Designing a Mobile Knowledge Management System

as a Platform between UTP Departments and Students

by

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Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information System)

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CERTIFICATION OF APPROVAL

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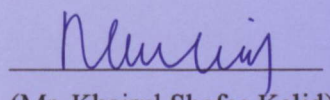
Approved by,

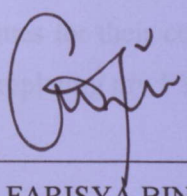


(Mr. Khairul Shafee Kalid)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
January 2012

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



NIK AMIRA FARISYA BINTI NIK KAMARUDDIN

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ABSTRACT

Departmental procedures are often a tricky thing for both students and department to deal with because it involves specific sequential steps that need to be taken in order to achieve the desired result. Nowadays, people are always on the move and with the aid of technology specifically mobile applications, they can access information wherever they go. Taking this into account, this project focuses on designing a mobile platform as a mobile knowledge management system for the usage of Universiti Teknologi PETRONAS (UTP) departments and the students. This project addresses the problem between UTP's departments and the students, specifically about communication of information regarding procedures of each department. Entitled *Designing a Mobile Knowledge Management System as a Platform Between UTP Departments and Students* ; short formed *m-Dept*, this project aims to design a mobile knowledge management system as a communication medium between the two parties, this project utilizes the Prototyping methodology and uses survey questions, interviews as well as research to collect relevant data and information.

CHAPTER 1

INTRODUCTION

1.0 Chapter Overview

The chapter explains about the project's background of study, problem statements, objectives and the scope of study that has been identified.

1.1 Background of Study

The history of knowledge management (KM) can be traced to as early as the 1970's where its importance is initially recognized by the likelihood of Peter Drucker, Peter Senge and Leonard-Barton. In simple words, knowledge management is mainly about knowledge and the transfer of knowledge. The purpose of KM is to facilitate effective transfer of the knowledge to others who have a need for the knowledge in carrying out their responsibilities in the organization [1]. A system that integrates KM is referred as a "knowledge management system", a phrase that is used to describe the creation of knowledge repositories, improvement of knowledge access and sharing as well as communication through collaboration, enhancing the knowledge environment and managing knowledge as an asset for an organization [2].

Technological evolution changes and simplifies as well as adding values to all systems and processes available, making almost everything possible and attainable at our fingertips. Integrating technologies and knowledge management to provide tools for knowledge management systems are a popular practice nowadays. With the aid of technology, it is possible to transfer and retrieve knowledge even when the individual is in a different geographical location or time zone. One of the examples of technological evolution is mobile technologies.

Therefore, this project dwells on mobile knowledge management (mKM) which basically an integration of mobile application with knowledge management. By definition, mKM is

a management process in the course of which mobile communication techniques in conjunction with mobile devices are employed for the creation, validation, presentation, distribution or application of knowledge [3].

Universiti Teknologi PETRONAS (UTP) consists of a number of management offices and departments which have been operating since the establishment of UTP in January 10, 1997. Some examples of these management offices and departments are the Academic Office, Information Resource Center (IRC), Security Services, Student Industrial Internship Unit (SIIU) etc. This project focuses on designing an mKM for the usage of UTP department and students. Generally, *m-Dept* has search functions to search and online forums for students and department personnel to interact.

1.2 Problem Statement

Departments in UTP are specialized to handle certain areas and they have to abide to certain procedures to process certain claims or requirements, whatever it is, according to their job scope. Often, students are not aware of these procedures and this would create frustration to both students and the departments because the students would end up wasting their time unnecessarily and the departments would not have enough documents to deal with, which lag the flow of the entire process.

1.3 Objectives

1.3.1 To analyze the as-is process

In order to proceed further with the project, some background information need to be gathered. Therefore, surveys and interviews are conducted for this purpose in order to study and document on the actual situation of communication issues between UTP departments and students. Apart from that, results from analyzing would contribute as the input for the second objective.

1.3.2 To design a mKM as a platform between UTP departments and the students.

Communication between UTP's management offices and the students has always been problematic. Therefore, it is important to have a platform that also acts as a knowledge management system which enables the users to search and retrieve information as well as creating new knowledge through the system's build-in functionalities.

1.4 Scope of Study

This project focuses on UTP departments that the students often deal with and those with tedious procedures. The department are identified through survey questions that are distributed to the students. *M-Dept* concentrates on procedural knowledge, explicit to tacit knowledge and tacit to tacit knowledge.

- Procedural knowledge

  M-Dept applies procedural knowledge because basically the system houses many procedures of a department, each procedures are described in simple step-by-step for the user to follow.
- Explicit to tacit

  List of procedures documented in the *m-Dept* are considered as explicit knowledge and therefore individuals who retrieve this knowledge will have tacit knowledge of the procedure documented in the system.
- Tacit to tacit

  m-Dept have online forum functionality where department personnel and the students could interact and share knowledge as well as creating new knowledge.

1.5 Project Feasibility

1.5.1 Scope Feasibility

This project paper will mainly focus on designing a simple mobile application that implements the likelihood of knowledge management system (KMS) in its features. The features that will be embedded in the system are based on researches that the author had done to gain an overview on what makes a system KMS. Basically the system will have search functions to enable the end users to search for their desired topic of interest. There would also be an online forum that both parties; students and departments could participate in where all forums will be archived and tagged under related topics. *M-Dept* will be made accessible from all types of mobile devices such as BlackBerry, iPhone and Android. For the initial stage, the author firstly target for the *M-Dept* system to operate in Windows platform environment for demonstrating purposes.

1.5.2 Schedule Feasibility

The development of the whole project will consume approximately two semesters in which it will be divided into two parts. FYP I is the first part of this project which covers planning, requirement analysis and design phase.

The second part of the project, FYP II will commence in the second semester whereby the results obtained from FYP I will be used for system development purposes which involves coding, testing and maintenance procedures.

1.5.3 Technical Feasibility

The development of the system would mainly depend on Adobe Dreamweaver CS5. It is one of software development kit (SDK) based on Adobe Flash platform which supports Java, PHP, Ruby, .Net, ColdFusion, and SAP. Apart from that, the software is chosen mainly because it supports building mobile applications for different mobile OS such as iOS, Android and Blackberry Tablet OS.

CHAPTER 2

LITERATURE REVIEW

2.0 Chapter Overview

This chapter discusses relevant findings from related areas of research to develop the project. It covers definitions of data, information and knowledge as well as knowledge management, what is mobile knowledge management system and mKM Implementations in other domains.

2.1 Data, Information and Knowledge

Becerra-Fernandez, Gonzalez & Sabherwal (2004) states that *data* consists of facts, observations, or perceptions which are represented by raw numbers or assertions and therefore, data alone are meaningless. *Information* comprises of a collection of meaningful data, it includes only those that possess context, relevance and purpose. Although data, information and knowledge are interrelated to each other, knowledge is quite distinctive from both data and information. It points out to information that enables actions and decisions.

2.2 Definition of Knowledge Management

Basically knowledge management (KM) is the dissemination of knowledge. Its main purpose is to assist in the effective transfer of knowledge to individuals in need in order to carry out their tasks or daily routines [1]. KM is subjective. Hence, researchers have come up with many definitions of KM. Although there is no single definition for KM, overall, the goal of KM includes six aspects. (1) Circulate knowledge. (2) Ensure knowledge can be found when needed. (3) Utilize new knowledge. (4) Knowledge is accessible from everywhere. (5) Ensure diffusion of knowledge and new knowledge. (6) Ensure that members of the organization knows where the knowledge is [4].

Table 2.1 : Definition of Knowledge Management

No.	Author	Definition
1.	Ouintas et al. (1997)	KM is to discover, develop, utilize, deliver, and absorb knowledge inside and outside the organization through an appropriate management process to meet current and future needs.
2.	Allee (1997)	KM is managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value.
3.	Gupta et al. (2001)	KM is a process that helps organizations find, select, organize, disseminate and transfer important information and expertise necessary for activities.
4.	Bhatt (2001)	KM is a process of knowledge creation, validation, presentation, distribution and application.
5.	Holm (2001)	KM is getting the right information to the right people at the right time, helping people create knowledge and sharing and acting on information.
6.	Horwitch and Armacost (2002)	KM is the creation, extraction, transformation and storage of the correct knowledge and information in order to design better policy, modify action and deliver results.

Some of KM definitions are listed in the table above. For this project, the definition that suits best is definition number 5. According to Holm (2001), KM is getting the right

information to the right people at the right time, helping people create knowledge and sharing and acting on information. The first half of the definition describes "the right information" which are the UTP department procedures and "the right people at the right time" points at the students which would be able to access the information whenever they want to at the convenience of their own mobile devices.

2.3 Mobile Knowledge Management System

Mobility is defined by the Oxford English Dictionary as *"the quality of moving or being moved easily from place to place, or of having ease and flexibility of motion"*. Mobile knowledge management (mKM) strives for IT support in facilitating knowledge registration, distribution and usage [5]. Mobile knowledge management can be classified as one of the KM technologies as it includes technology element that is mobile technology, in an overall KM solution [1].

This project came up with the idea to design a mobile knowledge management system that acts as a platform of knowledge sharing between UTP departments and students because nowadays, mobile devices are the hottest thing. Integrating mobile application and knowledge management system would provide great convenience because it allows the students and department staffs as well to still have access to information even when they are away from their usual workplace and thus acquiring and sharing of knowledge would still be efficient regardless of the individual's location [6], provided that they have the technology.

KMS in general should serve everybody who is involved in the process of understanding, evaluating and organizing [7], and thus the same thing applies in mKM. According to Frank (2001), a KMS should fulfill the requirements listed below;

- **Emphasis on concepts and reasons**
  The main concept of a system should be crystal clear before developing it in order to ensure that the system serves a particular purpose instead of merely being a system that does have certain beneficial functionalities but lacks specific concepts

and reasons. Taking this into consideration, this project's concept is "organizational process" which refers to UTP departments and the procedures that lies within them. Departments are different to one another in the sense that they cater things according to their own functions. The main reason why the system focuses on UTP departments' procedures is because of students' lack of awareness that affects the day-to-day routine of a particular department as a whole.

- **Re-use of existing knowledge**

  The *knowledge* here is referred to the departmental procedures (eg. Procedures to apply for car stickers, borrowing books from the IRC etc). The procedures are already there, except that there are no effective medium to convey them to students, therefore this project will design a system that embeds this knowledge and acts as a platform to disseminate them to individuals in need.

- **Support of multiple perspectives**

  A KMS should support different levels of detail [7]. For example, in UTP, there are different procedures of applying for a student card. Either to create a new one, or to replace damaged or lost student cards. To cater these different procedures for a similar case, this is where this project's interactive forum came into view. The forum is where users can post questions and have them answered by the departments' representatives.

2.4 mKM Implementation in Other Domains

There are a number of mKM systems that have been developed and are applicable to many domains with different backgrounds such as engineering design, pharmaceuticals etc.

Table 2.2 : mKM Implementations (Spiteri & Borg, 2006)

mKM system / author	Applications	Fundamental approach of mobile client support	Type of support
Darwin Kristoffersen S. 1998	Pharmaceutical industry	*Darwin* supports the distribution and exchange of lessons learnt within a dispersed IT-support group, by specifically using an early PDA.	• Data entry editing of tasks • Sharing of experiences • Support of to-do list • Coordination of tasks
FieldWise Fagrell H. 2000	News journalism, sales, real estate brokering	*FieldWise* is a generalized knowledge management architecture implemented for mobile news journalism by using Pocket PCs and mobile phones.	• Data entry and editing of tasks • Sharing of information • Support of to-do list • Location of available expertise • Evaluation of records
NewsMate Fagrell H. 2001	News journalism	The *NewsMate* prototype provides mobile and distributed news journalists with timely knowledge via a PDA with network access using a mobile phone.	• Support of a to-do list, matched with internal archives • Provides information on people involved in similar tasks • Provides matching between predefined external sources

			• SMS facility to alert people with overlapping activities
Shen J., Jones Q. 2003	Repair, technicians	This system allows data capture *in situ* by using mobile devices (pocket PCs with integrated digital cameras) and retrieve the information from the internet	• Uploading of photos and voice recordings via wireless transmission
Mummy Grimm M. 2005	Facility management at construction sites, mobile health care support, video-based e-learning	*Mummy* research focuses on capturing context to enhance intra and inter-individual knowledge transfer processes, such as remembering, reconstruction and communication	• Retrieval and presentation of relevant information in photographic and textual format

CHAPTER 3

METHODOLOGY

3.0 Chapter Overview

This chapter explains how the *m-dept* system is being developed. What is the methodology being used and the reason why it was chosen as well as data collection techniques and data analyzing.

3.1 System Development Methodology

A system development methodology, or also referred to as system development life cycle (SDLC) methodology is basically a "life cycle" of producing a particular system. It is defined as a framework that is used as guidance to structure, plan and control the process of developing an information system [8]. There are three main categories of SDLC methodology which are structured design, rapid application development (RAD) and object-oriented analysis and design. In this project, Prototyping methodology which is classified under RAD is used for the system development. As illustrated in **Figure 3.1**, the analysis, design and implementation phases are performed concurrently after the planning process. This methodology is chosen because the system prototype would be implemented immediately and therefore any further changes in requirements could be detected and system re-analyzing, re-designing and re-implementation of a second prototype could be performed if needed.

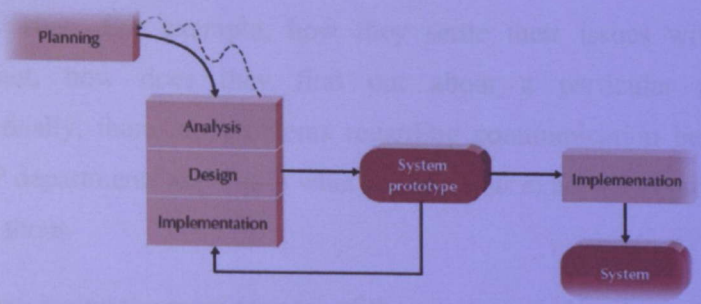

Figure 3.1: The Prototype Development Methodology

3.2 Planning

During this phase is also when the overall schedule of this project was planned according to timeline by constructing a Gantt chart **(Appendix I)** to ensure that each activity pertaining the project are on track. Research papers, journals as well as online resources are read to gather some insights and basic knowledge of current issues regarding KM, mKM and KMS that can contribute to the project.

3.3 Data Collection

Data are gathered from various sources such as books, research papers, journals, the internet etc. Those were for the purpose of reading and further understanding on some of the key points prior to the project such as 'knowledge management', 'knowledge management system', 'mobile knowledge management' and any other relevant materials. Apart from conducting research through reading, survey and interviews are also conducted to gather relevant data from the system user.

3.3.1 Survey

A survey is a method to gather information directly from people in a systematic and standardized way [9]. Before distributing the survey questions to targeted individuals which are UTP students, several points are taken into consideration in order to conduct an effective information gathering. The main objective of the survey is to understand the *current situation* between UTP students and departments. The term *current situation* refers to the situations from the students' point of view. For example, how they settle their issues with a particular department, how does they find out about a particular procedure etc. Hypothetically, there are problems regarding communication between students and UTP departments and this is what the survey is expected to prove and provide insights about.

Upon recognizing the main purpose of the survey and identifying the respondents, survey questions are prepared. The questions were constructed based on different

themes such as challenges, the as-is situation, etc. The themes are chosen according to the questions that are constructed to answer the objectives and purpose of the project as a whole. This survey covers both qualitative and quantitative questions and uses random sampling technique.

3.3.2 Interview

Considering two different parties that the project is based upon, interview is also one of the data collecting methods. The surveys are distributed to UTP students while the interview is to collect information and insights from the UTP department's side regarding the issue of communication problems between them and the students.

The main objective of the interview is to find out how does the department communicates their procedures to the students. Basically, it is more about understanding the current as-is process of communication between the two parties.

3.4 Analysis

Data gathered from the data collecting methods (inputs) are analyzed thoroughly to get the output required for the project.

Inputs:

- Research papers, articles, journals, online resources
- Data from survey distributed to UTP students
- Information from interview sessions with UTP department's personnel(s)

Outputs:

- Data to support the hypothesis that there are communication problems between the UTP departments and students.
- System requirement for *m-dept.*

3.5 Design

This phase focuses on information content and user interface design as well as development process. The strategies are the medium that helps to determine the output of the project. Some key points to be considered during this phase are stated below:

- How the contents will look like in the system?
- What are the resources needed to build the system?

The system's graphic design, user interface and content will be the output of this phase and will be the prototype specifications for the next phase.

3.5.1 Tools Required

Software:

- Adobe Dreamweaver CS5
- Adobe Device Central CS5

3.6 Implementation

In this phase the user interface and information content will be integrated into an actual system which would be accessible through mobile devices via 3G connection.

3.7 Expected Output

The *m-Dept* would be implemented as a web-based mobile application that runs on all mobile devices (smart phones/tablets) provided that it has wireless internet connection, users would be able to access the knowledge sharing mobile application as well as participating in the online forum in order to retrieve information related to the departmental procedures that they need at that time.

CHAPTER 4

RESULT AND DISCUSSION

4.0 Chapter Overview

This chapter covers and elaborates more on the findings gathered of this project as well as the prototype design. An analysis has been performed on the data gathered during data gathering process; mainly from conducting researches, surveys and interviews.

4.1 Analysis Models

4.1.1 System Architecture

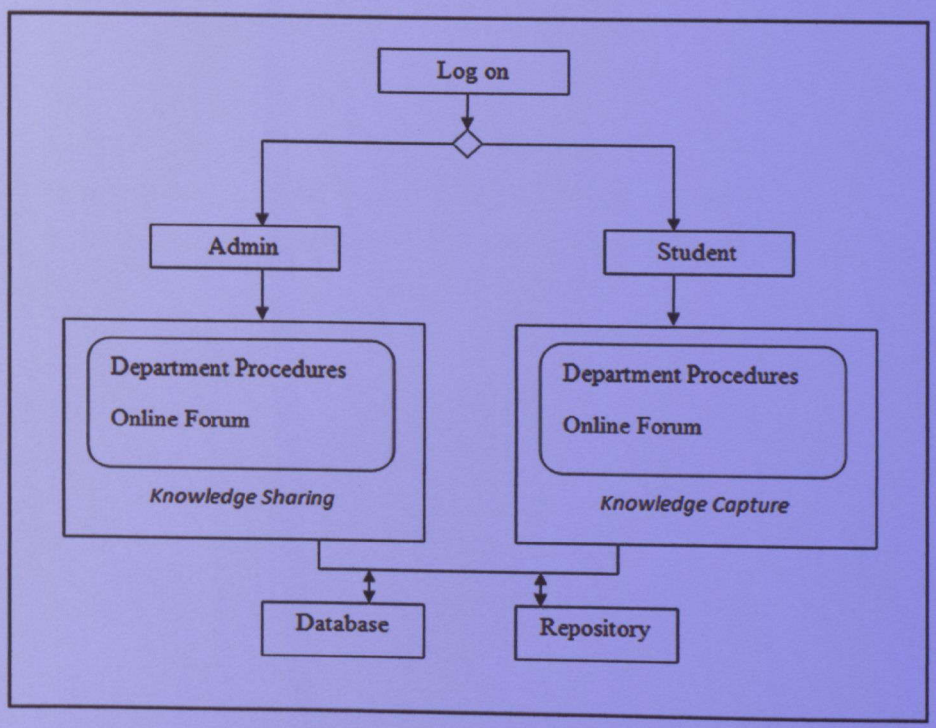

Figure 4.2: System Architecture

Figure 4.2 demonstrates the overall architecture of the *m-dept* system, basically how it works and how the users can interact with the main functionalities embedded inside the system.

Upon logging in, user is identified whether he/she is an admin or student. Different category of users will have access to different features of the system. Admin will play the role of knowledge sharing in the process whereby they will be able to add/edit department procedures into/in the system. Students, on the other hand, perform knowledge capture whereby they will be able to search and retrieve knowledge regarding departmental procedures. Both admin and student can participate in online forum for the purpose of knowledge sharing or knowledge creation regarding a topic of interest.

4.1.2 Use Case Diagram

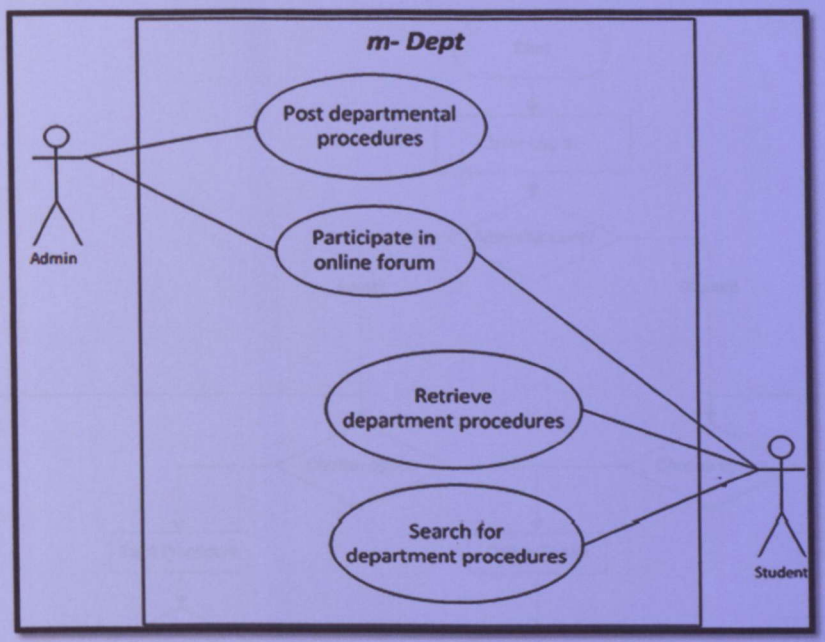

Figure 4.3: M-Dept Use Case Diagram

The use case diagram in **Figure 4.3** demonstrates how the actors interacts with *m-dept.* Actors are users of the system that play different roles in relative to the system. In this case, *m-dept* has two actors which are admin and student respectively.

4.1.3 System Flow Diagram

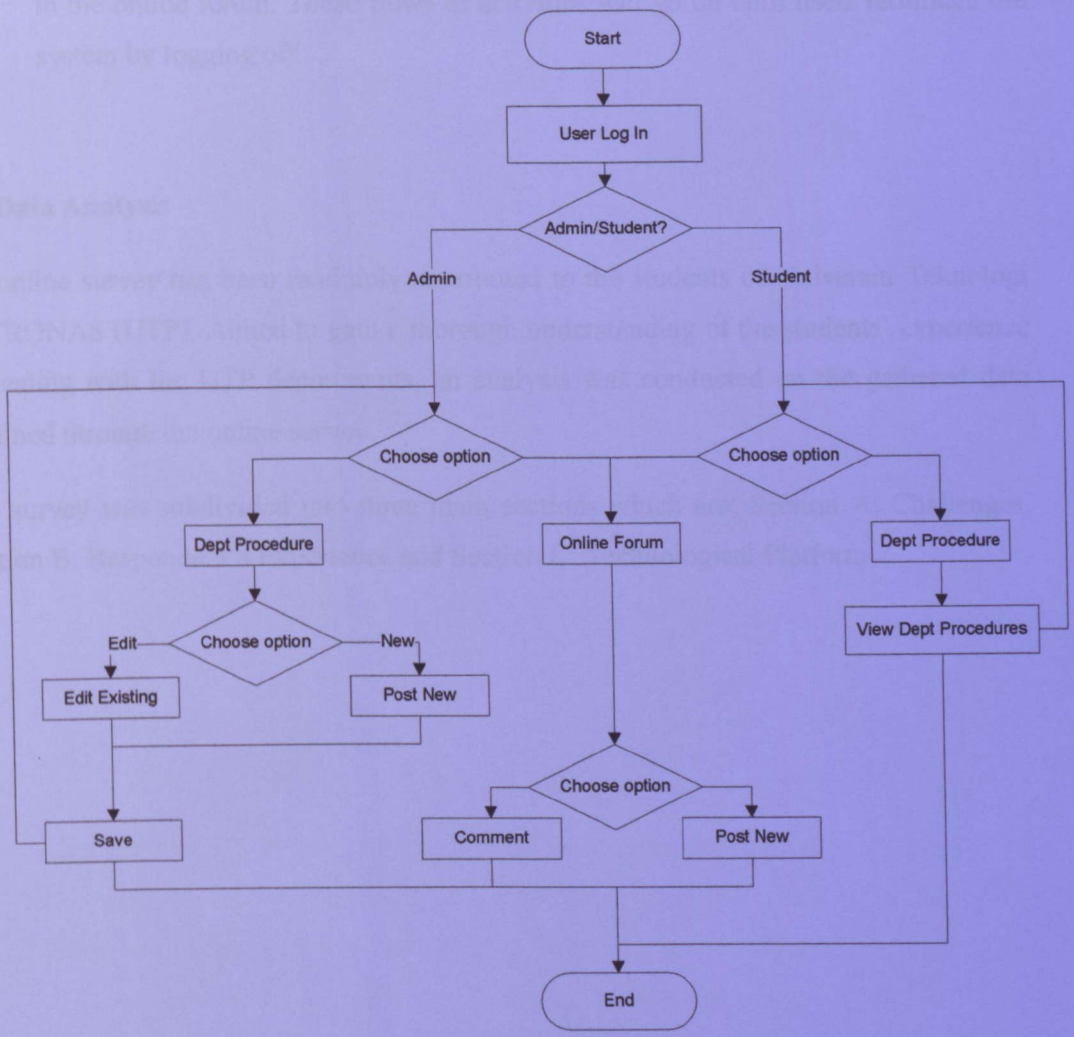

Figure 4.4: System Flow Diagram

The system flow diagram in **Figure 4.4** shows the flow of activities in the system once user logged on. The flow was separated into two flow of sequence which was categorized by user type. If logged on user is identified as an admin, then they would have the privilege to add/edit departmental procedures whereby student users would only be able to view and search for the departmental

procedures posted by admins. Both admin and student users are able to participate in the online forum. These flows of activities will go on until users terminate the system by logging off.

4.2 Data Analysis

An online survey has been randomly distributed to the students of Universiti Teknologi PETRONAS (UTP). Aimed to gain a thorough understanding of the students' experience in dealing with the UTP departments, an analysis was conducted on the gathered data obtained through the online survey.

The survey was subdivided into three main sections which are; Section A: Challenges, Section B: Respondent's Experience and Section C: Technological Platform.

4.2.1 Section A: Challenges

This section focuses on mainly the difficulties that the students have experienced while dealing with UTP departments.

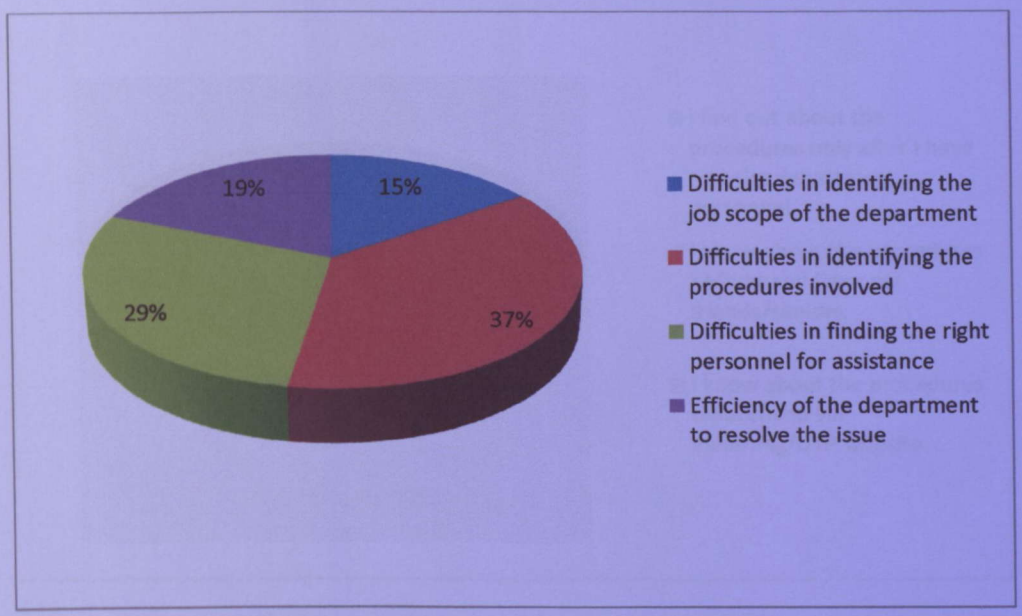

Figure 4.5 : Challenges

The result of the survey is portrayed by the pie chart in **Figure 4.5**. Majority of the students face a difficulty in identifying the exact steps of a particular procedure beforehand, this represents 37% of the overall challenges faced by the students. 29% of them stated that finding the right personnel for assistance was also a challenge.

These challenges could be eliminated or reduced if only there were an easily accessible centralized system as a platform between both parties. Which is what *m-dept* is proposed to be.

4.2.2 Section B: Respondent's Experience

This section reflects what is normally experienced by the students when they are dealing with the UTP departments.

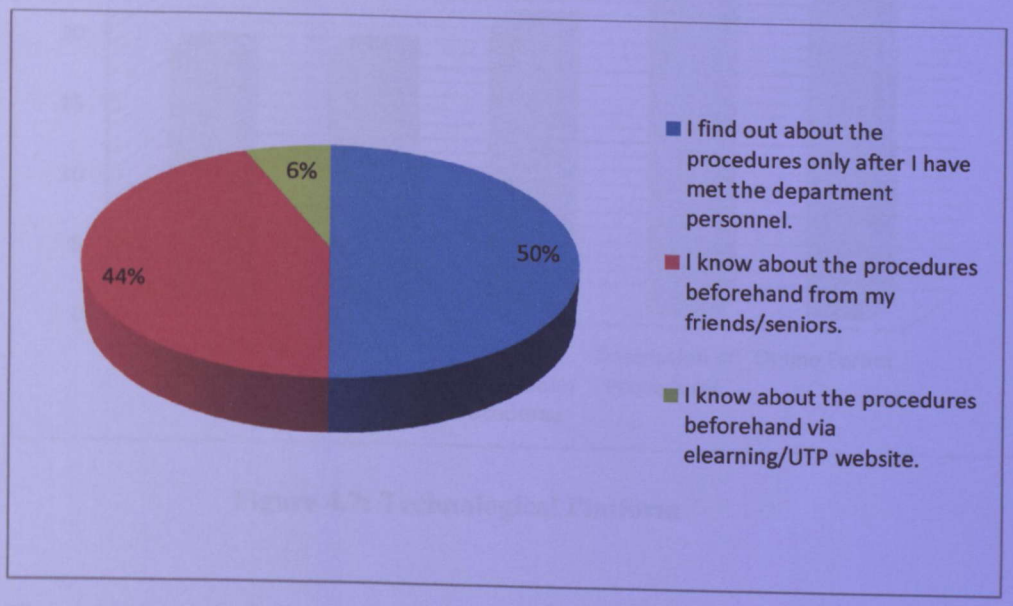

Figure 4.6: Respondent's Experience

Based on the data gathered from the respondents, most of them had stated that they only get to know about a particular departmental procedure only after they have met the personnel of a particular department (50%). While 44% of the respondents had known the procedures beforehand from word of mouth.

It can be concluded here that, the use of technology is not optimized for communication purposes as most students had the difficulty to gather information about a particular department when they need or wanted to.

4.2.3 Section C: Technological Platform

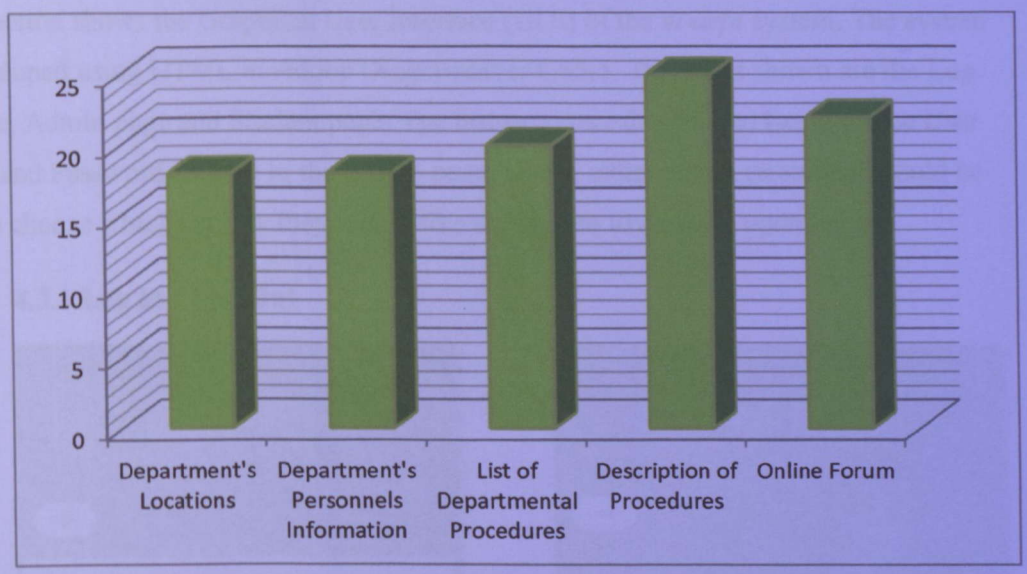

Figure 4.7: Technological Platform

The technological platform section basically focuses on the users' expectations on the system. Since the respondents for this survey are UTP students, in this case, the students' expectations from the *m-dept* system regarding what features it should offer were analyzed. According to the graph in **Figure 4.7** above, *Description of Procedures* earned the highest percentage followed by *Online Forum* and *List of Departmental Procedures.*

Those three would be the main features of the *m-dept* system.

4.3 Prototype

This section shows the Graphical User Interface (GUI) of the *m-dept* system. The system is developed using HTML in Adobe Dreamweaver CS5.5. The GUIs shown are the Log In page, Admin page and Student page. The last two were determined based on the User Name and Password entered in the Log In page. Users, either admin or student would be able to choose which activity they would like the system to perform upon log in.

4.3.1 Log In / Log Out

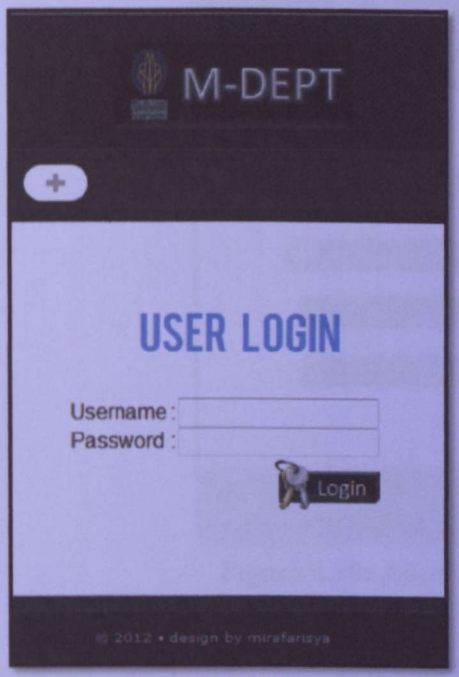

Figure 4.8: Log In page

Figure 4.9: Log Out page

The log in page as in **Figure 4.3.1** is where the user is required to enter their user name and password. Upon logging in, the system will identify whether the user is an *Admin* or a *student.* User can log out of their account by clicking on the "+" symbol button located on the top left, and the Log Out link will slide out as in **Figure 4.9**

The next module focuses on the administrator. The screenshots for admin functions are as below:

4.3.2 Module 1: Administrator

Figure 4.3.3 below shows the Admin page of *m-dept* system:

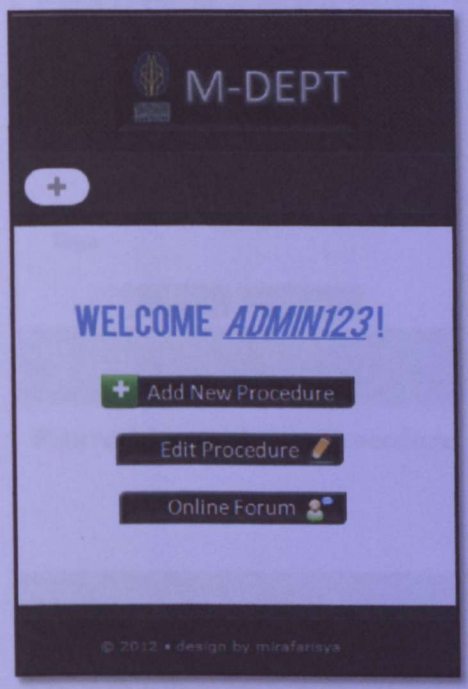

Figure 4.10: Admin Homepage

The button displayed on the page will lead the admin to the functions specified when clicked. If the user clicks on the *Post New Procedure* button, a form will appear for them to write and post the new procedure into the system's database **(Figure 4.11)**. Clicking on *Edit Existing Procedure* button leads the user to a page containing a list of procedures that have been posted and allows the user to edit them **(Figure 4.12)**. The *Online Forum* button will enable the user to post new topic or join the online forum residing inside the system.

Figure 4.11: Add New Procedure

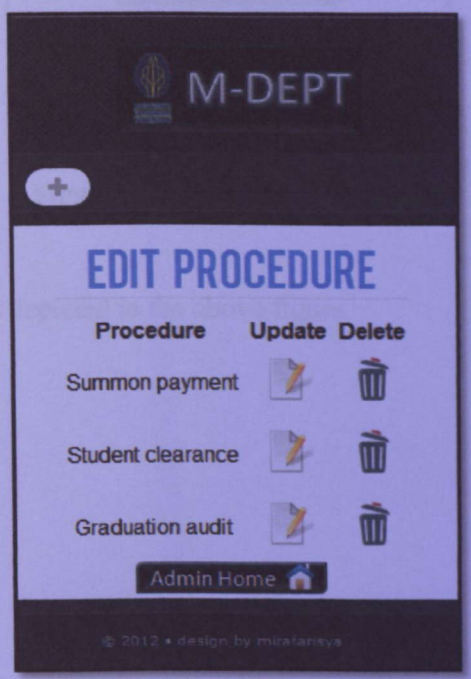

Figure 4.12: Edit Procedure

4.3.3 Module 2: Student

Unlike admin who is authorized to add and edit posted departmental procedures, student users are only authorized to view and search for the posted departmental procedures as well as participating in online forum.

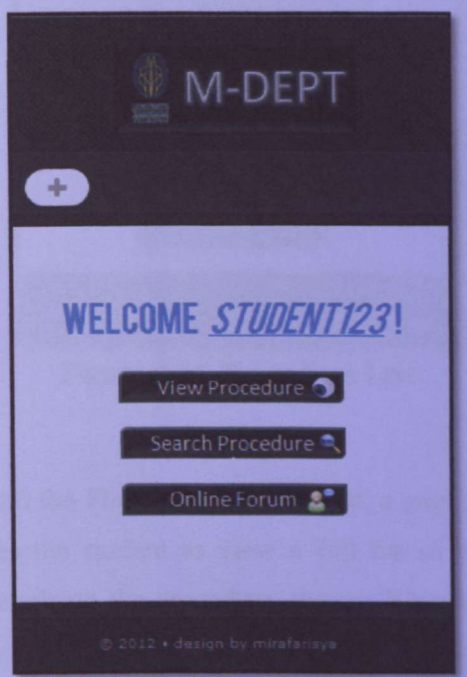

Figure 4.13: Student Homepage

Student page is as depicted in the above figure.

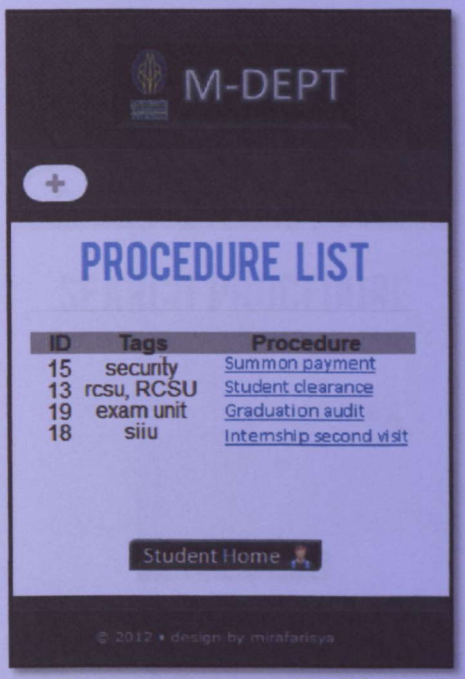

Figure 4.14: Procedure List

When users clicked the *View Procedure* button, a page as in **Figure 4.14** appears. This page enables the student to view a full list of posted procedures. If they require further details on the procedure, they will have to click on the procedure links to view.

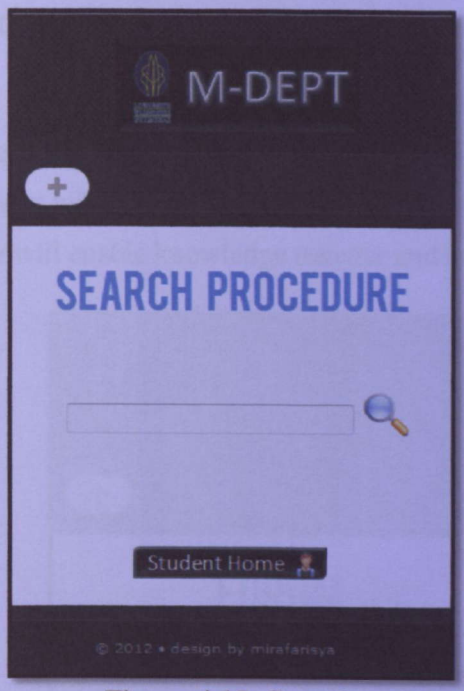

Figure 4.15: Search

The figure above shows the search page. Students can simply type in the procedure that they wanted to search. The system will retrieve the related procedures prior to the keywords that have been typed into the textbox.

4.3.4 Module 3: Online Forum

The third module is a function accessible to both administrators and students. This is where students can interact among themselves or communicates with the administrators. Users will be able to add new topics, or comment on posted topics. This online forum will enable knowledge transfer and knowledge creation as well.

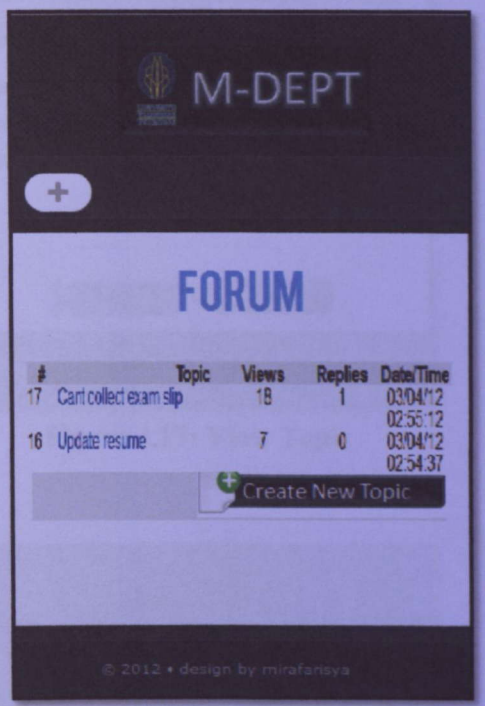

Figure 4.16: Forum Homepage

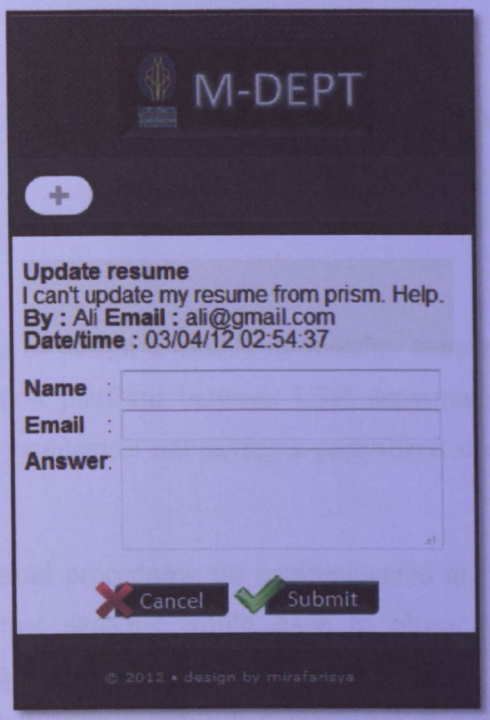

Figure 4.17: View Topic

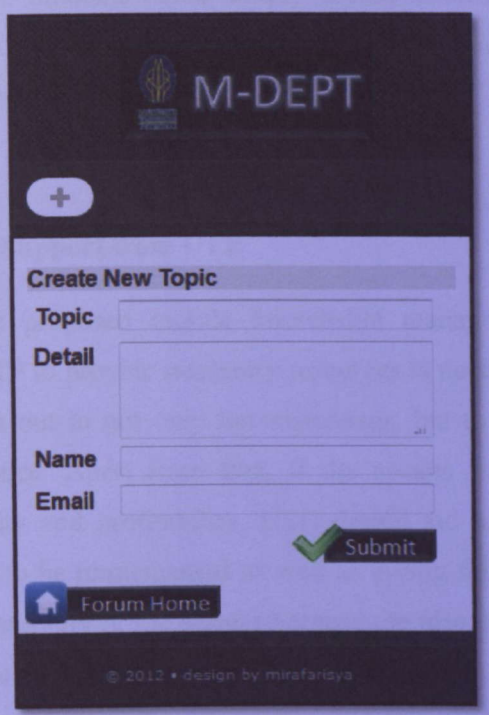

Figure 4.18: Create Topic

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This project is proposed to design a mobile knowledge management system that could serve as a communication platform between UTP departments and the students and therefore eliminates the problem of not having a centralized site for the students to refer to in times of need.

Currently, the departmental procedures are communicated to the students mostly over-the-counter; meaning that students would have to physically consult departmental personnel in order to get to know about certain procedures. By developing a mobile system that acts as the hub of knowledge that stores and disseminates as well as creating knowledge regarding information between department and students, it could definitely simplify a lot of things. Students could simply access information from their mobile phones and departments would decrease the problem of student not knowing their departmental procedures.

5.2 Recommendation

5.2.1 Adequate Support from UTP

To develop the proposed mobile knowledge management system, intensive support from UTP to provide necessary resources is necessary. The author should be able to reach out to not only her supervisor, but to other lecturers and also staffs for guidance. Apart from that, if the system is successfully built with assured feasibility and profitability, UTP should aid in providing fund for the author's system to be implemented as well as giving full assistance in protecting the intellectual property of the system because the idea of this proposed system is originated by the author.

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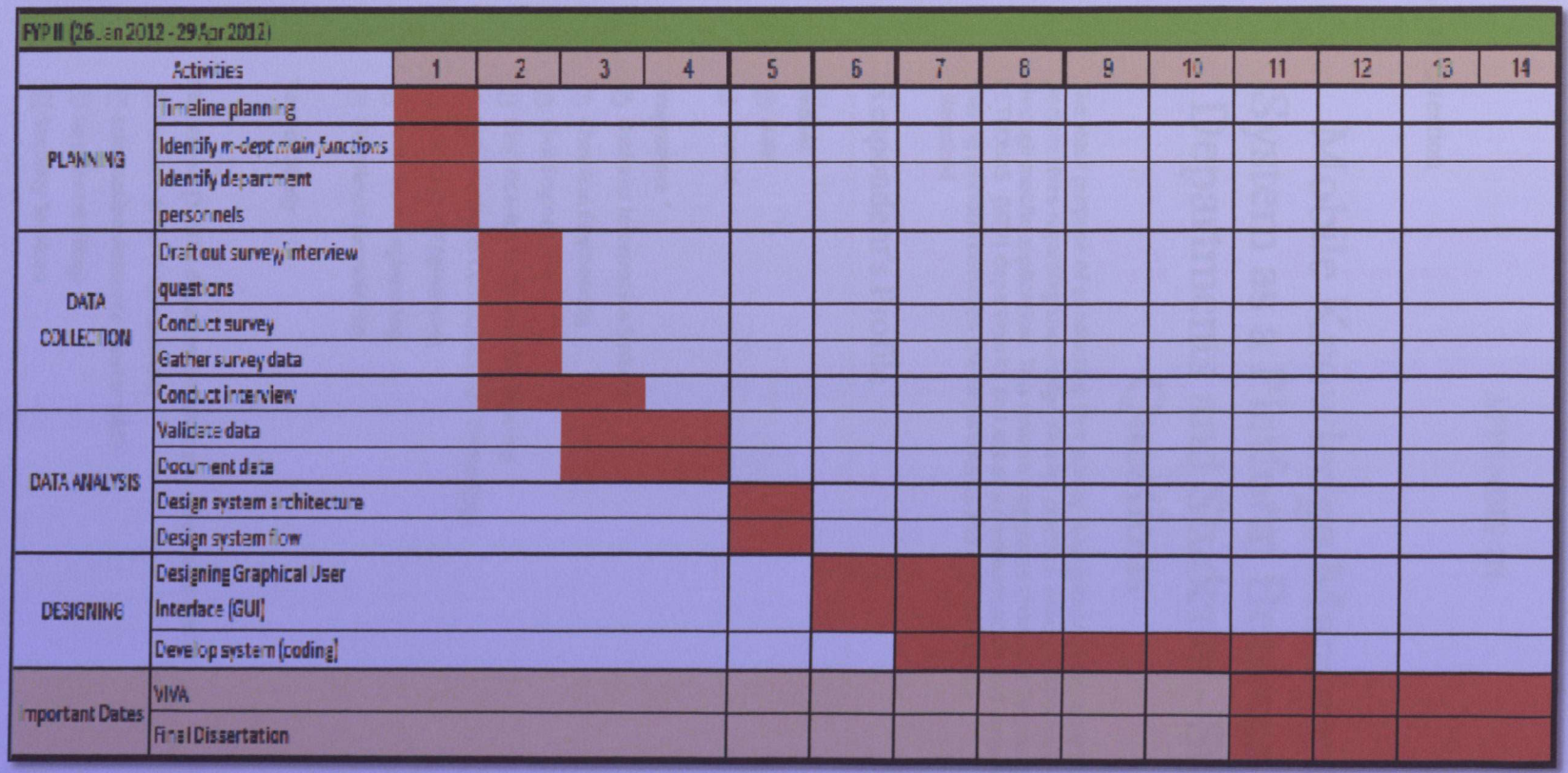
APPENDIX I

Gantt Chart (FYP I)

APPENDIX II

Gantt Chart (FYP II)



☐ Student Industrial Internship Unit (SIIU)

☐ Other:

This survey is divided into three sections which are;
A: Challenges, B: Respondent's Experiences, C: Technological Platform

Section A : Challenges

Rate the difficulties in identifying the job scope of each particular department that you have chosen above

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Department A	○	○	○	○	○
Department B	○	○	○	○	○
Department C	○	○	○	○	○

Rate the difficulties in identifying the procedures involved to resolve a particular issue

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Department A	○	○	○	○	○
Department B	○	○	○	○	○
Department C	○	○	○	○	○

Rate the difficulties in finding the right personnel for assistance

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Department A	○	○	○	○	○
Department B	○	○	○	○	○
Department C	○	○	○	○	○

Rate the efficiency of the department to resolve the issue

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Department A	○	○	○	○	○

Department B	○	○	○	○	○
Department C	○	○	○	○	○

Please indicate any other challenges that you faced

Section B: Respondent's Experiences

Experiences in identifying the department to be consulted in resolving an issue.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I know which department to go because my friends told me so.	○	○	○	○	○
I can simply identify the departments myself.	○	○	○	○	○
Never heard of the department(s) before.	○	○	○	○	○
Unaware of the location of the department.	○	○	○	○	○

Experiences in finding information about a particular procedure.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I find out about the procedures only after I have met the department personnel.	○	○	○	○	○
I know about the procedures					

beforehand from my friends/seniors.	○	○	○	○	○
I know about the procedures beforehand via elearning/UTP website.	○	○	○	○	○

Experiences in dealing with the department

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The department provides helpful assistance from the start till the end.	○	○	○	○	○
The department was effective in dealing with my issue(s)	○	○	○	○	○
I am not aware with the procedures involved beforehand.	○	○	○	○	○

Section C: Technological Platform

I propose the mobile knowledge management system to have the following functionalities:

List of UTP departments

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Departments' locations	○	○	○	○	○

Information on UTP department

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Departments' job scopes	○	○	○	○	○
Departments' personnel contact information	○	○	○	○	○

List of departments' procedures	○	○	○	○	○
Description of procedures	○	○	○	○	○

Discussion forum between department personnels and students

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

4. Please recommend other functionality for this mobile application (Mobile Knowledge Management System as a Platform between UTP Departments and Students).

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