while admins able review, approve, and monitor event-related data. The system was built using HTML, CSS, JavaScript, and PHP for the main web interface, and it integrates Python with Flask for modules such as event recommendation using machine learning, automated notifications, and analytics reporting. The database was developed using MySQL and managed through phpMyAdmin.

The system interface includes various modules such as user login, event browsing, profile management, and a paperwork submission dashboard. Access to functionalities is dynamically granted based on user roles, ensuring students and admins interact only with the modules relevant to them.

5.1.1 User Registration and Login

This module allows students and admins to register and log in to the system securely. Upon successful login, the system verifies credentials by referencing stored user data and directs the user to their respective dashboard based on their role. It ensures that unauthorized users cannot access internal features without proper authentication. Figure 10 shows Login Page for all roles, admin and students.

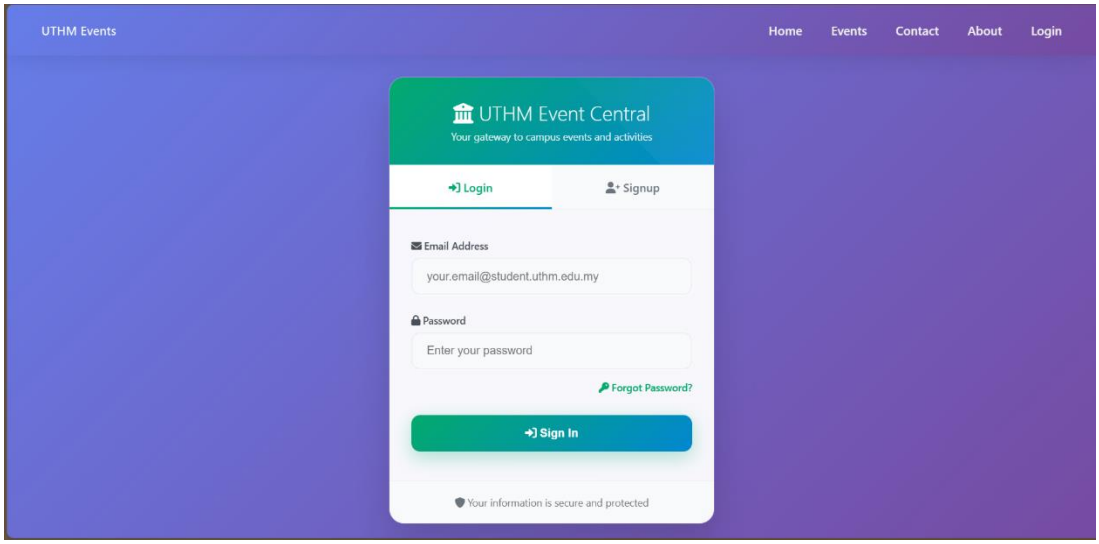

Fig. 10 *Login Page*

5.1.2 Profile Management

The profile management module enables users to update and maintain their personal information such as name, contact details, and faculty. This ensures accurate user data for event registration and communication. Changes made are reflected in the system database and used for personalized features like ML recommendations. Figure 11 shows Profile Page for student.

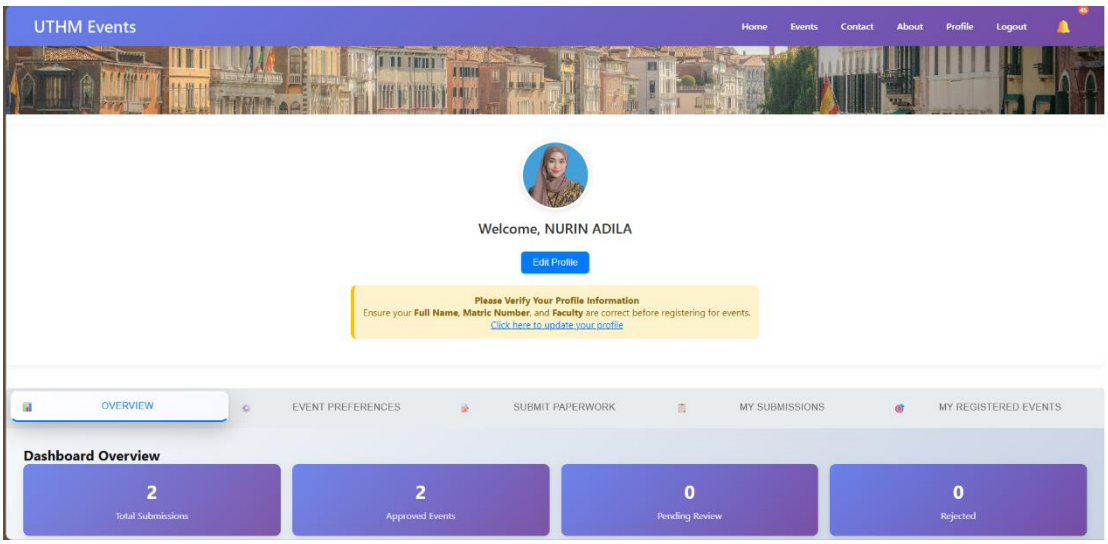

Fig. 11 *Profile Page*

5.1.3 Event Browsing and Recommendations

This process allows students to browse all available university events and receive personalized suggestions generated by a machine learning recommendation engine. Students able view details such as event name, type, location, and date. The recommendation engine enhances user experience by promoting relevant events based on student interests and past activity. Figure 12 shows available events in Events Page

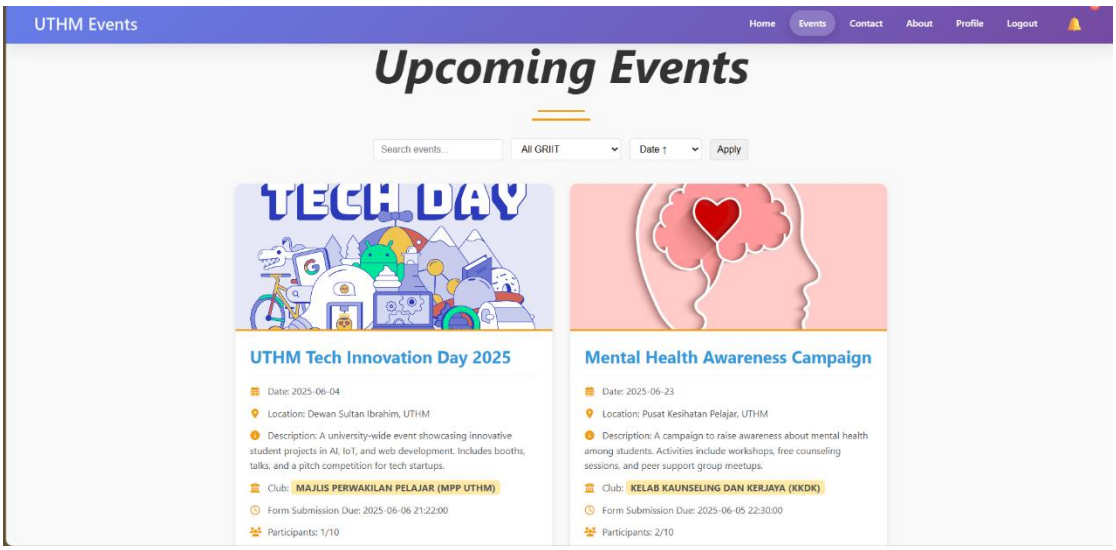

Fig. 12 *Events Page*

5.1.4 Admin Review and Approval

Admins use this module to review and manage all submitted event paperwork. They will be able view, approve, or reject submissions based on predefined criteria. This process ensures only qualified and complete events proceed, maintaining quality and compliance. The system logs approval status and updates relevant event data accordingly. Figure 13 shows Paperwork Approval Page at Admin side.

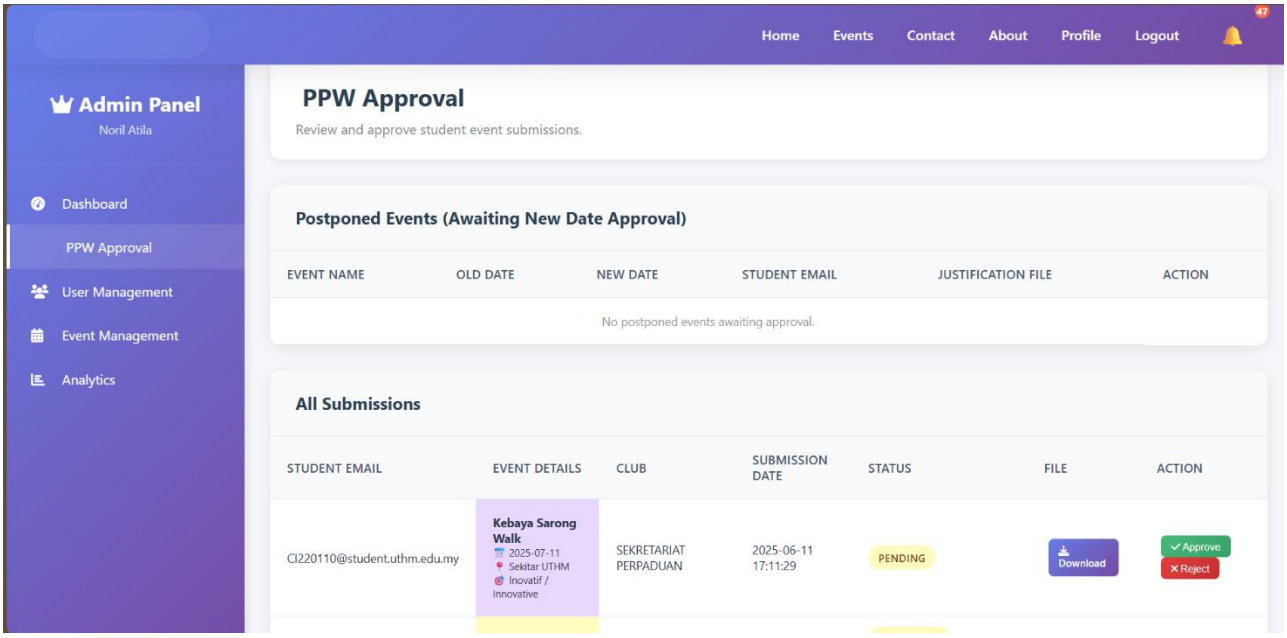

Fig. 13 *Paperwork Approval Page*

5.1.5 Join Event as Participant or Secretariat

Students can apply to join events either as participants or secretariats. The system collects the relevant information (e.g., role preference, experience) and records it in the registration database. This feature allows event organizers to easily track and manage student involvement in their programs. Figure 14 shows form to join as secretariat and Figure 15 shows form to join as participant.

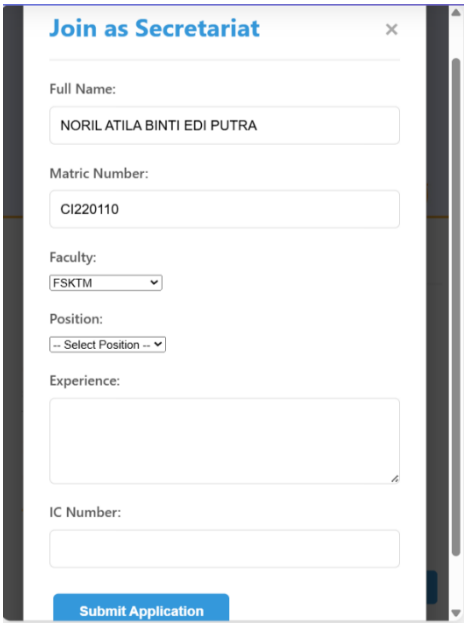

Fig. 14 *Secretariat Form Page*

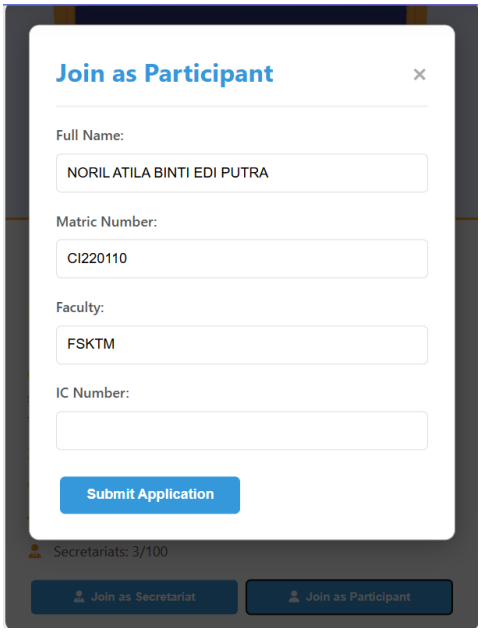

Fig. 15 *Participant Form Page*

5.1.6 Event Submission

This module allows students to formally submit their program proposal paperwork (PPW) including required documents and details such as event title, date, and core activity. The system stores the submission and notifies the admin for review. It ensures smooth proposal handling and maintains documentation for university records. Figure 16 shows page for stuent submit paperwork.

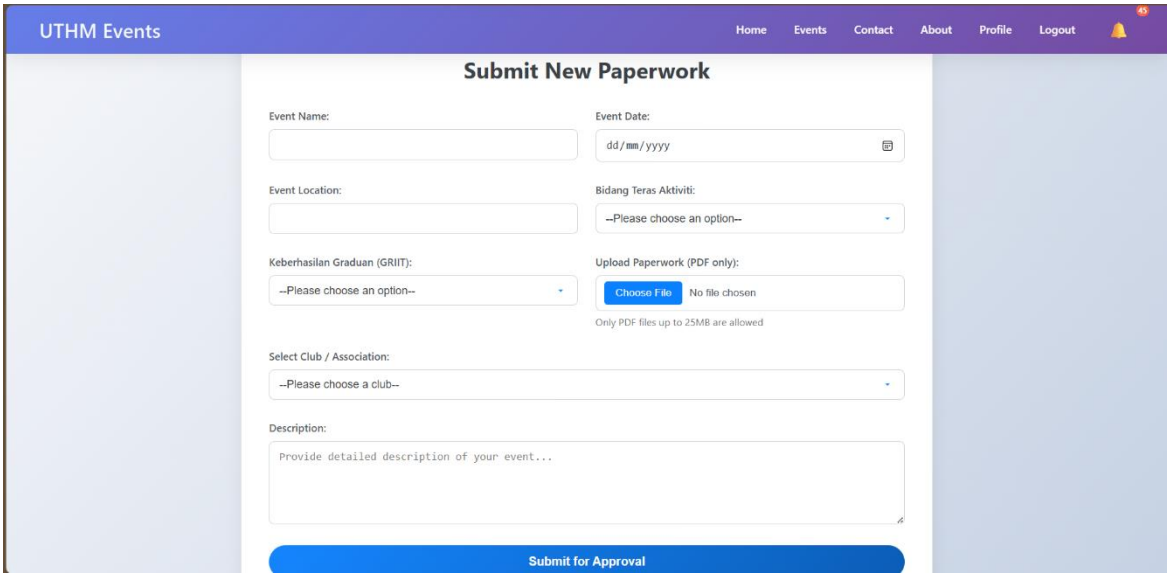

Fig. 16 *Submit New Paperwork Page*

5.1.7 Notification Management

Notification management enables the system to send and display important updates to users. Admins will be able issue notifications for approvals, rejections, upcoming events, or reminders. Notifications are stored in a dedicated log and shown in the user interface to ensure timely and clear communication between users and the system. Figure 17 shows notifications section in the syatem and Figure 18 shows notification in the Email.

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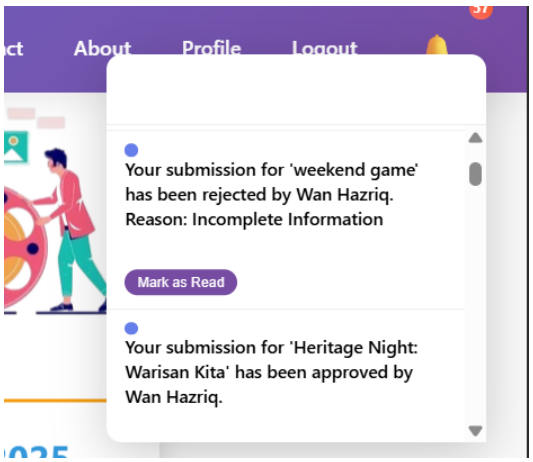

Fig. 17 *Notifications Section in the System*

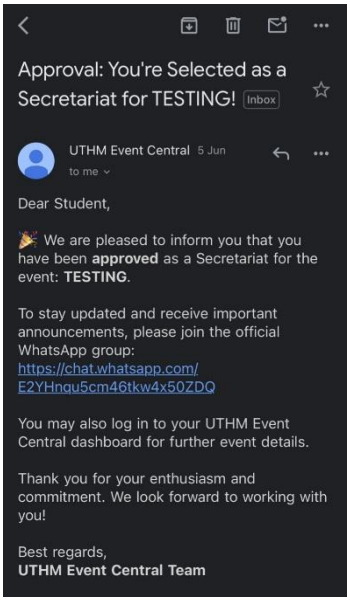

Fig. 18 *Notifications in the Email*

5.1.8 Analytics and Reporting (Process 8.0)

The analytics and reporting module allows admins to generate reports based on event data, participation statistics, and system usage. These reports support decision-making and performance evaluation. The data is retrieved from various modules and displayed in a readable format to provide insights into student engagement and event trends.

5.2 System Functionality

The system testing encompasses two types of testing which are functional testing and user acceptance testing. These testing phases are crucial to ensure that all implemented features in the UTHM Event Central Management System meet the expected requirements and operate as intended for both students and administrators.

5.3 Functional Testing

Functional testing is carried out to verify that each module and feature of the UTHM Event Central Management System operates correctly as specified during the earlier development phases. A test plan is utilized to guide and support this testing process. The following sections detail the test plans that were created to conduct system testing effectively, ensuring each component functions as expected under various conditions.

The Authentication and Authorization module (Test Case IDs: T5-1 to T5-6) focused on verifying secure login for both Admin and Student roles. It ensured proper redirection after login, protection of restricted pages, and secure session handling. These tests were crucial to confirm that only authorized users could access specific system features.

The Event Management module (Test Case IDs: T6-1 to T6-6) tested the admin's ability to add, edit, approve, and reject event proposals submitted by students. It validated the accuracy of event data processing, submission status updates, and access restrictions to maintain system integrity and prevent unauthorized changes.

The User Management module (Test Case IDs: T7-1 to T7-7) confirmed that only Admins could manage student accounts by adding, editing, or deleting users. It also included checks for preventing duplicate entries, validating input data, and ensuring that all user-related actions produced correct system feedback.

The Join Event module (Test Case IDs: T8-1 to T8-7) covered student registration as either participants or secretariats. It ensured correct handling of registration forms, withdrawal options, and viewing of joined events. Additionally, this module restricted unauthorized access and ensured that system validation worked correctly.

Lastly, the Submit Paperwork module (PPW) (Test Case IDs: T9-1 to T9-7) verified the end-to-end process of submitting paperwork for event approval. It tested file validation, form completeness, and ensured that Admins could view, approve, or reject submitted paperwork. This module also included an automatic alert mechanism to prompt users to confirm event execution a day before the scheduled date. Table 6 shows the result for Test Plan.

Table 5 Test Plan Results

Test Case Id	Test Case	Description	Expected Output	Actual Output
T5-1	Login as Admin	Admin login using valid credentials	Redirect to Admin Dashboard	Success
T5-2	Login as Student	Student login using valid credentials	Redirect to Student Homepage	Success
T5-3	Login with invalid input	Enter incorrect email and/or password	Show "Invalid email or password" message	Success
T5-4	Session handling	Stay idle for more than 60 minutes	Session expires and user is logged out	Success
T5-5	Role-based access	Student tries to access Admin pages via direct URL	Access Denied / Redirect to Login Page	Success
T5-6	Admin restricts student	Admin tries to open student-only page	Access Denied / Redirect to Admin Dashboard	Success
T6-1	Admin edit event	Admin updates event date, location, or description	Event details updated successfully	Success
T6-2	Admin approve event	Admin approves submitted paperwork	Event status updated to "Approved"	Success
T6-3	Admin reject event	Admin rejects a submission with reason	Status changed to "Rejected", reason is shown	Success
T6-4	Student submit event	Student submits paperwork with complete fields	Event submitted for admin review	Success
T6-5	Validation check	Submit form with missing required fields	Error message shown for missing inputs	Success
T6-6	Unauthorized access	Student tries to access admin event management module	Access denied or redirected to login/home page	Success
T7-1	Admin add new student	Admin adds a new student with valid information	User is created and shown in the user list	Success
T7-2	Admin edit student details	Admin updates student name, matric number, or faculty	Updated data is saved and reflected correctly	Success
T7-3	Admin delete student	Admin removes a student from the system	User is deleted and removed from the user list	Success
T7-4	Admin view users	Admin views the list of all registered students	List of students and details is displayed	Success

T7-5	Invalid input validation	Admin submits form with missing fields	System displays validation error messages	Success
T7-6	Unauthorized access check	Student tries to access admin user management module via URL	Access denied or redirected to login/home page	Success
T7-7	Duplicate user prevention	Admin registers user with an already existing email	System blocks duplication and shows an error message	Success
T8-1	Student joins as participant	Student joins an event with valid details	Confirmation shown, student added to participant list	Success
T8-2	Student applies as secretariat	Student applies as a secretariat for an event	Application recorded, pending admin approval	Success
T8-3	Admin views registrations	Admin views list of all registered participants and secretariats	All registered users are displayed with event info	Success
T8-4	Student views joined events	Student checks their own registered event list	Past and current events joined are listed	Success
T8-5	Withdraw from event	Student cancels their participation before the event starts	Status updated to "Withdrawn"	Success
T8-6	Admin removes participant	Admin removes a participant or secretariat from the event	User is removed from event participation list	Success
T8-7	Invalid registration	Student submits form without choosing a position (e.g. role)	System shows error message like “Please select a role”	Success
T9-1	Student submits paperwork	Student fills in and uploads required event details and PDF	Submission is recorded and sent for admin approval	Success
T9-2	Admin views submissions	Admin views all submitted paperwork	List of submissions is displayed with details and status	Success
T9-3	Admin updates status	Admin approves or rejects the submission	Submission status updated (Approved/Rejected)	Success
T9-4	Auto-status alert	System checks for upcoming event date	Triggers confirmation prompt if the event is near	Success

T9-5	View submission history	Student views previously submitted paperwork	Submission history and statuses displayed	Success
T9-6	Unauthorized access	Non-logged-in user tries to open paperwork submission module	Access denied or redirected to login page	Success
T9-7	Validation check	Student submits empty fields or missing PDF	System shows error messages and prevents submission	Success

5.4 User Acceptance Testing

User acceptance testing was conducted to confirm that the UTHM Event Central Management System fulfils the users' needs and meets all specified requirements. This testing involved two main user roles Admin and Student, each providing valuable perspectives on the system's functionality and usability. The evaluation was structured around a comprehensive questionnaire divided into three sections. Section A focused on general usability and system functionality for all users, Section B addressed role-specific aspects tailored to each group, and Section C concentrated on validating individual modules and system behaviour.

Respondents rated each aspect using a Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). Their feedback was analysed to identify strengths and areas for improvement. The insights gained through this user acceptance testing process ensured that the final system aligns with user expectations and delivers an effective and user-friendly experience. Questionnaire sets will be shows in Appendix C.

5.4.1 User Acceptance Testing Section A

Section A of the user acceptance testing focused on evaluating the overall usability and performance of the UTHM Event Central Management System from the perspective of all users. This section helped determine whether the system is intuitive, fast, and aligned with general expectations. Respondents answered using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

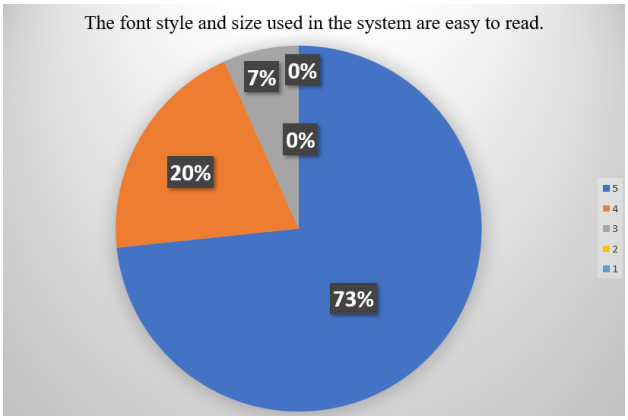

Fig. 19 Font Style and Size Pie Chart

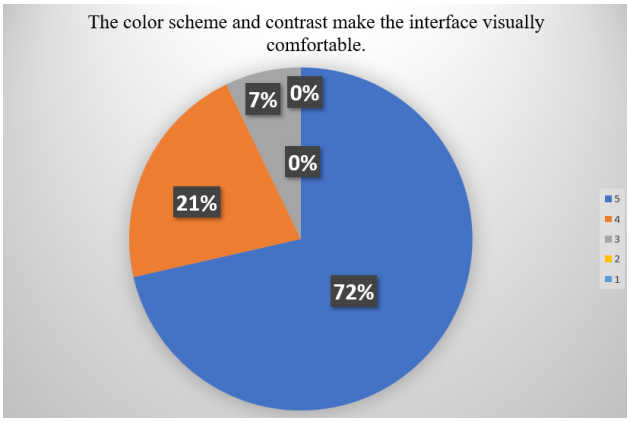

Fig. 20 Color Scheme and Contrast Pie Chart

5.4.2 User Acceptance Testing Section B(Admin)

Section B of the user acceptance testing focuses on evaluating role-specific functions for Admin users in the UTHM Event Central Management System. This section assesses whether admin functionalities such as managing users, approving events, handling paperwork submissions, and sending notifications operate smoothly and accurately. Table 11 shows the user feedback using a 5-point Likert scale, where 1 = Strongly Disagree and 5 = Strongly Agree.

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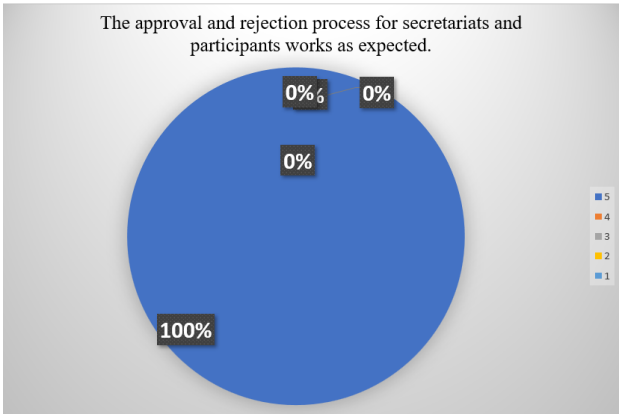

Fig. 21 Paperwork Approval Pie Chart

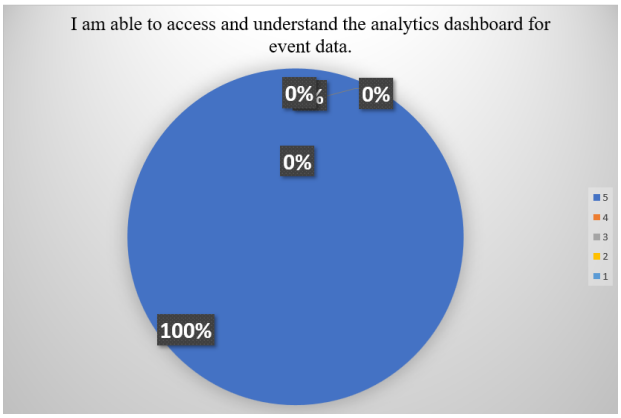

Fig. 22 Analytics Dashboard Pie Chart

5.4.3 User Acceptance Testing Section B (Student)

Section B of the user acceptance testing focuses on evaluating the student-specific functionalities of the UTHM Event Central Management System. This includes the ability to browse events, register as participants or secretariats, submit paperwork, and receive system notifications. The feedback was gathered using a 5-point Likert scale, where 1 = Strongly Disagree and 5 = Strongly Agree.

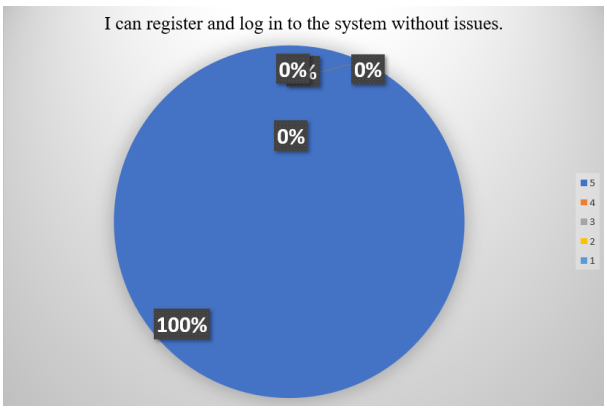

Fig. 23 Register and Log in Pie Chart

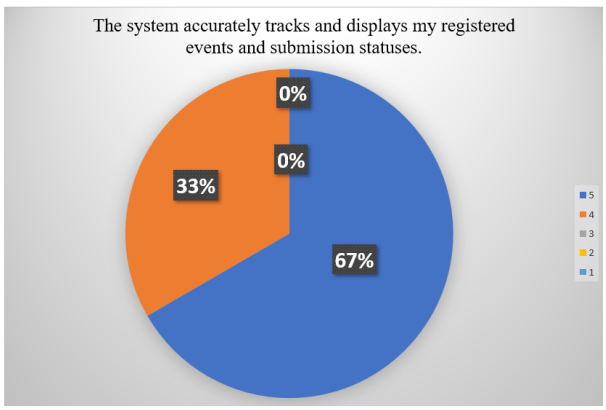

Fig. 24 Accurate Tracking Contrast Pie Chart

5.4.4 User Acceptance Testing Section C (Admin)

Section C of the user acceptance testing evaluates the overall performance and security aspects of the UTHM Event Central Management System. This section focuses on how well the system performs under normal usage conditions and how effectively it protects sensitive data and prevents unauthorized access. It covers key areas such as system loading speed, error-free operation, role-based access control, secure handling of submitted documents (e.g., justification files), and reliable login/session management for administrators. Feedback was collected using a 5-point Likert scale, where 1 = Strongly Disagree and 5 = Strongly Agree, as shown in Table 11.

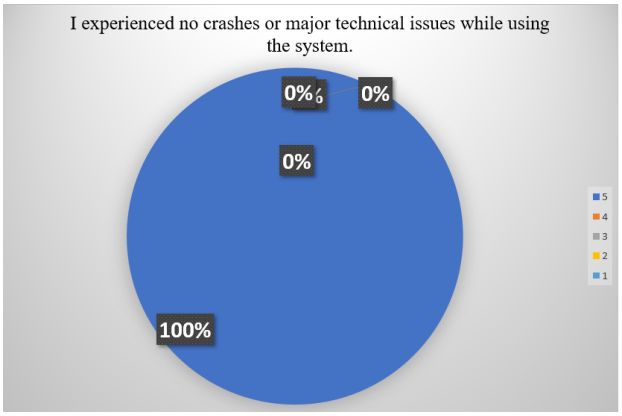

Fig. 25 Experienced Crashes Pie Chart

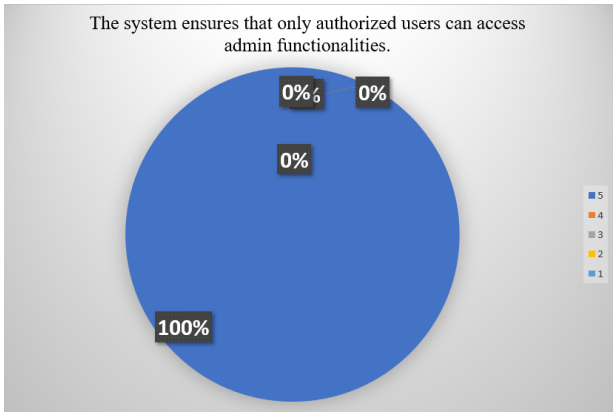

Fig. 26 Authorized Users Pie Chart

5.4.5 User Acceptance Testing Section C (Student)

Section C of the user acceptance testing assesses the performance and security aspects of the UTHM Event Central Management System from the students' perspective. This includes evaluating how fast the system responds during navigation and form submission, its stability under regular use, and the security of submitted event data and uploaded documents such as PDFs. The section also covers login reliability and confidence in data protection. Feedback was collected using a 5-point Likert scale, where 1 = Strongly Disagree and 5 = Strongly Agree, as presented in Table 12.

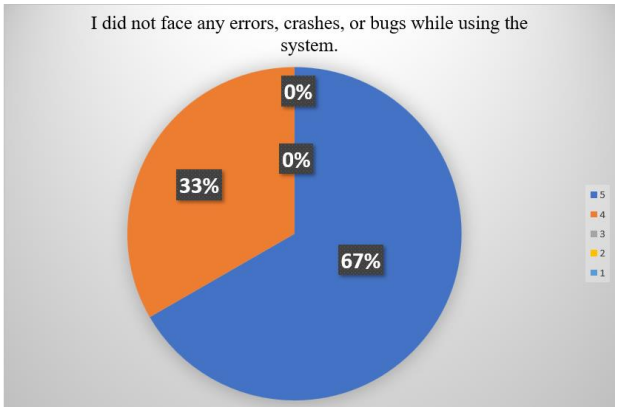

Fig. 27 Face Any Errors Size Pie Chart

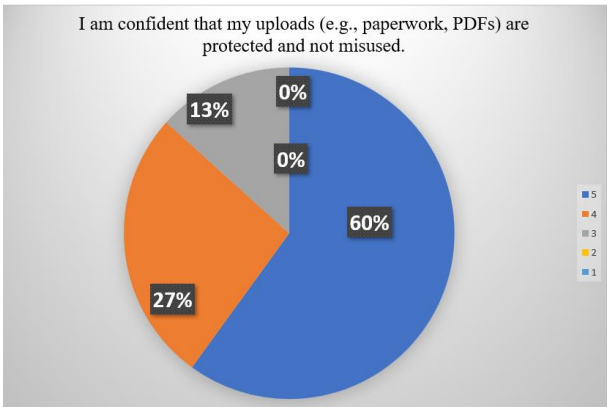

Fig. 28 Confident with my Uploads Pie Chart

6.0 Conclusion

The completion of the initial phase of the UTHM Event Central Management System project signifies a crucial milestone in developing a dynamic event management system tailored for Universiti Tun Hussein Onn Malaysia. This phase has resulted in the successful creation of essential system documentation, such as requirements specifications, architectural designs, and user interface prototypes, laying a solid foundation for subsequent development stages.

This initial stage has effectively showcased the application of software engineering principles to address specific needs within the university setting, streamlining event management processes. Functional testing and user acceptance testing (UAT) were conducted to validate the system's performance, stability, and usability. The test results showed that all core modules including user registration, event submission, approval processes, and notification handling performed successfully and met expected outputs, indicating the system is reliable and ready for deployment.

While the system demonstrates significant progress, some limitations were identified. These include the lack of mobile-responsive or mobile app support, absence of multilingual interface options, and basic search and filtering functionalities that do not support advanced queries like date ranges or combined criteria.

To address these limitations, future improvements are recommended: expanding the system for mobile platform integration to improve accessibility, introducing multilingual support to accommodate non-Malay speaking users, and enhancing the search and filter module with multi-criteria filtering and date pickers for more refined event browsing.

As the project progresses into full implementation and deployment, the groundwork and testing outcomes from this phase will be instrumental. The insights and skills acquired through this project particularly in project management, system architecture, interface design, and testing will be invaluable not only for the successful completion of this final year project but also for future professional endeavors in technology and event management. The experience has significantly enhanced technical and managerial competencies, positioning the project team well for upcoming challenges and advancements.

Acknowledgement

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Hussein Onn Malaysia for its support.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: ***study conception and design:*** *Noril Atila Edi Putra,* Madam *Rozanawati Darman;* ***data collection:*** *Noril Atila Edi Putra,* Madam *Rozanawati Darman;* ***analysis and interpretation of results:*** *Noril Atila Edi Putra,* Madam *Rozanawati Darman;* ***draft manuscript preparation:*** *Noril Atila Edi Putra,* Madam *Rozanawati Darman. All authors reviewed the results and approved the final version of the manuscript.*

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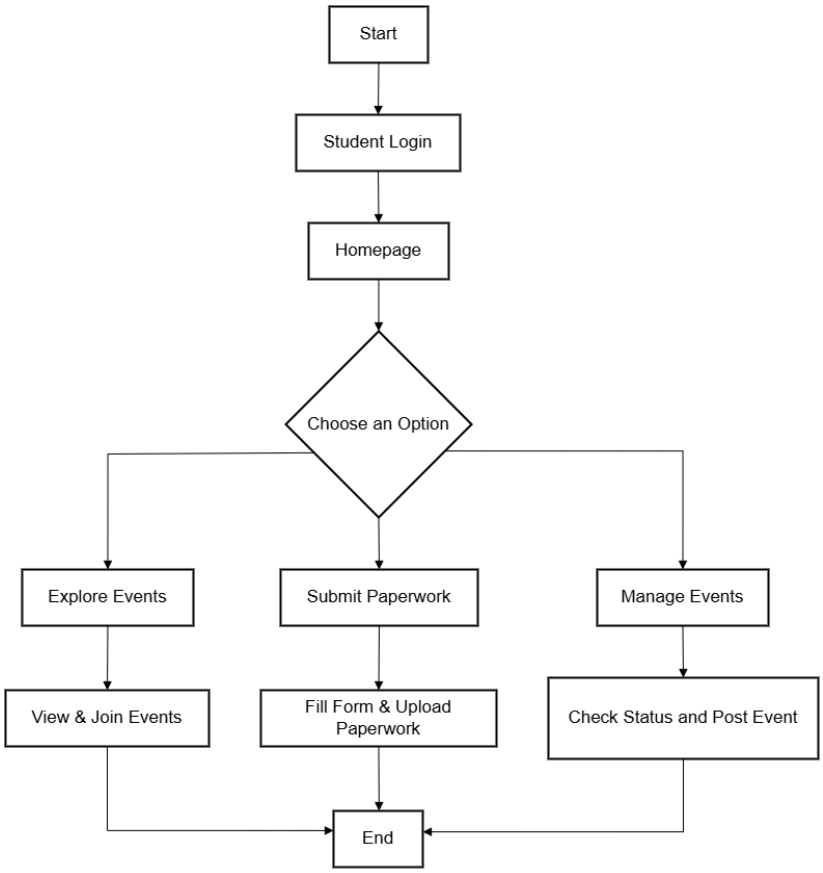
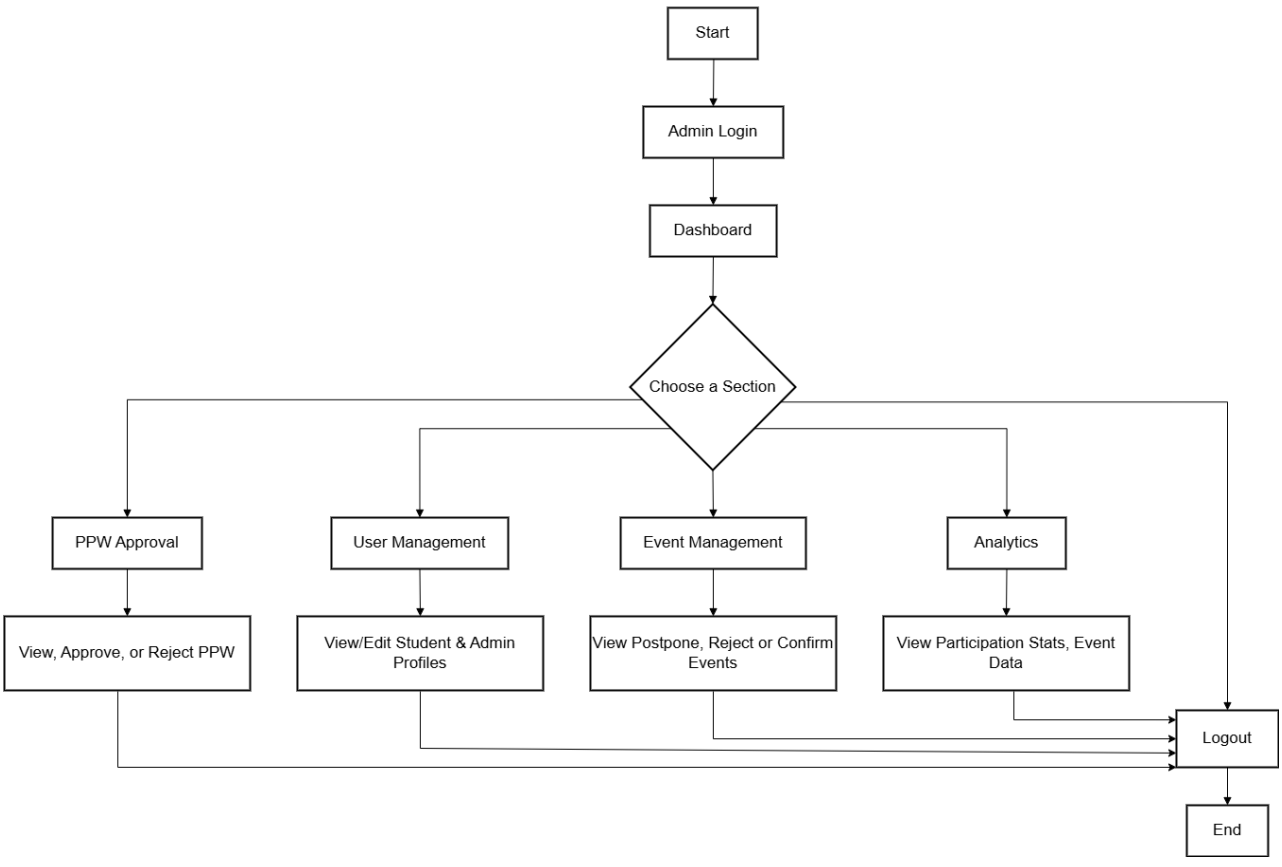
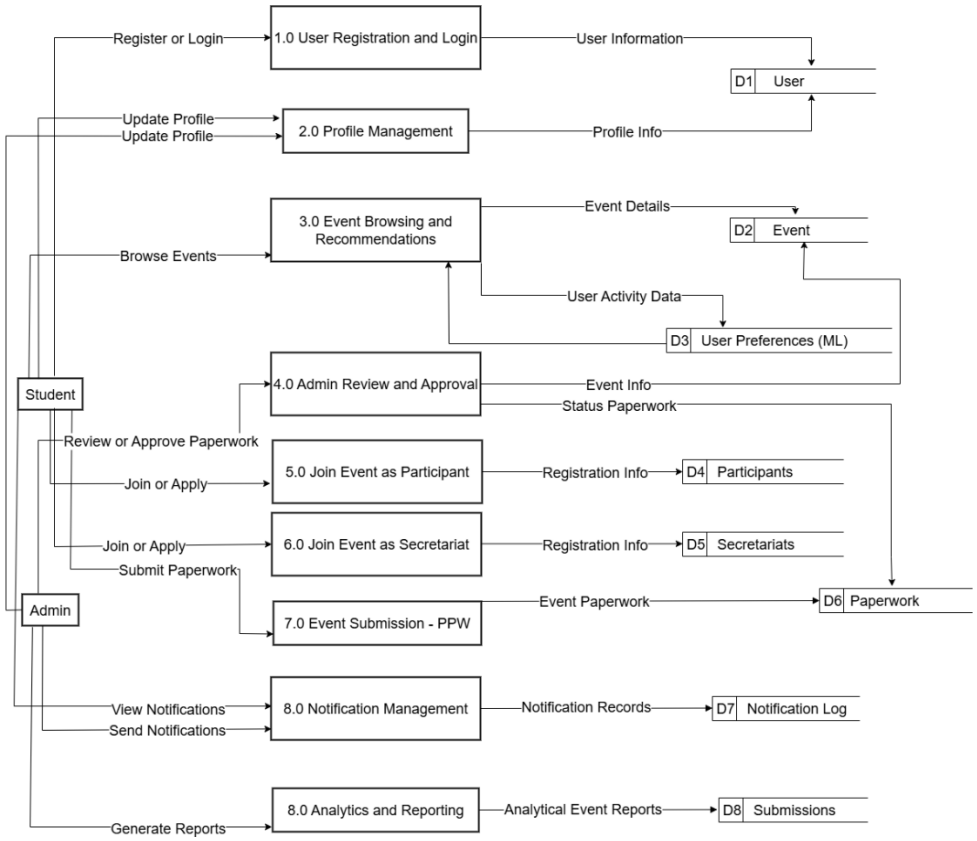
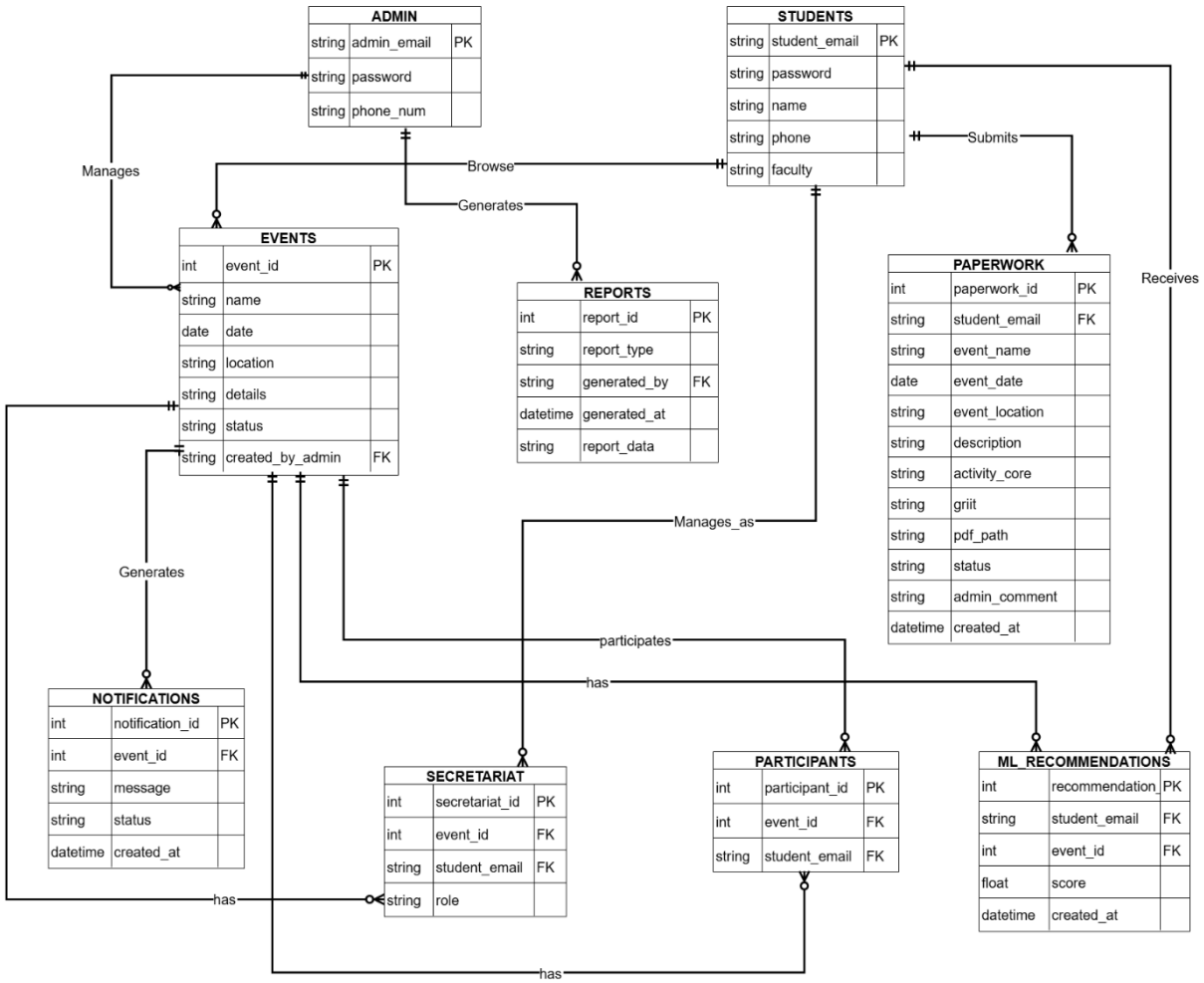
Appendix A: Student and Admin Flowchart





Appendix B: Data Flow Diagram and Entity Relationship Diagram





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Appendix C: Questionnaires

	1	2	3	4	5
The font style and size used in the system are easy to read.	○	○	○	○	○
The color scheme and contrast make the interface visually comfortable.	○	○	○	○	○
The overall layout and design of the system are neat and user-friendly.	○	○	○	○	○
The icons and buttons are visually clear and consistent throughout the system.	○	○	○	○	○
The system design is responsive and displays well on different screen sizes (e.g., laptop, mobile).	○	○	○	○	○

Section A (Admin & Student)

	1	2	3	4	5
I can successfully view and manage event submissions.	○	○	○	○	○
The approval and rejection process for secretariats and participants works as expected.	○	○	○	○	○
The system correctly displays justification files for postponed events.	○	○	○	○	○
I am able to access and understand the analytics dashboard for event data.	○	○	○	○	○
I can efficiently manage student user profiles and update their information.	○	○	○	○	○

Section B (Admin)

	1	2	3	4	5
The system loads pages quickly without noticeable delays.	○	○	○	○	○
I experienced no crashes or major technical issues while using the system.	○	○	○	○	○
The system ensures that only authorized users can access admin functionalities.	○	○	○	○	○
Submitted data and documents (e.g., justification files) are handled securely and confidentially.	○	○	○	○	○
Admin login and session management are stable and secure.	○	○	○	○	○

Section C (Admin)

	1	2	3	4	5
I can register and log in to the system without issues.	○	○	○	○	○
I am able to search, explore, and join events easily.	○	○	○	○	○
The event submission and paperwork upload process is smooth.	○	○	○	○	○
I receive timely notifications for approval, rejection, or event reminders.	○	○	○	○	○
The system accurately tracks and displays my registered events and submission statuses.	○	○	○	○	○

Section B (Student)

	1	2	3	4	5
The system responds quickly when browsing or submitting forms.	○	○	○	○	○
I did not face any errors, crashes, or bugs while using the system.	○	○	○	○	○
My personal data and event submissions feel secure within the system.	○	○	○	○	○
The login process works reliably and keeps my account safe.	○	○	○	○	○
I am confident that my uploads (e.g., paperwork, PDFs) are protected and not misused.	○	○	○	○	○

Section C (Student)