



Mobile Complaint Management System (MOCAS)

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ABSTRACT

Mobile Complaint Management System (MOCAS) is a mobile application that have been developed to increase the efficiency of addressing complaints by using a smartphone which is portable and handy. MOCAS is developed for the Universiti Teknologi MARA (UiTM) Cawangan Terengganu Kampus Kuala Terengganu management where they are still practicing traditional way in storing data. The current business process is conducted by filling a physical form by the complainant which it takes time for the complainant to go to the college office to do so. Also, the manual method can lead to the difficulties in gathering certain data for references. The staff takes at least two weeks to gather each complaint into each category because they do not have a proper database but a log book. MOCAS project is built by implementing Extreme Programming which is derived from Agile Software Development Model, and Ionic framework. While the design of MOCAS was done by adapting User Experience (UX) concept. A questionnaire has been provided for user and expert evaluation on this project development. It consists of demographic information and five sections which are perceived usefulness, functionality, usability, user experience, and satisfaction. The highest mean of the user evaluation is perceived usefulness, 4.37, where A1 and A5 stated that the system application would help them to improve their job performance and it is easy to complete their job. MOCAS was evaluated by 10 experts and 120 respondents. The experts are lecturers while the respondents are the students of UiTM.

Key words : Complaint, management, mobile, information system.

1. INTRODUCTION

Mobile Complaint Management System (MOCAS) is a mobile web-based application and it is designed to keep track of complaints registered by the students and lecturers of Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu.

1.1 Current Process

A complaint should be made in person by filling a form at the college office where it should be done manually regarding the

facilities problem in the university. The important complaint details that have been made in the form are recorded in a log book by the college staff as reference. Then 'Bahagian Pengurusan Fasilitas' (BPF) staff will take an action to solve the problem. When the complaint is resolved, they will notify the college staff either verbally or in writing of the outcome, with reasons for the decision where appropriate. The status is recorded in the log book by the BPF staff or college staff once the problem is solved.

1.2 Problem Statement

With the growth in student base, more wide-ranging system of monitoring is vital as it becomes inefficient to manage manually. Students have to go to the college office to fill a complaint form manually for the facilities problem provided in the college. It takes a long time to fill the form. Not only filling the form manually, but also all of the complaint forms are kept in a file with stacks of paper including the information of the facilities condition which is recorded by the staff or the 'Bahagian Pengurusan Fasilitas' (BPF) staff after they did the repairing work. According to Puan Norhartini Binti Abdul Wahab, who is in charge of complaint management system of Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu, this leads to the first problem where the staff takes almost two weeks to gather certain information of complaint details for references or any inquiry. So, the consequence of it is the staff could not make it on time to provide the required information for the top management of the organization.

Besides, the students, lecturers and staff are busy with each routines make them unable to make complaints directly by going to the college office. This is because sometimes students have to go back-and-forth to check the status of the complaint that have been made. Moreover, the repairing work cannot be done within the particular time because it depends on the availability of Bahagian Pengurusan Fasilitas (BPF) staff.

Furthermore, the possibility of the complaints information to be duplicated can be occurred which causes to time consuming for the staff to find the right information of the complaints. Complaints received were not stacking up according to each type of damage in the current process. This leads to the difficulties in gathering a particular records of

complaint to make a reference or as a proof in some cases. It is quite challenging to solve which at times it takes more than the preferred time length. .

1.2 Objectives

- i. To identify the current process, problem and the requirement of complaint management system in Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu.
- ii. To develop the proposed system for Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu.
- iii. To evaluate the usability and functionality of the proposed system.

1.3 Scope

The scope of this project is focusing on the user scope, data scope, process scope, and technical scope. The scope for this project is shown in the Table 1.

Table 1: Scope of Mobile Complaint Management System (MOCAS)

Scope	Explanation
Users	<p>i. Administrator The person who is responsible for managing the account of the users such as add new account, and delete account in the database.</p> <p>ii. User The user will be the students, lecturers, and outsiders. They can address complaint from anytime, anywhere. Moreover, they are responsible to view the status of the complaint that have been made from time-to-time. This is to provide a feedback that shows the satisfaction of using the facilities provided.</p> <p>iii. Staff The staff is assigned by the Head of Unit to solve the complaints received and update the status to the Head of Unit.</p> <p>iv. Head of Unit The Head of Unit is responsible to approve the action that is requested by the staff to fix the facilities problem which involves the cost of repairing. Also, involving in updating the status of the complaints in the system once it is solved by the staff. The complaints recorded can be summarized into a report as references.</p>
Data	Specific details of the complaints is required such as the location of the complaints that have been made.
Process	This mobile application is developed for addressing complaints and tracking complaints information.
Technical	This mobile application is supported by Android platform version 4 and above.

1.4 Significance

MOCAS helps the complainant to save time by addressing complaint from a mobile application. The complainant does not need to go to the college office frequently to make a complaint while busy with their routines. Also, MOCAS assists them in providing a status for each complaint that have been solved by the staff. So, the complainant does not need to go back-and-forth to check the status of the complaint either it has been solved. Several criteria need to be considered in mobile application, which are: reliability, availability, maintainability and safety [1]. Furthermore, correctness, security, responsiveness and testability are also important factors to be considered in the system [1].

2. RELATED WORKS

This project has been implemented user experience (UX) interface design and it is developed as a mobile application by using Ionic framework.

Ionic is more of an ecosystem than a framework because it supports programmers with all the tools needed to build mobile applications. It consists of various sets for different actions [2]. Besides, Ionic application requires AngularJS in order to function its full potential. AngularJS is an open-source and client-side JavaScript framework that can be used to develop complex web applications, web services and single-page applications (SPAs). As a matter of fact, AngularJS lifts up plain HTML and enhances new syntaxes and structures to it. This boost up leads to new HTML components and modified attributes [3]. As AngularJS uses basic HTML templating, designers and developers can work side by side. As an example, designers can design a different user interface (UI) and developers can bind data syntax to different UI modules. Every now and then, they can change the UI without the need of making lots of changes to the core of the application [4].

The Nielsen Norman Group states that. I quote “a good user experience meets the exact needs of the customer, without fuss or bother, but, to go above and beyond with user experience means creating something that is “a joy to use” unquote [5]. User interface (UI) is how things look, user experience (UX) is how things work. UX is a process, while UI is a deliverable [6]. UX includes all the users' emotions, beliefs, preferences, perceptions, responses, behaviours and accomplishments that occur before, during and after using a product [7]. User experience prefers a broader view, looking at the individual's entire interaction with the system, as well as the thoughts, feelings, and perceptions that result from that interaction. So, subjective scale is a feasible method to evaluate positive experience [8].

3. METHODOLOGY

The Agile software development model consists of six phases which are planning, analysis & requirements, design, development, testing and evaluation, and documentation.

Table 2: Project Development Methodology

Agile Software Development Phases	Extreme Programming Phases	Activity	Outcome
Planning	Planning	<ul style="list-style-type: none"> Identifying the problems. Conducting an interview. Discover related article and previous studies. 	<ul style="list-style-type: none"> Problem statement, scope and objectives. Current business process and flowchart.
System Analysis & Requirements		<ul style="list-style-type: none"> Business process analysis. 	<ul style="list-style-type: none"> Functional and non-functional requirements. System requirement and specification.
System Design	Design	<ul style="list-style-type: none"> Design user interface. Design database. 	<ul style="list-style-type: none"> System architecture design and interface. ERD, DFD, and context diagram. Database.
System Development	Coding	<ul style="list-style-type: none"> Develop the system. Develop databases. 	<ul style="list-style-type: none"> Functional MOCAS.
Evaluation & System Testing	Testing	<ul style="list-style-type: none"> System testing is done with the user. Identify the errors. 	<ul style="list-style-type: none"> System is tested.
Documentation		<ul style="list-style-type: none"> Record the whole process development in a report. 	<ul style="list-style-type: none"> Final report.

These phases are merged with extreme programming (XP) phases in order to fulfil the requirements and specifications of the mobile application. Extreme Programming (XP) is a discipline of software development based on values of simplicity, communication, feedback, and courage [9]. Table 2 describes the implementation of Extreme Programming phases in the project development software that is applied along with the outcome of each phase.

4. RESULTS AND DISCUSSION

The questionnaires were distributed to the respondents through Telegram and WhatsApp and it was made by using Google Form. The Mobile Complaint Management System (MOCAS) was tested and evaluated by the respondents before completing the questionnaires. This is to make sure the requirements of MOCAS is adequate and efficient so that it meets the objectives. The questionnaires consist of demographic information and five constructs.

System testing was divided into a four parts which is staff, Head of Unit, user and admin. Based on the system testing, the testers give positive results for the process of managing the complaint by using the system during the evaluation meeting with them. In overall, the modules for Mobile Complaint Management System (MOCAS) were running well whereas the tester and developer were satisfied with it.

Furthermore, the expert evaluation which consists of five sections was conducted with ten experts who gave good cooperation in dealing with the system. The evaluation from the experts is important to improve the weakness of the system. Based on the result, the overall comments from the experts were used for improvement to make the system more effective and useful for the organization to manage the related data. In addition, the experts stated that MOCAS is easy and simple to navigate for handling complaint data. However, MOCAS still needs to upgrade its development from time to time.

Lastly, in user evaluation which comprises of demographic information and five constructs were distributed to 120 respondents in order to gain the feedback of using the system application.

Table 3 defines the project summary for the whole project development of Mobile Complaint Management System (MOCAS). There were three objectives that needed to achieve. The project summary shows the method and the solution for each objectives that were identified for this project. The method activities involved from the start of the project until the end of the project progress and the result showed whether the objective is achieved or not.

Table 3: Project Summary for MOCAS

Objective	Method	Solution
To identify the current process, problem and the requirement of complaint management system in Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu.	<ul style="list-style-type: none"> Collect the primary and secondary data Interview the person in charge for complaint management system in Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu. Completing the literature review by reading articles, journals and research on internet. 	<ul style="list-style-type: none"> Identify problem in current business process. Identify method that the organization used to manage complaints and other related data.
To develop the proposed system for Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu.	<ul style="list-style-type: none"> Develop the proposed system by using Ionic Framework Version 4 with the integration of MYSQL as the database. Applying elements that focusing on user experience. 	<ul style="list-style-type: none"> Development of Mobile Complaint Management System (MOCAS).
To evaluate the usability and functionality of the proposed system.	<ul style="list-style-type: none"> Distribute the questionnaires to 120 respondents and 10 experts. Providing test plan. 	<ul style="list-style-type: none"> Get the comment and suggestion from the experts and users. Identify the future work for the next version.

5. CONCLUSION

The project is developed based on the objectives that have been listed. The first objective is to identify the current process, problem and the requirement of complaint management system in Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu. To achieve the objective, interviews have been conducted in order to collect related data of the current business process in handling complaint. The data analysis was completed by doing some research on the internet and by reading articles and journals. Therefore, the current business process has been identified for the organization where it needs some improvement on the problems they have faced.

The second objective is to develop the proposed system for Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu. This objective will need the developer to find a solution towards the problems of the current business process. After the data analysis was completed, Mobile Complaint Management System (MOCAS) was proposed as the solution for the current traditional complaint management system in Universiti Teknologi MARA (UiTM) Kampus Kuala Terengganu. MOCAS was developed by implementing Ionic Framework Version 4 with the integration of MYSQL as the database.

Lastly, the third objective is to evaluate the usability and functionality of the proposed system. This was conducted by distributing the questionnaires to 120 respondents as user evaluation and 10 experts as expert evaluation. The test plan was prepared as the guideline to develop MOCAS and gain positive feedback from user and expert evaluation.

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