UKM PROJECT TRACKER 360

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ABSTRACT

The UKM Project Tracker 360 is a project management application that is developed to improve the university project management. This allows for transparency, real time progress monitoring and a single point of system for tracking projects, even when they are structured, virtual and IT-based. The platform offers categorization, fine-tunning progress tracking, collaborative file sharing, real-time communication tools, problem identification and resolution instruments, predictive analytics and feedback mechanism that is robust. It empowers efficient tracking of timeframes, detection of bottlenecks and improvement of educational innovations. The platform makes sure that it is accessible and offers robust security mechanisms for the stakeholders, giving them the required tools and information for successful project management and academic excellence.

INTRODUCTION

Academic institutions face multiple project management challenges because they experience data fragmentation along with the utilization of inconsistent tracking procedures and poor stakeholder coordination. Project tracking performed traditionally through manual methods and spreadsheets triggers resource mismanagement as well as delays and errors in the project timeline. Educational institutions need a modern efficient and collaborative project management system because they continue conducting extensive research and development projects.

The UKM Project Tracker 360 functions as an innovative web-based platform which focuses on project monitoring through its centralized interface served to manage project progress tracking between managers and authorized university personnel and student users. The system allows users to track progress automatically while featuring role-based access control and real-time notifications in addition to issue resolution functions for optimizing workflow and communication.

RESEARCH METHODOLOGY

The development of the UKM Project Tracker 360 was carried out using the Agile methodology, which emphasizes iterative development, continuous feedback, and stakeholder involvement. This methodology allowed for a flexible and adaptive approach, ensuring that the system evolved to meet user requirements effectively. The development process was divided into four key phases:

Analysis phase

- A wide-ranging user needs assessment was performed using project manager and university staff and student interviews combined with surveys with focus groups.
- The essential features needed for the system consisted of project tracking, task assignment, issue reporting, real-time notifications and administrative control functionalities.
- An assessment of Microsoft Project and Primavera and Monday.com yielded information that exposed their weaknesses and clarified UKM Project Tracker 360's distinctive advantages.

Design phase

- Structure of the system implemented an MVC (Model-View-Controller) design pattern to achieve separation of concerns between program components and modular system architecture.

- The database scheme received attention from me for executing efficient projects and task and user management with issues storage.
- The design phase included creation of wireframes and UI mockups which treated both technical and non-technical users to an interface that presented both simplicity and ease of use.
- RBAC (Role-Based Access Control) allowed the system to assign specific permission levels to Administrators, Project Managers and University Authorities.

Implementation phase

- **Frontend Development:** Utilized Vue.js for its reactive data binding, dynamic UI components and responsive design.
- **Backend Development:** Built using PHP and MySQL, incorporating RESTful APIs to facilitate efficient data exchange.
- **Database Management:** Implemented using phpMyAdmin, supporting structured and scalable data storage for user roles, project details, task assignments and issue logs.
- **Security Measures:** Integrated strong encryption protocols, access control policies and secure authentication mechanisms.
- **Real-time Functionality:** Developed features like progress bars, dynamic task updates and an integrated notification system to enhance user engagement.

Test phase

- **Unit Testing:** Assessed individual system components, including user authentication, project creation and task management.
- **Integration Testing:** Ensured seamless interactions between frontend and backend modules, verifying data consistency and proper API responses.
- **User Acceptance Testing (UAT):** Conducted with university stakeholders to validate usability and effectiveness based on predefined test cases.

- **Performance Optimization:** Evaluated system responsiveness under varying workloads, implementing caching, optimized queries and database indexing to improve performance.

The data obtained from the usability assessment was analyzed using descriptive statistics, evaluating different system aspects based on average scores. Table 1 presents an explanation of the scoring scale used for interpretation.

Table 1 explains the scoring scale

Mean Score	Interpretation
0-33	Poor
34-66	Fair
67-99	Good
100	Excellent

RESULT AND DISCUSSION

The UKM Project Tracker 360 was tested for usability, functionality and security, ensuring that the system met its intended objectives effectively.

Platform Features

The assessment focused on evaluating three key features from the core platform regarding efficiency alongside user experience and their influence on project management procedures.

- **User Registration and Login**: A role-based authentication system with secure user registration and login features protecting data integrity by controlling access based on different user roles.

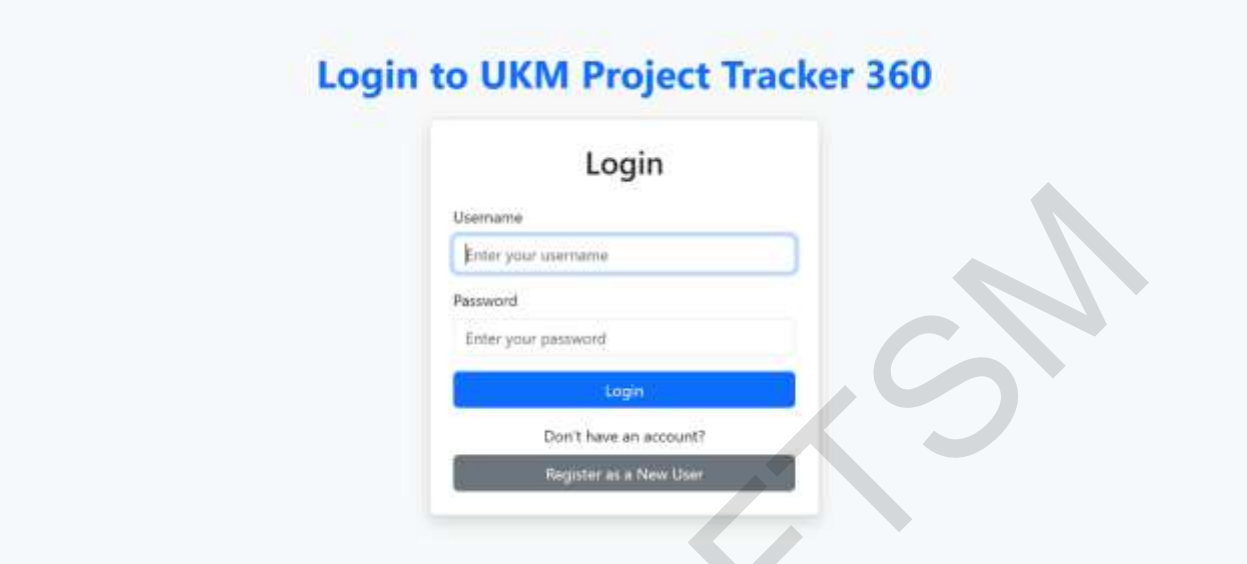

Figure 1 Login Interface

- **Dashboard**: Real-time project summaries along with milestones appeared on the dashboard for improved project oversight through automated notifications.

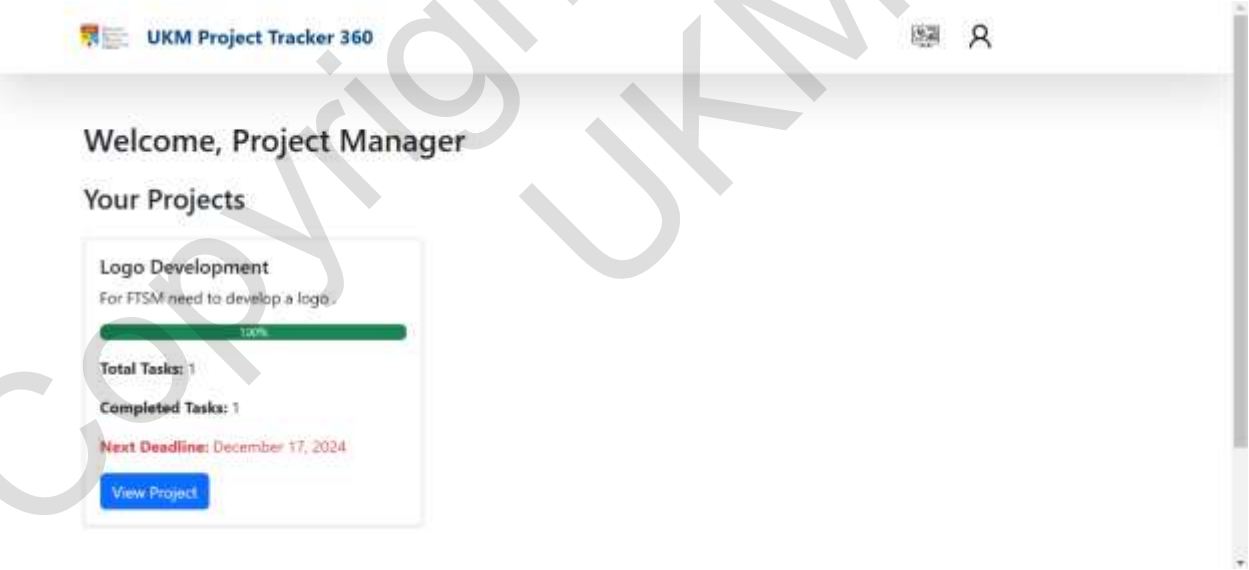

Figure 2 Each User has a Different Dashboard Depends on the User Type

- **Project Progress Tracking**: Users accessed enhanced transparency due to an interactive progress bar which let them track project completion visually and efficiently.

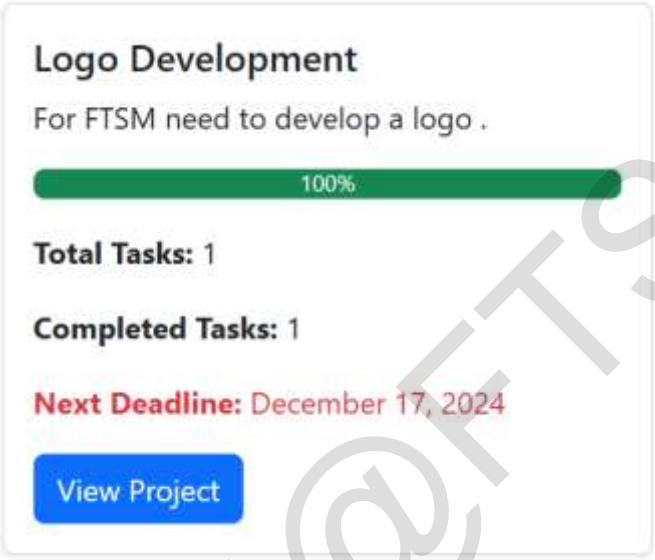

Figure 3 Project Progress Bar

- **Issue Management**: Users could report project issues through the system which enabled tracking and resolving project problems to enhance both faster issue resolution and better decision outcomes.

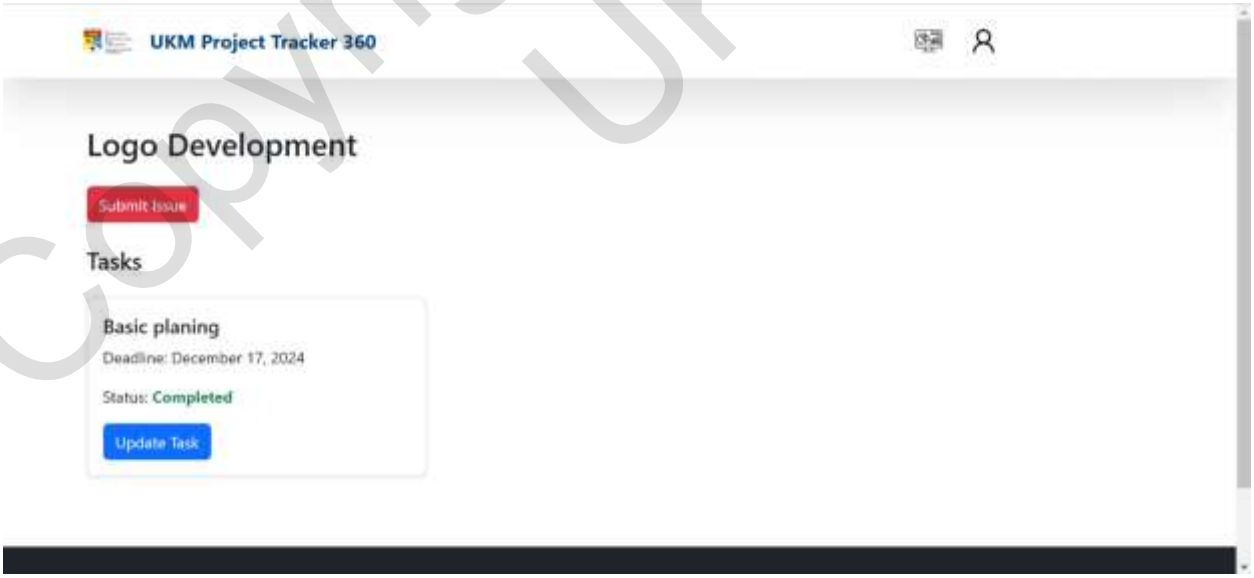

Figure 4 Submit Issue Option

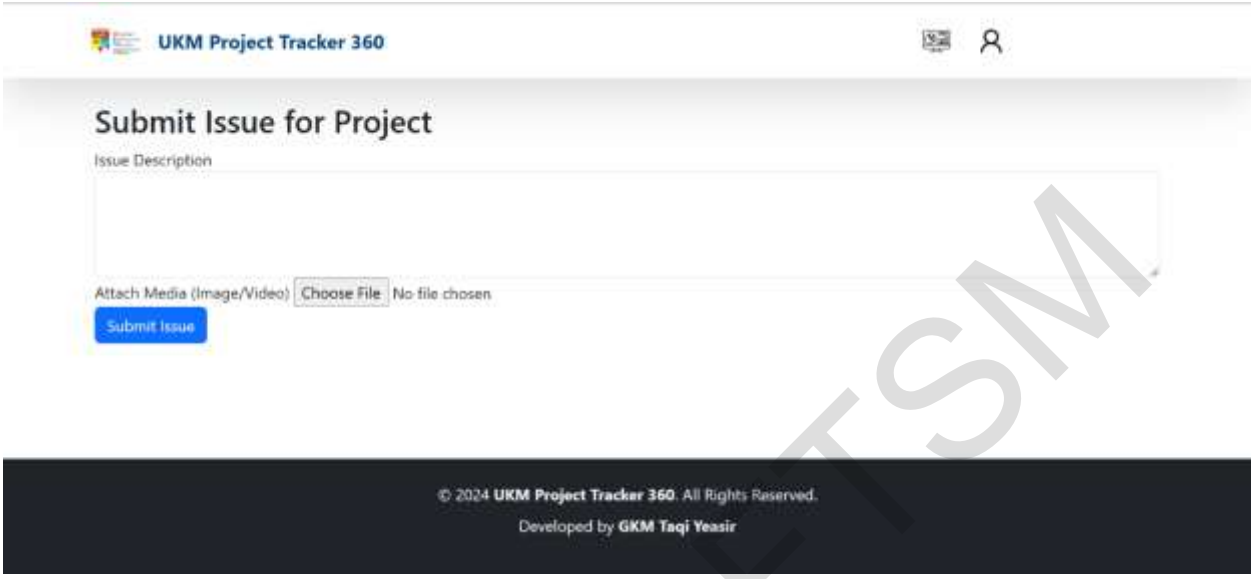

Figure 5 Project Manager can Attach Media with the Submit Issue Option

- **Admin Management**: Through Admin Management the system enabled project builders as well as user role handlers and data management operators to maintain organizational governance effectively.

Figure 6 Admin can Add New Project

Figure 7 Admin can Add Tasks in Different Running Project

- **Commenting on Issues:** University authorities can provide feedback on issues submitted by project managers, allowing them to determine whether a delay is justified or not. This functionality improves communication, ensuring project managers receive authoritative guidance and can adjust their workflows accordingly.

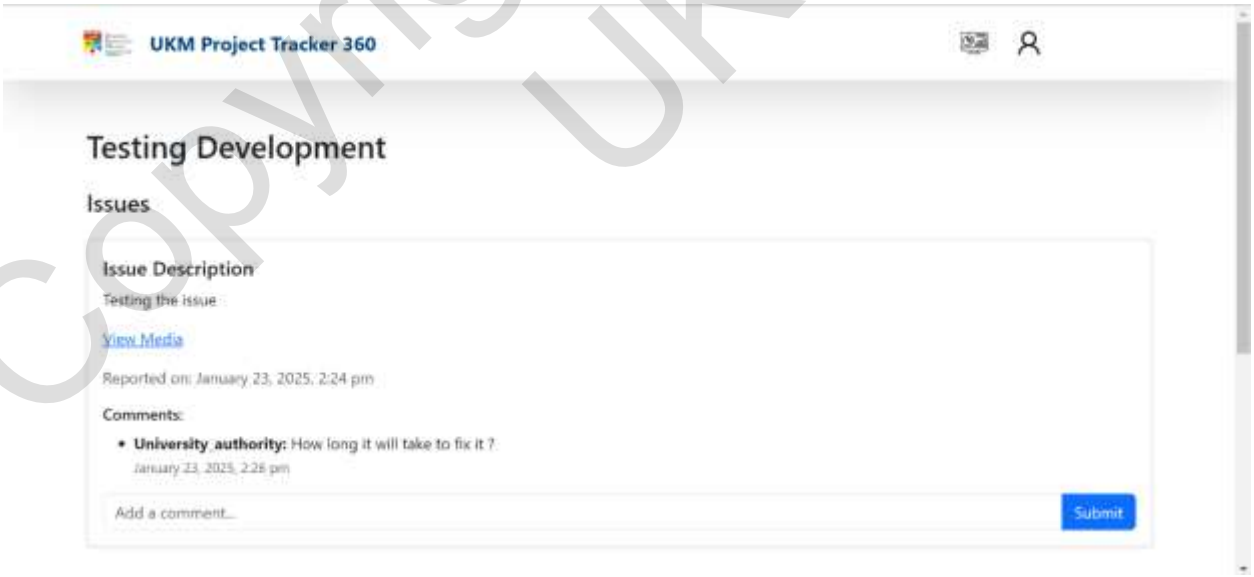

Figure 8 University Authority can Comment on the Issues Submitted by the Project Manager

Usability Testing Results

Usability testing is the final phase of evaluation conducted with user representatives and stakeholders to ensure that the UKM Project Tracker 360 meets functional requirements before deployment. The purpose of usability testing is to assess the system's ease of use, collect quantitative data on user experience, and evaluate user satisfaction.

Table 2 presents the average scores for different user satisfaction items based on usability testing. Items 1, 2, 8, and 9 received the highest ratings, averaging 87, indicating strong user satisfaction. Conversely, item 4 had the lowest score of 60, suggesting an area for potential improvement. The overall average score was 77, which, according to Table 1, falls within the high satisfaction range (67-100).

Table 2: Usability Testing Average Scores

No	Item	Average Score
1	I found the platform easy to navigate.	87
2	The platform's interface was intuitive and user-friendly.	87
3	The platform allowed effective collaboration.	73
4	I encountered difficulties in understanding some features.	60
5	The platform provided useful notifications and reminders.	67
6	The system improved task and project management efficiency.	67
7	I was able to track project progress seamlessly.	80
8	The system enhanced communication among team members.	87
9	I felt confident in using the platform for project tracking.	87
10	I enjoyed using the system for managing my tasks.	73
	Overall Average Score	77

Additionally, Table 3 presents the average scores for other factors influencing user engagement. The highest-rated item with a score of 93 indicates users' confidence in mastering the platform over time. Items 1 and 3 had the lowest scores of 60, showing areas that require enhancement.

Table 3: Additional Usability Factors

No	Item	Average Score
1	The platform effectively retains users' attention.	60
2	The platform is interactive and engaging.	67
3	Over time, users improve in using the platform.	60
4	Users feel more competent with extended use.	73
5	Users can approach the platform in a personalized way.	67
6	Users feel confident using the platform.	73
7	The system allows flexibility in project management.	80
8	Users believe they can improve with practice.	80
9	Users stay motivated despite challenges.	93
	Overall Average Score	73

The usability testing results indicate that the UKM Project Tracker 360 has achieved its usability and effective objectives. Most Likert scale responses were rated above 67, confirming positive user feedback and satisfaction. The areas with lower scores suggest the need for further refinement in user guidance, onboarding processes, and feature accessibility to enhance the user experience.

Suggested Improvements

In addition to the above improvements, the following should be done for further improvement of the UKM Project Tracker 360.

- Predictive analytics based on AI to predict possible project risks and possible optimizations.
- Ability to integrate it into the mobile application to track our projects, while working on the go.
- Cloud-based storage for enhanced file-sharing and document collaboration.
- Workload analysis to provide automated task delegation for maximum efficiency.

CONCLUSION

UKM Project Tracker 360 has successfully shown its capability as a good and strong project management tool at academic institutions. The system offers a central place that allows real time progress tracking, issue management and all this organized by automated notifications which enhances overall project oversight and communication between stakeholders. Usability testing results validate that the system is well accepted by users and the overall high satisfaction.

The platform's implementation addresses important issues in academic project management such as delays, data fragmentation, and poor collaboration. It’s a very user-friendly interface with structured process of delegating jobs to get projects done in a fast and faster way with clear accountability and transparency. Furthermore, the system comes equipped with strong security features to protect the data of project, as well as keeping the information safe.

System Strengths

- Enhanced transparency with centralized project tracking.
- Structured issue management and bulk task delegation for improved collaboration.
- An interface that is easy for technical and non-technical people.
- The robust security measures to protect and privacy data.
- Automated notification and reminders that bring the users in the loop and proactive.

System Limitations

- Limited AI-driven analytics for predictive project risk assessment and decision-making.
- There is no mobile application, thus limiting users’ accessibility to the project tracking on the go.
- Restricted use of offline environments, reliance on stable internet connectivity.

Despite these limitations, the UKM Project Tracker 360 is an effective project management tool that has successfully achieved its objectives, offering a structured, secure and efficient way of managing a project. Future assistance with future enhancements, which include the development of an AI based on analytics, mobile application development, and integration of cloud storage.

ACKNOWLEDGEMENT

Firstly, I would like to give my deepest thanks to PROF. DR. NURHIZAM SAFIE MOHD SATAR, who is known for his valuable guidance, constructive input and constant assistance in this project. The expertise and mentorship have, to a very large extent, shaped the evolution of UKM Project Tracker 360.

I would also like to thank the faculty members; university staff and students who took part in the usability testing and offered their feedback. The contribution of their valuable input has improved the system's functionality and user experience significantly.

Many thanks to my friends, family and any civilians who have spent a good chunk of their life reading over all the words that fill this space.

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