

Universiti Teknologi PETRONAS Postgraduate Portal

By

Ahmad Ammar Bin Hasuna

16405

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

May 2015

Universiti Teknologi PETRONAS
Bandar Seri Iskandar,
31750 Tronoh
Perak Darul Ridzuan

CERTIFICATION OF APPROVAL

Universiti Teknologi PETRONAS Postgraduate Portal

By

Ahmad Ammar bin Hasuna

A project dissertation submitted to the
Business Information System Programme
Universiti Teknologi PETRONAS
In partial fulfilment of the requirement for the
BACHELOR OF TECHNOLOGY (Hons)
(BUSINESS INFORMATION SYSTEM)

Approved by,

(Assoc Prof Dr Mohd Fadzil Hassan)

UNIVERSITI TEKNOLOGI PETONAS

TRONOH, PERAK

May 2015

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work in 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.

AHMAD AMMAR BIN HASUNA

ABSTRACT

University Teknologi PETRONAS nowadays has been using internet as a tool of education and learning. Through the development of web portal and content management portal such as E-learning, PRISM and UTP official website, these will allow students, lecturers and UTP staffs to interact with each other, exchange learning materials, course registration, hostel registration and many other more. UTP offers numerous of platforms for information dissemination namely UTP official website and E-Learning but they are focused more towards undergraduate studies. In fact, UTP does not have a dedicated web portal for postgraduate studies. It is a disadvantage for not having postgraduate web portal because most of the research universities in Malaysia have their own web portal for postgraduate studies.

As a proposed solution to address this problem, the author will develop a web portal with the addition of content management dedicated for postgraduate studies. The web portal will be referred to as UTP Postgraduate Portal (UPP) that will act as online medium for postgraduate students and have numerous functionalities. The main web portal will have functionalities such as to display information regarding the courses offered in UTP and login function for student and administration on the content management section and view public news provided by the Centre for Graduate Studies. For the content management section, there are several functionalities such as update and display of internal news and information regarding postgraduate studies, upload and download form or learning materials and forum for the interaction between students and Centre for Graduate Studies staff. The research methods used will be constructive and exploratory to gather data such as distributed online survey to the officers of Centre for Graduate studies as well with the postgraduate students. Benchmarking is also one of the research method used by the author to gather data and information. At the end of the research, web prototypes for postgraduate studies portal will be developed as a prove of concept for this project.

ACKNOWLEDGEMENT

I would like to express my deepest appreciation and gratitude to the following people in helping me completing the whole final year project.

First and foremost, Alhamdulillah and thanked to Allah the almighty for His consent and plentiful of endowment, that allows me to complete this project. I would like to thank my supervisor, Ap. Dr. Mohd Fadzil Hassan for his guidance and continuous support in completing this project. His constructive ideas and suggestions were shared to me by him on how to further enhance the project and on how to conduct a good research. His understandings and encouragement have been inspiring me to be more creative in this project. His advices motivate me to do my best in trying to complete the whole project. Thank you for this great opportunity

Besides that, I would like to thank all the parties and friends who willing to assist me in completing the research survey and system evaluation. These responses helped me to acquire as much data and information as much as possible.

Table of Content

CERTIFICATION OF APPROVAL	ii
CERTIFICATION OF ORIGINALITY.....	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
LISTS OF FIGURES	viii
LISTS OF TABLES	x
CHAPTER 1	1
INTRODUCTION.....	1
1.1 Background Study	1
1.2 Problem statement	3
1.3 Significant of Project.....	4
1.4 Research Objectives	5
1.4.1 General Objective	5
1.4.2 Specific Objectives	5
1.5 Scope of Studies	5
1.6 Relevancy of Study	6
1.7 Feasibility Study.....	7
CHAPTER 2	9
LITERATURE REVIEW.....	9
2.1 The Needs of Portal for Higher Education Learning.....	9
2.1.1 Customer Relationship Management for Higher Education	9
2.1.2 Knowledge Management Practice in Higher Educational Learning.	12
2.1.3 Application on Customer Relationship Management and Knowledge Management in other universities’ web portal.	13
2.2 Web Based Application as Technology Platform	14
2.2.1 Windows Operating System for Web Development.	14
2.2.2. Server Side Scripting	15
2.2.3 Language use for web development.....	15
2.2.4 Database Management System	16
2.2.5 Web Server for Web Development	17
2.2.6 Web Design.....	17
CHAPTER 3	19

METHODOLOGY.....	19
3.1 Research Methodology	19
3.2 System Methodology	20
3.3 Project Activities	21
3.3.1 Planning Phase	21
3.3.2 Analysis Phase	21
3.3.3 Design Phase	22
3.3.4 Testing and Implementation Phase	22
CHAPTER 4	27
RESULT AND FINDINGS.....	27
4.1 Data Gathering and Analysis	27
4.1.1 Analysis on the Existing Problem and the Proposed Functionality.	27
4.1.2 Analysis on the Design for the Web Portal.	37
4.2 Actual Product	43
4.2.1 Development Tools	43
4.2.2 Use Case Diagram	44
4.2.3 Activity Diagram	46
4.2.4 System Architecture	48
4.2.5 Explanation of the Actual Product	49
4.3 Product Testing	62
4.3.1 Functionality Testing	62
4.3.2 User Acceptance Testing	68
CHAPTER 5	73
CONCLUSION AND RECOMMENDATION	73
5.1 Conclusion	73
5.2 Future Recommendation	74
References	75
Appendix	78
□ Survey Questionnaire on Requirement Analysis	78
□ Demographic Survey Result on Requirement Analysis	81
□ Survey Questionnaires on User Acceptance	83
□ Demographic Survey Result on User Acceptance	85

LISTS OF FIGURES

- Figure 1: Scope of project
- Figure 2: Framework of RAD prototyping methodology
- Figure 3: Web Browsing Frequency
- Figure 4: People's feedback on existing portal focus more on undergraduate studies
- Figure 5: People feedback on separation of undergraduate portal and postgraduate portal
- Figure 6: Expected Functionality in Postgraduate Portal
- Figure 7: Respondent's feedback on experience in any other universities postgraduate portal.
- Figure 8: Feedback on relationship among students, lecturers and UTP staff when using portal.
- Figure 9: Feedback on the development of knowledge sharing in portal
- Figure 10: Feedback on the user acceptance.
- Figure 11: Feedback of lecturers/staffs on spreading news and event in the portal
- Figure 12: Feedback of respondents on online forum functionality
- Figure 13: Respondent's feedback on upload documents functionality
- Figure 14: Respondent's feedback on information display in the web portal.
- Figure 15: Respondent's feedback on knowledge sharing in the web portal
- Figure 16: Respondent's feedback on online forum functionality
- Figure 17: Examples of selection of background and text colour.
- Figure 18: Webthemez Templates
- Figure 19: Universiti Malaysia Sabah Postgraduate Portal
- Figure 20: Universiti Teknologi Malaysia School of Graduate Studies
- Figure 21: Universiti Sains Malaysia Institute of Postgraduate Studies
- Figure 22: National University of Singapore
- Figure 23: Use Case Diagram for UTP Postgraduate Portal
- Figure 24: Use case diagram for PG-ELearning site
- Figure 25: Activity Diagram for Visitors Point of View
- Figure 26: Activity Diagram for Current Student Point of View
- Figure 27: Activity Diagram for Administrator Point of View
- Figure 28: System Architecture for this UTP Postgraduate Portal

Figure 29: UTP Postgraduate Official Page/ Home Page

Figure 30: About Us Page

Figure 31: News & Event page

Figure 32: Admission Page

Figure 33: E-Learning Menu Tab

Figure 34: Login Page

Figure 35: Sign Up Page

Figure 36: Contact Us Page

Figure 37: Admin Page for PG-ELearning

Figure 38: Add New Article Page

Figure 39: Screenshot of upload document into the PG-ELearning site.

Figure 40: PG-ELearning Home Page for Student.

Figure 41: Student Profile Page

Figure 42: News & Update Page

Figure 43: News that contains files.

Figure 44: Knowledge Sharing Forum

Figure 45: Feedback on the background and text colour

Figure 46: Feedback on type and size of fonts

Figure 47: Feedback on menu tab position

Figure 48: Feedback on clear division and separation of information

Figure 49: Feedback on buttons and links provided in UTP Postgraduate Portal

Figure 50: Feedback on download functionality

Figure 51: Feedback on online forum functionality

LISTS OF TABLES

Table 1: Gantt chart of the project in Final Year Project 1 and Final Year Project 2

Table 2: Expected Submission

Table 3: Functionality Testing for Web Application

Table 4: Comparison between other Universities Postgraduate Portal

Table 5: Chosen elements for the UTP Postgraduate Portal

CHAPTER 1

INTRODUCTION

1.1 Background Study

Web portal is a platform where informations were brought together from variety sources in a uniform ways and there are dedicated areas for each of the information source on the page for displaying information (Wikipedia, 2015). Tatnall (2009) stated that web portal can be categories as a unique internet or intranet site design to act as a gateway that can provided access to others different sites and also provided protection for the user from any uncertain thing in the internet. In addition, a web portal also can be defined as a tool where users can have various of informations with many functionalities provided in a single web page.

There are various types of portals with differences functionalities. Academic management portals, integrated academic portals, artificial intelligence education portals, high school portals, primary school portals, weblogs and corporate e-learning portals are the example portals in education perspective (Tatnall, 2009). A knowledge management system can be considered as a portal whereby it relates more on libraries and professional societies. Tatnall (2009) stated that this type of portal can attract numerous of researchers that interested in any related topics such as mobile portals for knowledge management, designing portals for knowledge work, knowledge servers, portal strategy for managing organization knowledge, the portal as information broker, allow access to scholarly publications and portal attributes of major digital libraries.

Universiti Teknologi PETRONAS (UTP) is considered as the best technology universities in Malaysia which had a clear vision on being centre for creativity and innovation as well been a leader in technology. UTP is focusing on becoming an institute of higher learning that provides knowledge and expertise for the advancement of engineering, science and technology. By promoting more postgraduate student to continue their studies in UTP, university's mission can successfully achieve. As a result, the number of postgraduate students in UTP has rapidly increasing every semester.

UTP is facing a lot of difficulties in managing and controlling numerous of forms. Besides that, UTP postgraduate students are having difficulty on receiving official news from Centre for Graduate Studies. This problem occurs when all the news regarding postgraduate had been mixed up with the undergraduate's news. This problem will let to confusion of postgraduate students in receiving news. By developing a web portal for postgraduate students which include all the key features of web portal such as security, access different data, transaction, search, publish content and personal content will be a solution to this problem.

Moreover, the author will develop a web portal for postgraduate students in UTP which provides user-friendliness features and comprehensive contents for the users. In this project user friendliness features is defined on how the website can provide simplicity for users to gain something from the web portal and users can gain experiences from it. Other than that, the content in this web portal need to be comprehensive and updated in order to gain user interests.

The rest of this chapter will be organized as follows. The next section will put forward the problem statement of this project. This will be followed with the objectives section, and finally scope of study section.

1.2 Problem statement

Nowadays, the internet and other related technologies had changed the ways of the learning processes and education institutes operate. Many universities in Malaysia used internet technologies such as web portal to enable their education processes and create innovative e-learning application. E-learning includes all forms of electrically that supported teaching and learning such as web-based learning, digital collaboration and virtual education opportunities. Skills and knowledge are enabled and transferred through computers and networks.

With the transactions had taken place in Universiti Teknologi PETRONAS (UTP), the postgraduate studies were been focused and the number of students in postgraduate is increasing dramatically. E-learning had been used by UTP in order for the students to get all the news, forms, learning material and discussion between lecturers and students but it mostly been used by the undergraduate students. Due to current situation, there are few problem had been discovered and proving the needs for the project. The problems are:

[1] **The existing portal does not focus more on postgraduate studies:** UTP is currently using e-learning as their platform of education processes but mostly used by undergraduate students. There are no specific platforms or portals for postgraduate students to receive news, updates, forms and other related to the postgraduate studies. It will let to confusion for the postgraduate students to receive information if they still using the current platform.

[2] **Difficulty for postgraduate student to receive official news:** This problem occurs because of the current system had been used by both undergraduate and postgraduate students. Mostly all the news in the current system is made for undergraduate studies. Meanwhile, for postgraduate students, they prefer seeking information or news from the lecturer itself rather than open the e-

learning for gain information. With this in mind, the current system that been built seem useless for postgraduate studies.

- [3] **Difficulty for postgraduate students to interact with the lecturers:** The interaction between postgraduate students and lecturers are important in order to accomplish the studies. The interaction between lecturer and the student usually by face to face interaction and this interaction actually is better than any others methods but it requires time and availabilities by both parties.

1.3 Significant of Project

According to the research's observation, this project will provide a significant contribution to these categories of users such as visitors, postgraduate students, lecturers and UTP staffs.

From the visitor perspective, the research on the problem will give a better solution to the visitors who have difficulty on finding information regarding postgraduate studies in UTP. From this project, it will make the visitors easy to find any sort of information regarding postgraduate studies. Given the fact that web browsing had rapidly increase day by day, it give opportunity to the author to develop this web portal as a solution to the visitor's problem.

From the postgraduate student perspective, the project will help student on their learning processes such as getting internal news relate to their studies, getting learning material that been provided by university and interacting with their lecturer in the online medium. Its same goes to the lecturers and UTP staffs perspective which the web portal can increase their work productivity on giving information and learning material to their postgraduate students. Hence, by using this web portal, a lot of things can be improvise in term of time and energy consume on getting the

information. Moreover, the productivity of work will be increasing and the learning process in UTP will be better.

1.4 Research Objectives

1.4.1 General Objective

The main objective of this final year project is to generate solution that will be utilize by the Centre for Graduate Studies (CGS) and UTP postgraduate students in exchanging information and knowledge throughout the learning process. In addition, this web portal will focuses on the issue of productivity and efficiency.

1.4.2 Specific Objectives

The specific objectives to be attained from this project are:

- I. To conduct detailed requirement gathering and analysis pertaining to postgraduate portal design customized for UTP postgraduate students.
- II. To implement the design specified in above objective.
- III. To deploy and conduct usability testing for the developed portal.

1.5 Scope of Studies

The scopes covered for this Final Year Project (FYP) are classified into three categories which are the targeted users of the portal, features involve in portal and the development platform to build the portal.



Figure 1: Scope of project in term of targeted users, features involve and development process

1.6 Relevancy of Study

The project is relevant from the different perspectives as below:

I. Visitor

The study will help visitors to gain as much as information regarding postgraduate studies with the easiest way. To demonstrate, informations such as course offered, news, contact information can easily be access by using this web portal. It will reduce time and effort to explore and find any information regarding postgraduate studies.

II. Postgraduate Student

The study will help student on their learning and research. It will be easy for student to gain their learning material throughout the web portal and will be easy for students to interact with their lecturers or UTP staffs. The development of this web portal also created knowledge sharing among students and lecturers. This web portal will reduce time and effort regarding their learning process.

III. UTP Staff

The study will assist UTP staffs on updating and giving the news and events relate to postgraduate studies. It will make the work easier for UTP staff on updating the news. Spreading news in the online medium will create more awareness to the user rather than display it on paper.

IV. University

This postgraduate web portal will make UTP same level as the other research universities in Malaysia. With the unique design and functionalities of the web portal, it will give competitive advantage to the university itself.

1.7 Feasibility Study

The feasibility study is required in order to ensure that the study is possible and smoothen the development cycle of the study. It is being separate into 3 categorize as below:

i. Technical Feasibility

The technical part of study occur in implementation phase where the study is expected to developed a web portal for the user who involve in postgraduate studies which have various functionalities in term of learning perspective. Technically, the web portal for postgraduate studies can be developed as the author has expertise in programming and experience in developing a web application.

ii. Economic Feasibility

The development of the project is expected to be low because the only cost that needs to be pay is on the web template and the hosting of the web page. The author uses this WebThemez as the tools for the web development. The cost is about RM300 and this cost will be subsidized by the university to complete the prototype of the project. Another cost that may involve is

hardware and software cost in order to support the web application. The author is expected to use a laptop as the local host server due to higher costs. Therefore, hardware and software may incur no costs.

iii. Time Feasibility

Before the analysis phase starts, the author will collect data from various sources which it not take for more than 1 month. The author uses internet to search on past research papers. The web development will be using Webthemez and MUUT which there are templates provided. By using Webthemez and MUUT, it will speed up the development of the prototype. With the 8 month provided for this Final Year Project, it is expected every tasks can be done according to the schedule.

CHAPTER 2

LITERATURE REVIEW

2.1 The Needs of Portal for Higher Education Learning

Every higher education institute in Malaysia should have at least a portal for educational purposes. When came to education perspective, a portal will create a relationship or a bond between university and students. Grant and Anderson (2002) stated that all education institutions had been through a fundamental process in how they interacted and operated with their “customer” such as students, donors, faculty members, staff members and alumni. The best organization in the world will be ineffective if the focus on “customer” is lost (Kotler & Fox, 1995). The most common portal that been implement by many universities is E-learning. Reusch (2014) stated that E-learning is one of the pillars in modern higher education that will help students in their learning processes.

2.1.1 Customer Relationship Management for Higher Education

Customer Relationship Management (CRM) is a set of strategy usually used by organization or business to build a solid relationship with their customer or in other word is to make customer trust and loyal to the organization product or services. CRM also enable organizations to achieve their objectives and goals. Grant and Anderson (2002) supported this statement by mentioned that organization can achieve goal of reducing costs, increasing revenue, identifying new opportunities and channels of expansion, and improving customer value, satisfaction, profitability and retention by implementing CRM which both a business strategy and a set of discrete software tools and technologies. CRM business strategy places the customer at the center of the organization’s universe

which it takes a very customer-centric view of the entire customer life cycle (Grant & Anderson, 2002).

Futhermore, CRM mostly used by organizations or businesses that create products and services to the customer but it also have been one of the important elements in higher education learning. From the college or university's perspective, a clear and complete picture of each individual and all the activities pertaining to the individual by implement this CRM business strategy (Grant & Anderson, 2002). In education institute perspective, CRM can be called as Student Relationship Management (SRM). SRM was inspired in the principles of Customer Relationship Management (Santos & Piedade, 2008). Why implement a higher education CRM business strategy? Higher education institutions are same as the organizations in the world which consists of several departments which have difficulties to focus on their customer. In higher education institutes, customer refers to students. To solve this problem, a portal will acts as a platform or will acts as CRM tools in order for student communication and interaction with the university. Grant and Anderson (2002) stated that increasing the effectiveness of staff member who communicate or interact with customer or prospect is the main aim the CRM application been designed in the institutions. He also stated that improving customer responsiveness and a more comprehensive view of the entire "cradle-to-grave" customer life cycle is benefit of using CRM application. The needs of CRM application in higher educational context had been categories into three which are student's need, administrator's need and faculty members need. Student nowadays are really into the technologies which can help them to make their work done in such a short time and the technologies become greater day by day. Grant and Anderson state that today's student have a higher demand to access information about their performances, options and their future. The demand by the student is the reason why the CRM application or portal needs to be apply in higher education institute.

The author continues with the need of administrator in CRM application or portal in higher educational institutes. Grant and Anderson (2002) stated that college's or university's administrative system would also introduced a self-service system

that empower the administrative team to rethink the investment of administrative resources in institutional services by implement the CRM strategy. A connection between student's services and faculty member are the need of faculty member in CRM application. Grant and Anderson (2002) mentioned that there is a complete disconnect between instructional programs and student services in many institutions. They also explained that student services and faculty are tightly linked, strategies to enable student learning and dynamically sharing resources in the new learning environment. It shows that faculty member needs the access of their student profile in order to create a learning option for students. The access can be done by implement a web portal or CRM application which can help the faculty member to get the work done.

What that been mentioned above are the reasons why the CRM or Customer Relationship Management been implemented in higher education institution and it also gave greater impacts to the higher education institutions and students.

The impact of implementation CRM in higher education will be face by all who involve in the institutions such as students, administrators and faculty members. The author starts with the impact face by students who implements this CRM application. Grant and Anderson (2002) mentioned that the standard for access to students and faculty services will change as students come to expect virtual access to students and faculty services resources. It means that the old way that been used by student to interact and communicate with the faculty members or lecturers that takes hours will be change by provide a virtual support system or portal for student to meet their needs without disturbing their schedule. The author continue with the impact face by the administrator when implement the CRM application. The administrative staff can focus on more productive, satisfying and rewarding activities such as helping students plan for the future and making personal connections with students by shifting responsibility for information maintenance to faculty member and students, and empowering them to complete relevant processes and securely access vital (Grant & Anderson, 2002). The impact that will face by the faculty member been explained by Grant & Anderson (2002) which stated that faculty curriculum planners can develop an

accurate picture of which technology resources truly make difference in student learning with a system that is dynamically linked with students.

2.1.2 Knowledge Management Practice in Higher Educational Learning.

Knowledge management is all about connection between people, process and technology in order to share and transfer intellectual capital along with corporate knowledge. Additionally, knowledge management also focus on creating new knowledge that can be use on creating new product and innovation of the existing product. John (2001) stated that organization with a focus on Knowledge Management pay close attention to the issues of organizational learning, collaboration, workflow, best practices, document management, intellectual property management and using data effectively. Moreover, Kozina and Dukic (2012) also stated that knowledge management had become an important asset in organizations as it enabled to enhance effectiveness and efficiency.

Kidwell et al (2001) stated that there were significant opportunities for higher education learning to apply knowledge management practices to support every part of their mission. Other than that, a portal will provide a basic introduction to the Knowledge Management practices for higher education.

This knowledge management is so important to be implementing in higher education perspective because it has ability to share, create and manage the knowledge. Knowledge Management is necessary to higher education in order to create a flexible and innovative relationship between work and education (Kozina & Dukic, 2012). Thanasankit, Bradley and Corbitt (2005) stated that intellectual capital and knowledge is the asset which can provide competition advantages over others organizations. Knowledge Management system will manage all the new knowledge created by students and lecturers. This new knowledge will be share with others for the sake of education and distribution of knowledge. Technologies that supported knowledge management in organization, specifically, knowledge generation, codification and transfer were Knowledge Management System (KMS) (Ruggles, 1997). Thanasankit, Bradley and Corbitt

(2005) also stated that there are many higher education institutions provided students with a personalized gateway to teach, learn and administration facilities in a web environment by implemented web portal technologies.

There are factors that influence the implementation and usage of a knowledge management portal in higher education institutions. One of the factors is knowledge sharing within organization. Lim and Klobas (2000) mentioned that the grown of technologies had attract the interest to create formal channel in order to share knowledge. Knowledge sharing is not depend on the technologies but the technologies will act as a support tools for the knowledge to be capture, discover, share and retrieve information and knowledge. An organization must support knowledge sharing culture in order to make a successful knowledge transfer (Lim & Klobas, 2000). The other factor that influences the implementation and usage of a portal for knowledge management in higher education institutions is the usage of internet “as a mechanism to acquire and gather external knowledge and information to better their knowledge assets” (Thanasankit, Bradley and Corbitt, 2005).

2.1.3 Application on Customer Relationship Management and Knowledge Management in other universities’ web portal.

Customer Relationship Management and Knowledge Management are the reasons why it been implement in the web portal for higher education learning but are there higher education learning apply this two model in their web portal? Ahmadi, Osmani, Ibrahim and Nilashi (2012) stated that University Technology Malaysia use CRM strategy to continue the communication with their alumni. It shown that, there is university use CRM in order to interact with their previous student. UTM also had developed a website that allows their student to interact each other (Saeed, Lahad & Gazem, 2012). They also stated that UTM developed a web which acts as Knowledge Sharing Model in order their student to share any knowledge in a single platform. It had shown that UTM implemented knowledge management practices in the web portal.

2.2 Web Based Application as Technology Platform

What is web based application? Web-based application is refer to any programs that operate over an internet connection using HTTP. Basically the web-based application runs on the web browser such as Google Chrome, Mozilla Firefox and Internet Explorer. Web-based application consists of social networking website, online shopping websites, webmail services, portals and blog pages.

2.2.1 Windows Operating System for Web Development.

Operating system is a computer program that coordinates and controls all the activities in the computer hardware devices. Operating system also an essential component in computer system and require it to operate all application programs in the computer. There are four types of operating system which are Real-time operating system, single-user with single task operating system, single-task with multi-tasking operating system and multi-user operating system. For web development, the suitable type of operating system is single-user with multi-tasking operating system which this operating system been used by most of people nowadays on their desktop and laptop computers. It is suitable because this operating system requires several functions such as booting the computer, perform basic computer tasks, provide user interface and provide file management. Windows, Linux and Mac OS X are the types of single-user with multiple task operating systems.

Windows is suitable operating system for the web development because of the “speed, memory capacity and hardware sophistication” (Stallings, 2005). Stallings (2005) also stated that the needs for multitasking on personal computers, workstations and servers been triggered by two main developments. The first development that had been mentioned by him is the applications have become more complex and interrelated with the increasing of speed and memory capacity of microprocessors along together with the support of virtual memory. The second development that been explained by him is the multitasking is growth of client/server computing. A particular application can be accomplish with

client/server computing which a personal computer act as client and a host system acts as server. Other than that, Hocenski, Martinovic and Balen (2012) stated that Windows operating system is the most widely used operating system for the personal computers nowadays.

2.2.2. Server Side Scripting

Server side scripting is tools in creating two ways communication between server and user by running script on the web server. Kappel, et al (2006) stated that the ability for webmaster to highly customize the response based on the user's requirement, access rights or queries into data stores is the biggest benefits of using server side scripting. There are several types of server side scripting that mostly used for the software application such as JSP, PHP, ColdFusion and LSP. Wienbergen, Recker and Brelage (2006) also mentioned it is widely used for creating programmed features for websites because the syntax is drawn from other widely used language.

2.2.3 Language use for web development.

The common languages that been used by developer to develop website or portal are Hypertext Markup Language (HTML), Cascading Style Sheets (CSS) and PHP or Hypertext Processor.

HTML is the prominent markup language for web pages and also can be considered as the basic building-blocks of web pages. Read HTML documents and composes them into visual or audible web pages are the purpose of the web browser such as Google Chrome and Mozilla Firefox. Usually in the website, there will no HTML codes been display but the codes been interpret the content of the page. HTML elements usually form the building blocks of all websites in the internet (Levine, 2003). HTML also allows image and objects to be changes and can be used to develop interactive pages and forms. Besides that, link to another page can be executed by using HTML (Emamdadi, Kahani & Zarrinkalam, 2014)

Cascading Style Sheets (CSS) is a mechanism that has a functionality of adding style such as colour, spacing and font. External Style Sheets can save amount of work because it is stored in CSS files. As state in W3School (2011), CSS is designed to enable the separation of document written in HTML or a similar markup language from the actual document presentation which include several element such as colors, fonts and layouts. More flexibility and control in the specification of presentation are the improvement that been made by this separation.

The usage of PHP is possible as it designed for web development to produce dynamic web pages. Levine (2003) stated that there are certain chunks of programming that is needed again and again, such as user authentication and database when putting together the system. PHP files as known as classes can be wrapping together to ensure the codes tidy and organize. There are examples of the PHP usage which are presenting data from a variety of sources such as files and database, performing actions such as sending request and incorporating interactive elements such as search function.

2.2.4 Database Management System

Database Management System or DMBS is known as a program that provides one or more computer to create and access data in database. Kappel, et al (2003) explained that there are four DBMS versions from the technical perspective such as relational, network hierarchical and flat, all four DMBS refer to the way the data is internally organized. Below are some of the most widely used in DBMS as mention in Oracle Website:

- a) MySQL
- b) Oracle
- c) MSSQL
- d) Informix
- e) PostgreSQL
- f) Firebird

For the web development, the author has chosen MySQL as the web's database. MySQL is one of the most popular open sources database that use SQL whereby SQL is a language that have functionality for adding, processing and accessing data in database. Consistent performances, ease of use and high reliability are the reason that MySQL become most popular open sources database. MySQL database can also backup and recovery system (Ping, Hong-Wei & Nan, 2014)

2.2.5 Web Server for Web Development

For web development, the author has chosen XAMPP as the web server. XAMPP is an integrated server package of Apache server, MySQL and PHP. Murphy (2003) stated that the usage of combination various technologies defines a programming paradigm of developing software and establishes a software distribution packages. The XAMPP had become the most popular in the web industry because the way of deploying inexpensive, reliable and secure web application.

2.2.6 Web Design

The essential part of web based application is the web design. Gal and Mylopoulos (2001) stated that the leading tool in designing application is the web itself. The web that been created must be attractive in order to attract the users. Website design caters for many purposes for different type of usage and it can be use by anyone else or developer for free.

“Web content has been identified as one of the main factors that contributing to continuously visits. As content on the web includes text, pictures, graphics, layout, sound, motion and, someday, even smell, making the right web content decisions are critical to effective web design. While an understanding of marketing strategies that attract visitors to websites is beginning to emerge, how to convert web surfers to

repeat visitors is a less well-understood phenomenon (Rosen & Purinton, 2004).

As mentioned by Rosen and Purinton in above statement, content are the important element in a website that becomes attractiveness to the users. They also mentioned that the most attractive part have been seen by the users is the graphic and layout. Design an attractive website can give an impression of love at first sight for the user when using the website.

Another element that must take into consideration when develop a website is colour. Colour has the ability to elicit behaviours and emotion, yet there is a research which colour treatment in website design are tested which is how colour affects satisfaction and trust on the part of the viewer. Elliot and Maier (2007) stated that the cognitive system and visual had adapted to receive and process colour information, which contained in every visual stimulus we encountered. Perception, physiological, reactions, emotional reaction or behavioural intention can be effected by the colour information such as hue, brightness and saturation. In the commercial perspective the colour show the attitude and expectation towards brand. It will be the same towards any organization in the world who represent the organization in the website or any related media.

Internet with the current and emerging multimedia features provided opportunities and particularly useful for dealing with intangible nature of services, and to gain competitive advantages (Baloglu & Peckan, 2006). Each industry created different sets of function as needed that will lead to different design for their website to become attractive for the users. From the higher education learning perspective, design is not the main attention but the functionalities that made it useful for students.

CHAPTER 3

METHODOLOGY

3.1 Research Methodology

There are two research methodology been used in this project. The first research methodology is exploratory research. This exploratory research can help to identify and define the problems and questions for this project. The author uses this research methodology in three phases of the system methodology which are planning, analysis and design phase. In planning and analysis phase, the author had carried out quantitative and qualitative data gathering where the author had conduct a survey on identified problems that have been faced by people involve in postgraduate studies. Furthermore, for quantitative research, the author had conducted an online questionnaire form to be filled in by students, lecturers and staffs in order to create awareness on the importance of web portal in higher education learning. In addition, for the data accuracy, the author expected to collect data at least from 20 respondents. For the qualitative research, the author had reviewed all research paper related to the project. The author had done some observation with some other research universities websites in order to create a benchmarking and identify the main functionality of postgraduate web portal. The author will continue this exploratory research throughout the design phase. A benchmarking and online research will be conduct in order to identify the needs and requirements on developing the design of this web portal.

The second research methodology used in this project is constructive research. This constructive will be conduct after exploratory research been complete. To illustrate the design and implementation phase, this research methodology will be tested on the theories and solution that had been proposed. For conducting user testing, the

interface of this web portal needs to be design and to be complete. The prototype will change several times until the objectives and requirements of the user had been fulfilled.

3.2 System Methodology

The author has chose Rapid Application Development (RAD) – based methodology to be adopts in this Final Year Project. Rouse (2007) stated that Rapid Application Development or RAD is a model that can developed faster and high-quality goods through more expedient processes such as reusing software components, less formality in team communications and early prototyping. This type of methodology relies on rapid prototyping rather than through planning and analysis phase and it involves system construction with repeatedly spiralling through all the phases. Besides that, there are three phases that performed concurrently until completed which are analysis phase, design phase and implementation phase. The initial prototype is the first part of the system that user will use and the prototypes are utilized to their fullest potential. Figure below shows the framework of the Rapid Application Development.

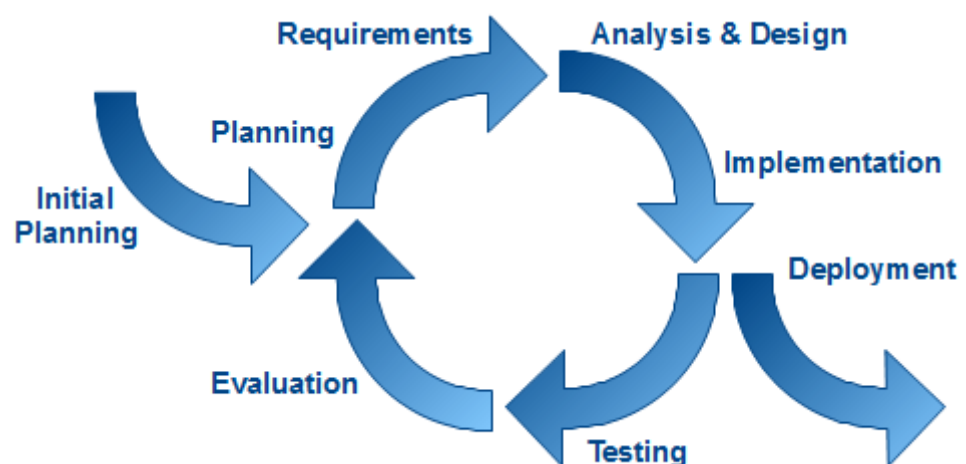


Figure 2: Framework of RAD prototyping methodology

The main advantage of this methodology is the ease in changing requirements regarding the course of the system development as well as multiple stages of complexity and completeness of the proposed system. To accelerate the requirement analysis and design phases along in detecting errors, programming and time constraints earlier in prototypes rather than later in complete system model are the construction approaches in this methodology. This approach is the most suitable usage where changes are an expected factor during the development phase.

3.3 Project Activities

3.3.1 Planning Phase

- i. Done research and some observation on the background of the preceding and related tasks.
- ii. Identify the problems that occur and suggest a solution to solve the problems identified.
- iii. Emphasize the significant of the project.
- iv. Identify project scope, goals and objectives. For guidance of the activities, goal and objective of the project have to be clarify. Project scope is been specifically to suit project's need and requirement.
- v. Identify Gantt chart and milestones
- vi. Analyze project feasibility.

3.3.2 Analysis Phase

- i. Clarify analysis objectives. This phase is to evaluate and discuss the justification and the rational behind this project's concept, idea and unique approach.
- ii. Analyze related works critically on scopes, algorithms used in this project and relative application to the scope of this study.

- iii. Identify the benefit and the approach of the purposed system. The author approach to the identified problem had led to the benefit when applying the proposed model into the scope of this study.
- iv. Prepare the project requirements definition.
- v. Collect data to evaluate developed hypotheses. The data had been collected base on the online questionnaire that been developed by the author to the targeted user.
- vi. Analyze collected data.
- vii. If there any changes, the author will update and modify the latest version of milestones and Gantt chart.

3.3.3 Design Phase

- i. Collect data to determine the criteria and requirement of web portal.
- ii. Clarify design objectives. The author adopts a simple architecture on which the web will be built. The web will be design with straightforward functions and user friendly interface.
- iii. Develop analysis models for the system. The author develop Activity diagram that act as functional model
- iv. Develop system architecture.
- v. Design Graphical User Interfaces (GUIs) and built the system function accordingly.
- vi. Review the internal web.
- vii. Finalize the prototype.

3.3.4 Testing and Implementation Phase

- i. Clarify testing and implementation objectives. The designed function and the performance of the prototype have been tested. Finalize the prototype and put it on hold for future full web development for actual launch.
- ii. Conduct functionality test

- iii. Conduct user acceptance test.

Figure below shows milestones and Gantt chart which developed to support monitoring project's activities.

No	Detail / Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Final Year Project 1															
Planning Phase															
1	Selection of Project Topic														
2	Research on Related Studies														
3	Identify Problem and Propose Solution														
4	Clarify Scope, Goals and Objective														
5	Identify Gantt Chart and Milestones														
Analysis Phase															
6	Analyze Related Web														
7	Prepare Web Requirement														
8	Collect Data to Evaluate Developed Hypothesis														
9	Analyze Collected Data														
Final Year Project 2															
Design Phase															
10	Develop Analysis Models														
11	Develop System Architecture														
12	Design Graphical User Interface														
13	Develop the Web Portal Functionality														

14	Internal Web Review														
15	Finalize Web Prototype														
Implementation Phase															
16	Conduct Functionality Testing														
17	Conduct User Acceptance Testing														
Launch Phase															
18	Official Launch of UTP Postgraduate Portal														
19	Post-Implementation Analysis														
20	Post-Implementation Review														
21	Upgrading														
FYP Submission Requirement															
22	Submission of Proposal Topics														
23	Submission of Interim Report														
24	Proposal Defence														
25	Pre-Sedex Presentation														
26	Submission of Dissertation														
27	Viva														



Completed Tasks



Ongoing Tasks



Future Tasks

Table 1: Gantt chart of the project in Final Year Project

CHAPTER 4

RESULT AND FINDINGS

On this chapter, the author will discuss on the findings in develop a successful web portal for postgraduate studies. The elements that will be discussed are based on the objectives of this project. The first objective of this project is to conduct detailed requirement gathering and analysis pertaining to postgraduate portal design customized for UTP postgraduate students. In order to complete section 4.1, the author will discuss on the detailed requirement and the preferable design for this web portal. The second objective is to develop the web portal base on the requirement gathered. In section 4.2, the author will show the developed web portal and full explanation of its functionality. To deploy and conduct testing for the developed web portal is the last objectives of this project. Therefore, in section 4.3, the author will display the result of the functionality testing and user acceptance testing of this web portal.

4.1 Data Gathering and Analysis

4.1.1 Analysis on the Existing Problem and the Proposed Functionality.

In this section, the author had conducted online questionnaire survey and interview throughout this project in order to gather data and information regarding the existing problems that had been faced by students and staffs in postgraduate studies and the preferable functionality to be included in this web portal.

In the online questionnaire survey, 20 people had been asked questions in order to identify the problem they currently facing and what expected functionality should be included in the web portal. The author had create 17 question to be answered by the people which the question been separate into four section. Section A is regarding of

respondent background information which has 3 questions, section B is regarding respondent feedback on the project proposed which has 8 questions, 3 questions in section C which regarding respondent's feedback on the functionality propose for UTP staffs and lecturers while 3 questions in section D which regarding respondent's feedback on the functionality propose for students. Below are the results of the online survey conducted.

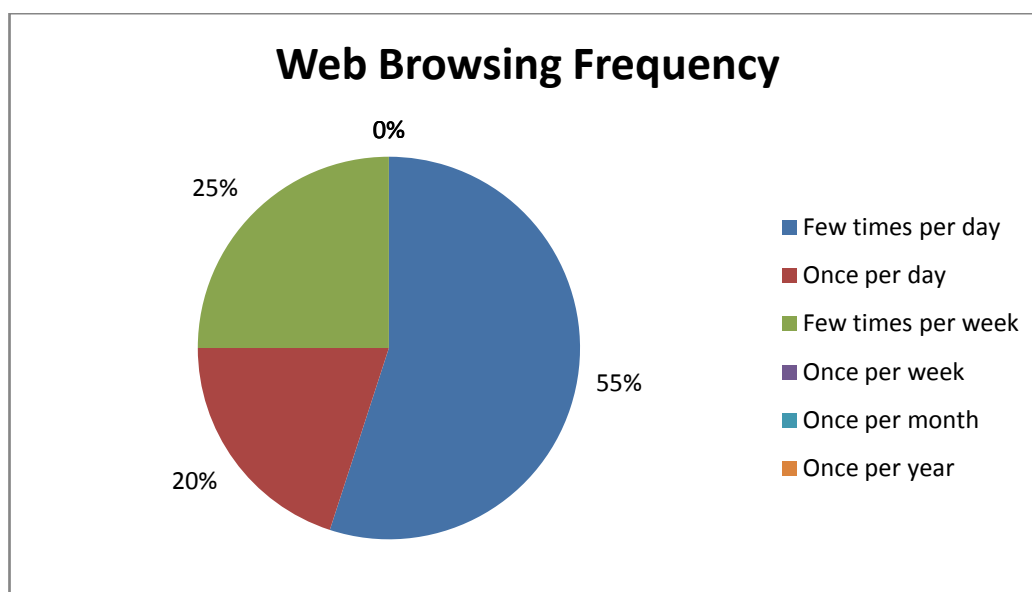


Figure 3: Web Browsing Frequency

Figure above shows the web browsing frequency of students, lecturers and staffs in UTP. Majorities of the respondents (55%) usually browse the website few times per day. The other respondents (45%) also browse the web at least once per day. Therefore it can conclude that most of peoples in UTP use internet as a tool of learning and completing works.

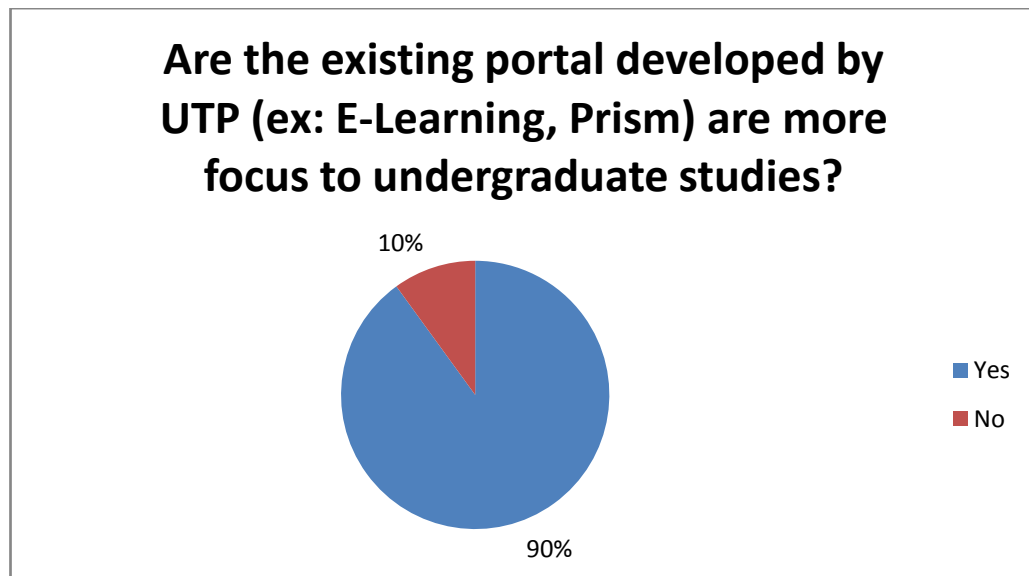


Figure 4: People's feedback on existing portal focus more on undergraduate studies

The purpose of this question is to create awareness of UTP students and staffs on the existing learning portal that been developed by UTP. Most of the respondents (90%) agreed that the existing portals developed by UTP are more focus on undergraduate studies. The author concluded that the existing portals are seemed to be useless for postgraduate studies.

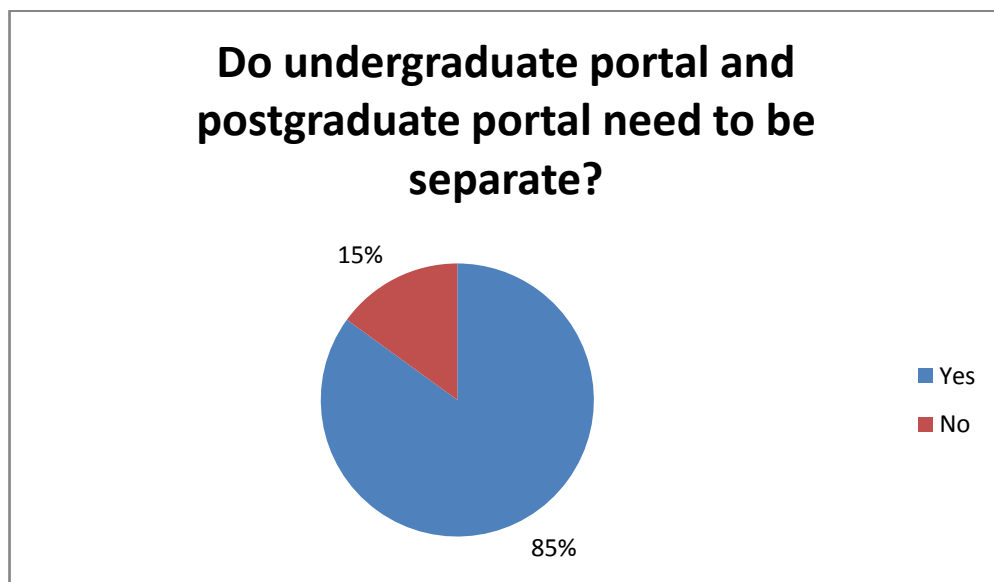


Figure 5: Respondent's feedback on separation of undergraduate portal and postgraduate portal

Because of the existing portal more focus on undergraduate studies, the author had create a question in order to gain opinions of the users about the separation of undergraduate studies portal and postgraduate studies portal. Most of the respondents (85%) agreed on the separation between postgraduate studies portal and undergraduate studies portal. Therefore, with these opinions, it will be more relevant for the author to create a web portal for postgraduate studies.

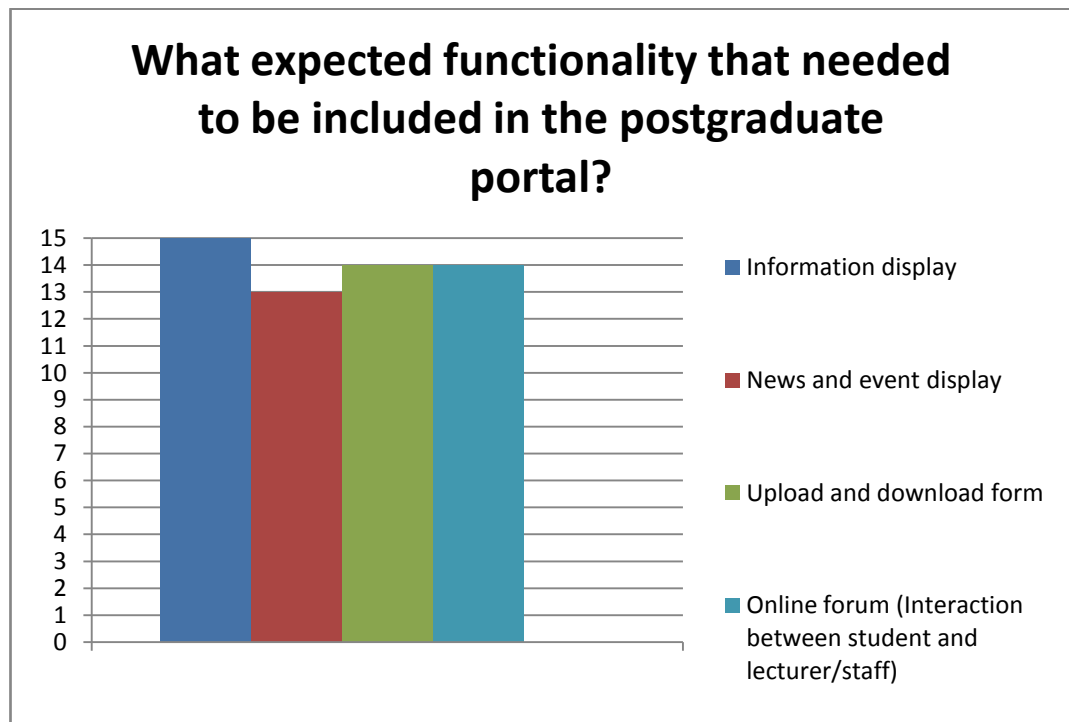


Figure 6: Expected Functionalities in Postgraduate Portal

Question on figure above is to determine what the functionalities that needed in the web portal. Most of the respondents identifies that the most functionality needed is information display. The other functionalities also getting high votes same as the information display functionality. The respondents also suggest other functionality that have to be include in web portal such as complain form, customer services for complaint and quick response and online GA form submissions It shows that these are the functionalities needed by users in the new postgraduate portal.

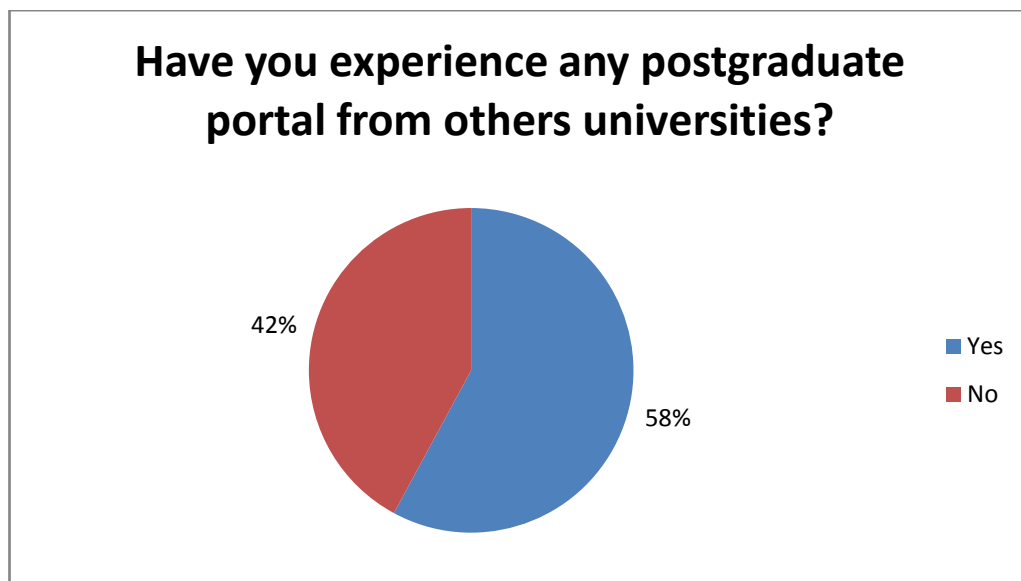


Figure 7: Respondent's feedback on experience in any other universities postgraduate portal.

In figure above, it shows that 58% of the respondents do have experience on using postgraduate portal and the rest of the respondent does not have any experience on using postgraduate portal. Based on the survey that been made, the respondent who have experience may hope for a web portal for postgraduate studies to be develop in UTP and the others will gain a new experience on using postgraduate portal when UTP Postgraduate Portal been developed.

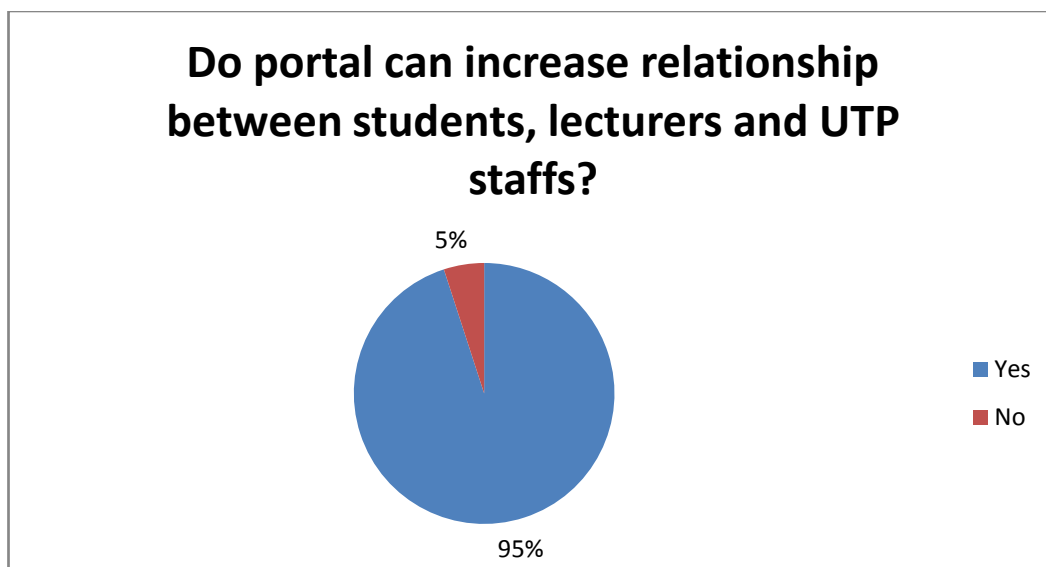


Figure 8: Feedback on relationship among students, lecturers and UTP staff when using portal.

Relationship among students, lecturers and staffs are important in order for smoothen learning process and to increase work productivity as well to create harmony environment in the institute. Therefore the author had created a question on determine the relationship between students, lecturers and staff when using a web portal. Most of the respondents (95%) agreed that the portal can increase the relationship among students, lecturer and staff. The author concluded that a web portal can be a platform or a medium of interaction and communication among peoples in UTP.

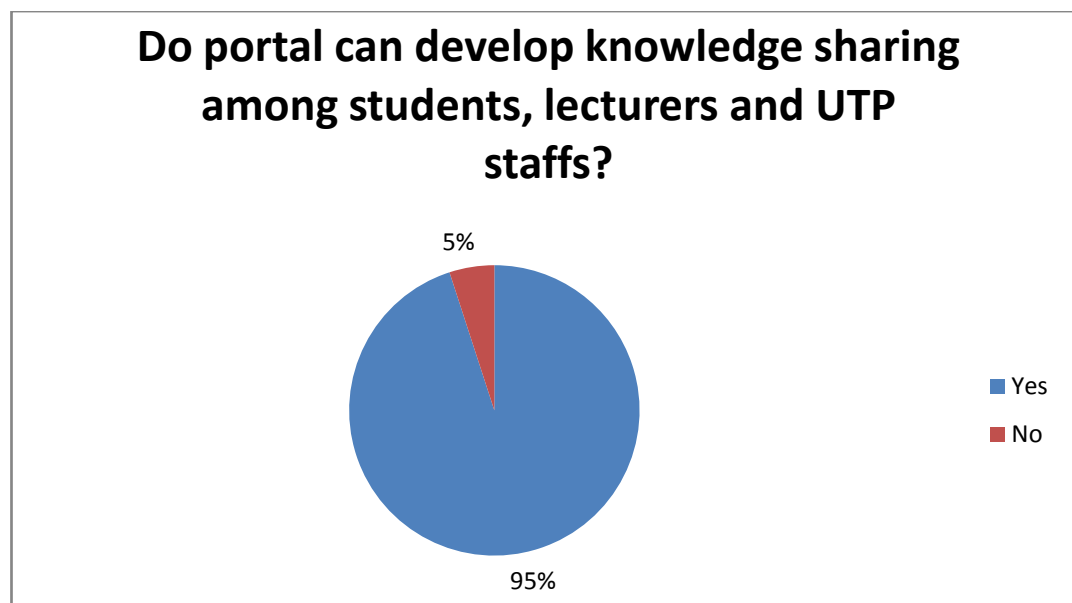


Figure 9: Feedback on the development of knowledge sharing in portal

Knowledge sharing is important in all organizations around the world because it carried out many benefits. Furthermore, by gaining new knowledge from others, it will increase the productivity on completing works. In addition, the new knowledge can generate new ideas or products and the existing product can be improved. With this justification, the author had created a question on the development of knowledge sharing in portal. Most of the respondents (95%) agreed that portal can develop knowledge sharing among students, lecturers and staffs in UTP. The author concluded that a web portal also can acts as a tool or a platform of knowledge sharing among students, lecturers and staffs in UTP.

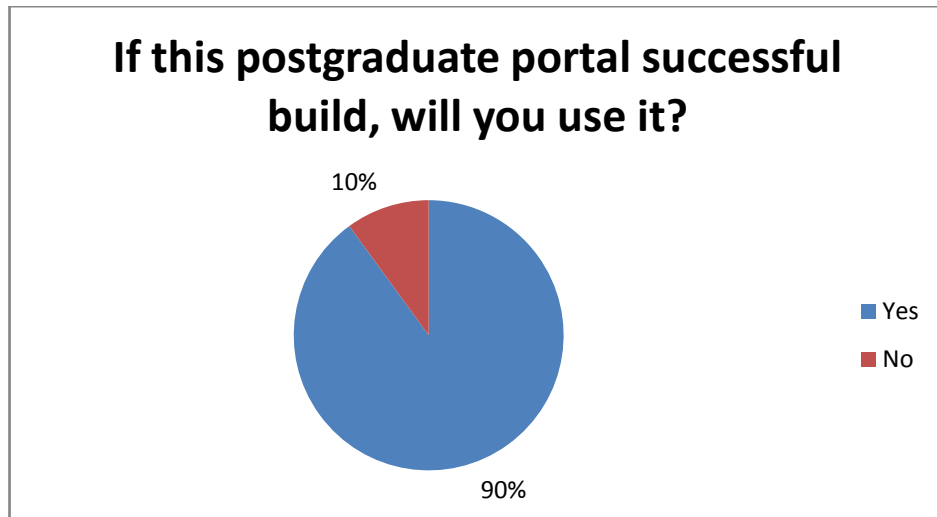


Figure 10: Feedback on the user acceptance.

Before develop this project, the author must ask a question regarding the user acceptance of this project. Most of the respondents agreed to use it, if it is successful been build. Therefore, with all complete functionality and requirement of this project, this project will have its end user and will be use for the sake of learning process and work productivity.

For the next result we will discuss on the feedback of the respondents who currently holding position as lecturers or UTP staffs. The question are mostly regarding on the propose functionality in the web portal.

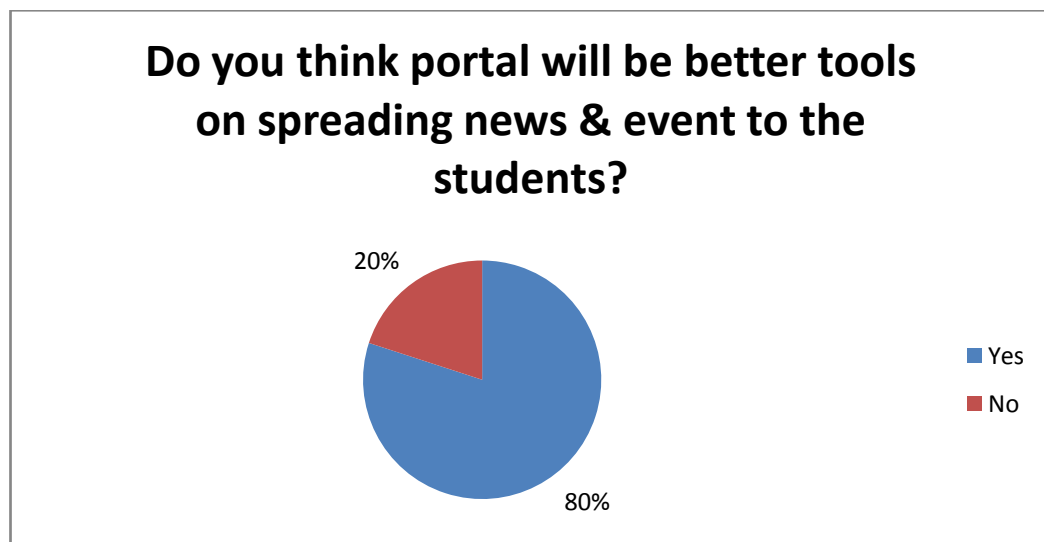


Figure 11: Feedback of lecturers/staffs on spreading news and event in the portal

This question been asked base on the proposed functionality of the portal which is update, provide news and event to the students in the portal. Most of the respondents (80%) agreed that spreading news and events in the portal are better than the current method. It shows that lecturers or staffs will use this functionality as a tool for them to spread news.

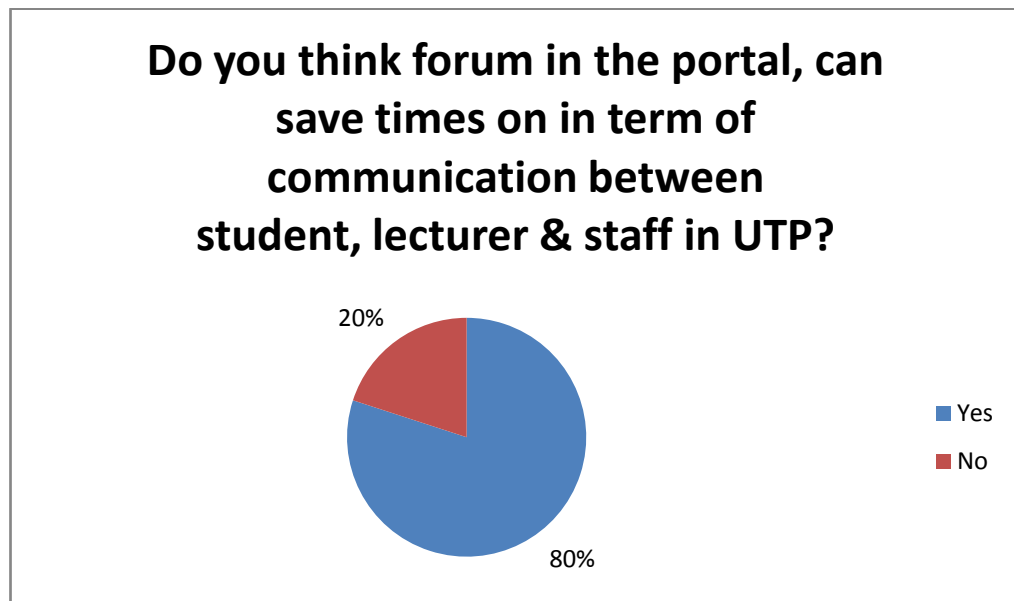


Figure 12: Feedback of respondents on online forum functionality

One of the proposed functionality is the online forum which enables students, lecturers and staffs to interact with each others. 80% of the respondents agreed that it will save more times interacting using online forum. It can be conclude that portal can act as a communication tools which can save more times and efforts to communicate.

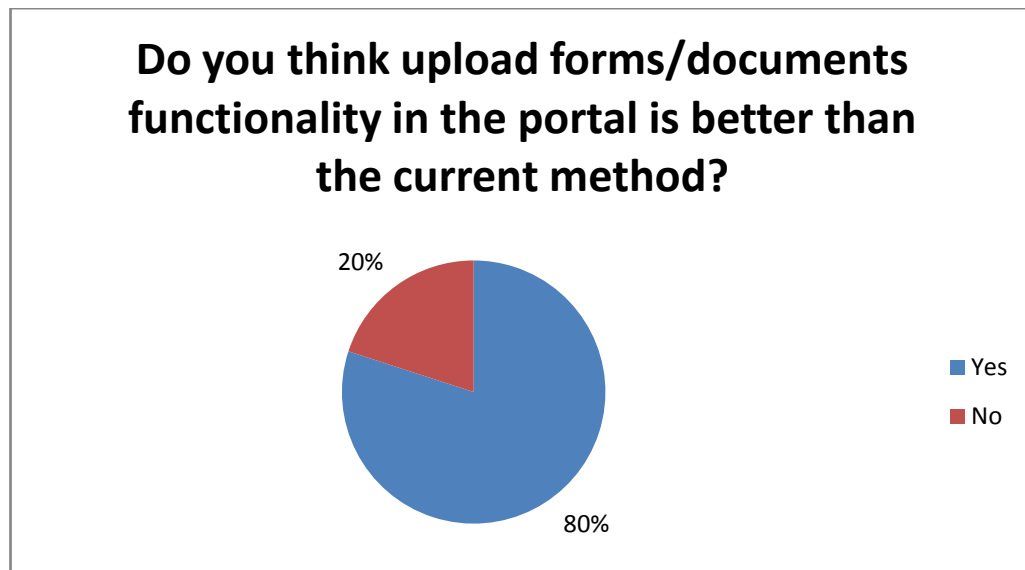


Figure 13: Respondent's feedback on upload documents functionality

The author created this question to determine whether upload forms and documents in the portal will be better than the current method that they used. Most of the respondent (80%) agreed that upload documents in the portal will better than the other method. Therefore, this functionality can be applied in the web portal.

Subsequently, the author discussed on the feedback of the respondents who currently holding a position as student. The question are mostly regarding on the propose functionality for students in the web portal.

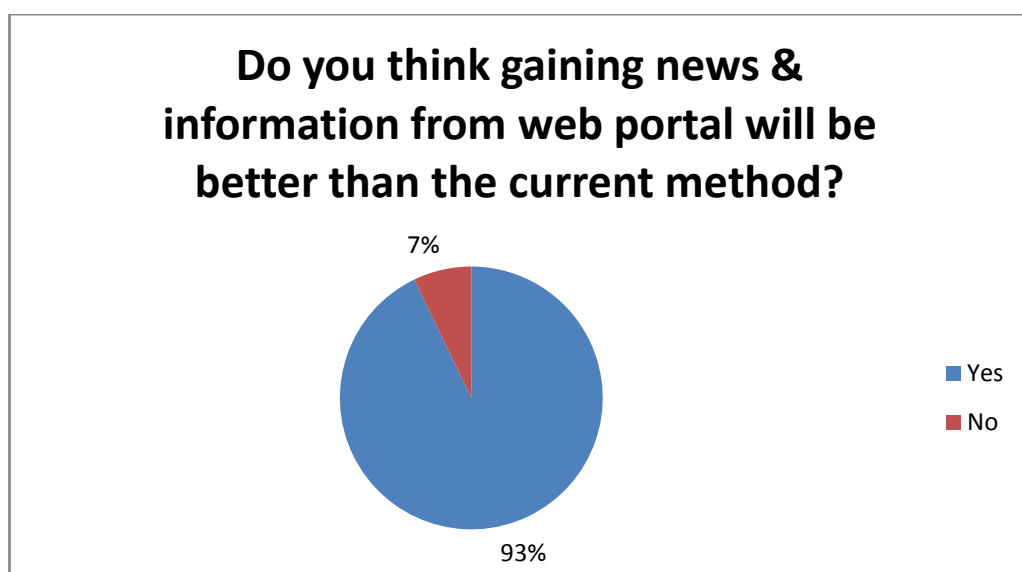


Figure 14: Respondent's feedback on information display in the web portal.

Most of the respondent (93%) agreed that gaining news and information from the web portal will better than the current method that they used. It shows that student will more comfortable using portal in order to gain news and information. The news and information also will be more accurate because it will upload and publish by trusted and reliable parties.

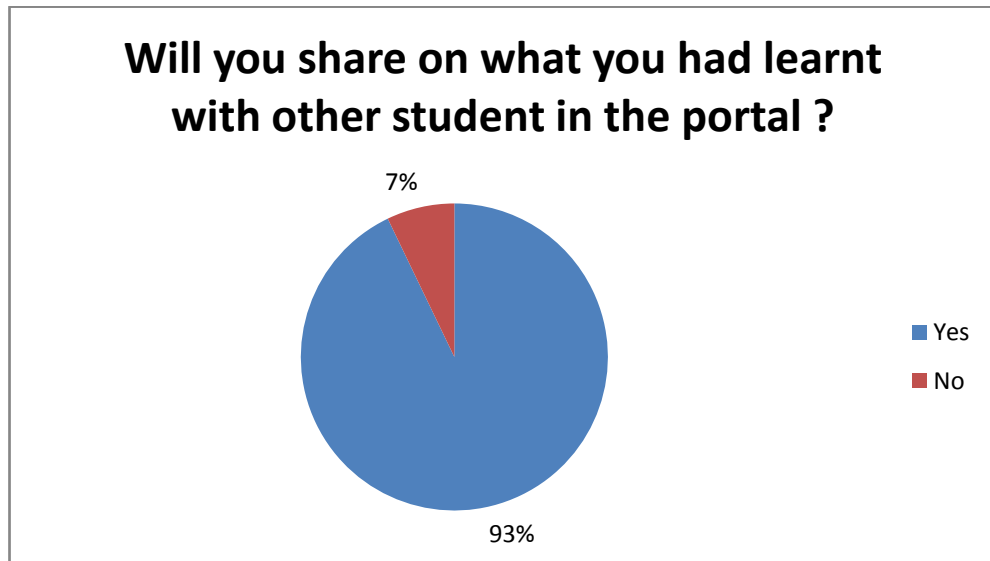


Figure 15: Respondent's feedback on knowledge sharing in the web portal

As mentioned on the above result, knowledge sharing is important within the organization. The question above ask on the student who willing to share their knowledge with others in online. This question also to identify is it necessary to add in this functionality. Most of the respondent gave a positive impact on the question by agree to share their knowledge in the portal with others. Therefore, there will be users to use and to practices this knowledge sharing in the web portal developed by the author.

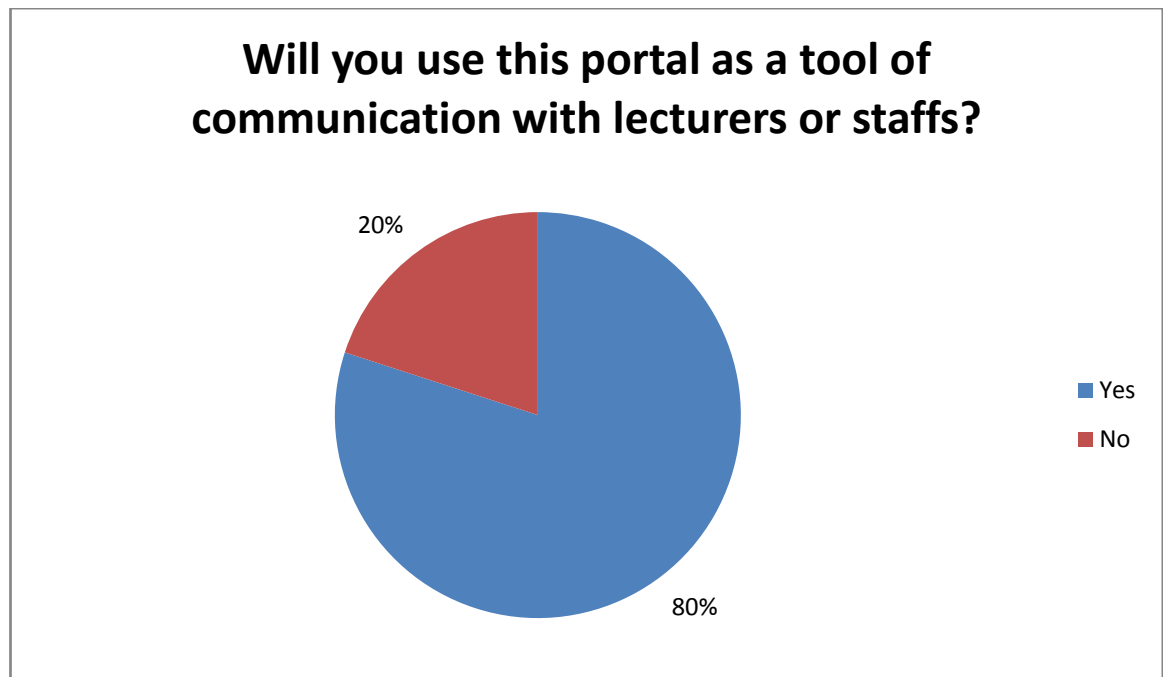


Figure 16: Respondent's feedback on online forum functionality

This functionality will not be executed without any users. So the author had conducting a survey to determine if there any user will use this functionality. Most of the respondents had agreed that they will use online forum in the portal as a tool of communication with lecturers or staffs.

4.1.2 Analysis on the Design for the Web Portal.

In this section, the author will discuss on the design that will be implement in this web portal. The design of this web portal includes the colour selection, the font selection, the position of the menu tab and many others criteria. To gain the design for this web portal, the author had done research in the internet on the criteria for this web portal and some benchmarking from others universities website.

The author starts with the colour selection for this web portal. Based on research in the internet, there are experts who gave their opinion on the colour selection for the website. Cannon (2012) stated that the contrast of colours can reduce eyestrain and can gain user attention on a page. He also mentioned that the example of contrast is an effective selection of background and text colour. Below are the examples of selection of background and text colour.

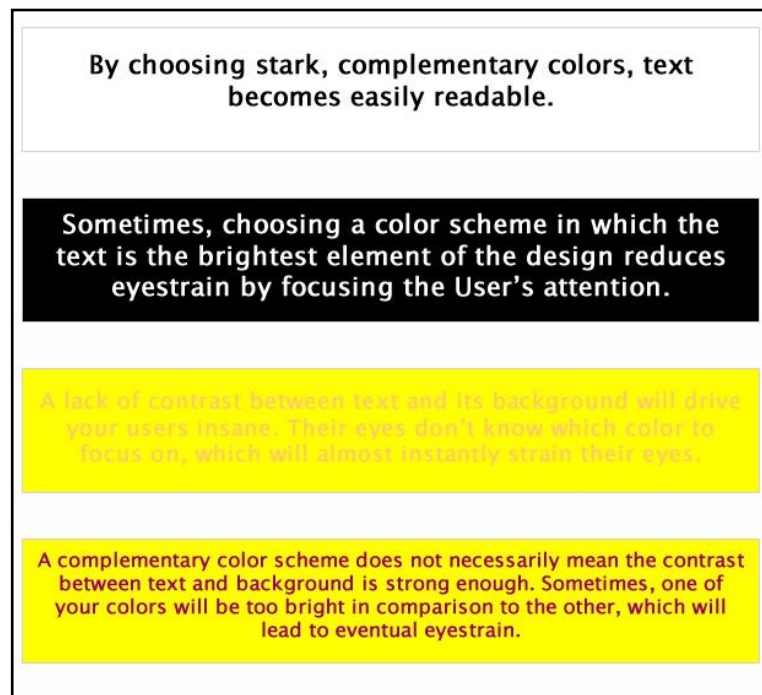


Figure 17: Examples of selection of background and text colour

Based on the figure above, the best practice is usually to choose a very light colour for the background and a very dark colour for the text itself. It is because the text will be easily readable and guide the reader attention.

Next the author moves to font selection for the web portal. According to the research in the internet, it stated that fonts not seem as important a design element as colour, but it must take as consideration into the selection when creating a website. The fonts will convey important information about the company, products and services but the right fonts will contribute the website overall mood and visitor experience. There are many fonts available but the best fonts to use are when the fonts are compatible with any operating system platform. Sarah (2010) had stated the fonts that compatible to any operating system platforms. Below are the fonts that most compatible.

- Georgia
- Palatino Linotype
- Times New Roman
- Arial
- Trebuchet MS

- Verdana
- Comic Sans MS
- Courier New

Other than that, the position of the menu tab has to take into consideration on designing a web portal. Some website places it on the top of the page and some others website place on the right or the left side of page but which one is the appropriate position to be place in the web portal? To identify which one the best position, the author had conduct a review on web templates that been provided in WebThemez website. Below are the website template provided by WebThemez

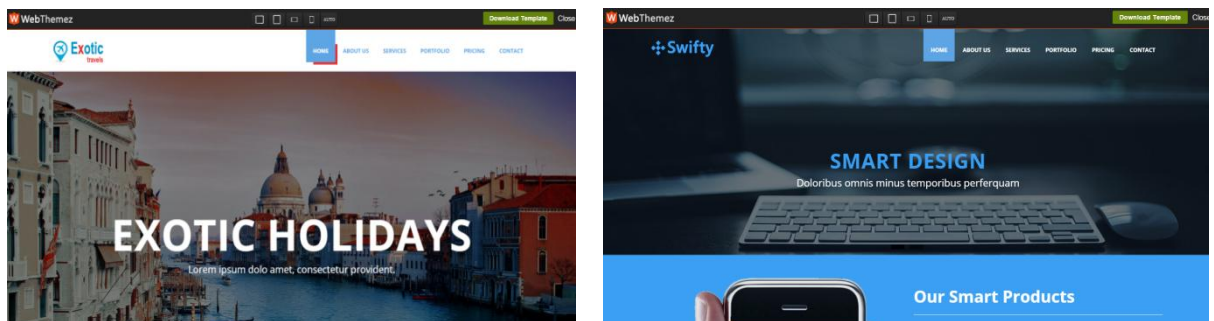


Figure 18: Webthemez Templates

As the figure show, most of the templates display the menu tab at the top of the page. Therefore menu tab at the top of the page is the most appropriate position and most of the developers prefer to use template that display menu tab at the top of the page.

Other than doing research in the internet, the author had done some benchmarking from others universities postgraduate portal. Benchmarking is a measurement of the quality of an organization or institute policies, products, programs, strategies and their comparison with standard measurements, or similar measurements of its peers. The reason of this benchmarking is to analyze how other universities design their postgraduate portal. The author had chosen postgraduate portal from various universities and most of them are local universities. Below are the screenshot of different webpage of others universities postgraduate portal.



Figure 19: Universiti Malaysia Sabah Postgraduate Portal



Figure 20: Universiti Teknologi Malaysia School of Graduate Studies



Figure 21: Universiti Sains Malaysia Institute of Postgraduate Studies

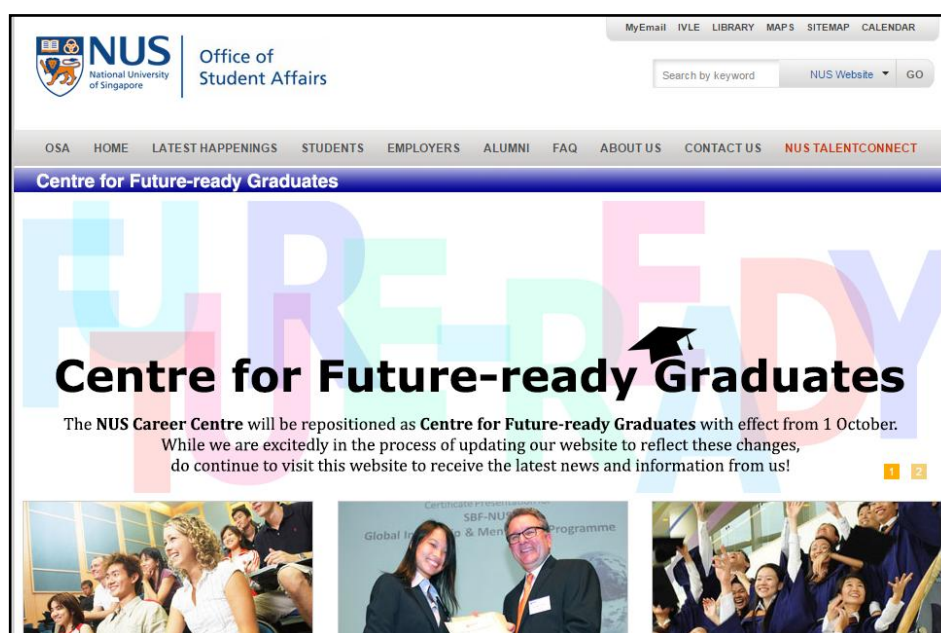


Figure 22: National University of Singapore

From the review of the entire chosen postgraduate portal, the author had made comparison on the element of design. Base on the comparison, the author can select the best elements that can be implementing in UTP Postgraduate Portal. Below are the table of comparison for every chosen universities postgraduate website.

Element of Design	Universiti Malaysia Sabah	Universiti Teknologi Malaysia	Universiti Sains Malaysia	National University of Singapore
Background Color	Bright	Bright	Bright	Bright
Text Color	Mixed (Bright & Dark Color)	Mixed (Bright & Dark Color)	Mixed (Bright & Dark Color)	Mixed (Bright & Dark Color)
Type of Font	<ul style="list-style-type: none"> • Arial • Helvetica 	<ul style="list-style-type: none"> • Arial 	<ul style="list-style-type: none"> • Roboto Condensed 	<ul style="list-style-type: none"> • Arial
Position of Menu Tabs	Top & Left side of the page	Top of the page	Top of the page	Top of the page
Slideshow	Included	Included	Included	Included

Table 4: Comparison between other Universities Postgraduate Portal

From the above table, it shows the comparison for every universities website in term of the elements of design. As we can see, there are more similarities rather than differences in term of the elements between every universities postgraduate portal. Most of the universities choose a bright colour as their background colour while the text colour had been mixed with dark and bright colour. Meanwhile, the type of font that they are using is Arial which is the standard fonts for every universities web portal and this font is easily readable. Besides that, every university chose to display their menus tab at the top of the page. It shows that top is the appropriate position for the menus tab to be display. Lastly, every university provided slideshow in order to display the announcement or news. This slideshow is not as important as other elements but it make the web portal looks more interesting and can gain user attentions.

Based on the research in the internet and benchmarking from other universities postgraduate website, the author had a clear view on what elements of

design to be implementing in the UTP Postgraduate Portal. Table below shows on the chosen elements to be implementing in this project.

Element of Design	
Background Colour	Bright
Text Colour	Mixed (Bright & Dark Color)
Type of Font	• Arial
Position of Menu Tabs	Top of the page
Slideshow	Included

Table 5: Chosen elements for the UTP Postgraduate Portal

For the next section, the author will show and explain the actual product based on the chosen elements.

4.2 Actual Product

4.2.1 Development Tools

Hardware

- Laptop with average requirement (Intel Core i5, 4.00GB RAM, 64-BIT Operating System, etc.)
- Server with good stability and performance.
- Internet connection for allow access to the server.

Software

- Operating system: Windows
- Database: phpMyAdmin
- Server side: Apache
- Web template: Webthemez

- Online forum plug-in: MUUT

After the analysis of the functionalities and design had been done, the author had come out with the actual product which is UTP Postgraduate Portal itself. In this section, the author will explain in detail on how this actual product works. Before the author explains in detail, this project consists of two parts which is UTP Postgraduate Official Page and PG-Elearning. There are different functionalities between these two parts of the project. The different functionalities depend on the user acts for. In this project, there are three types of users which are visitors or future postgraduate students, current postgraduate students and administrator or staff. Below are the use case diagrams and activity diagrams of this project.

4.2.2 Use Case Diagram

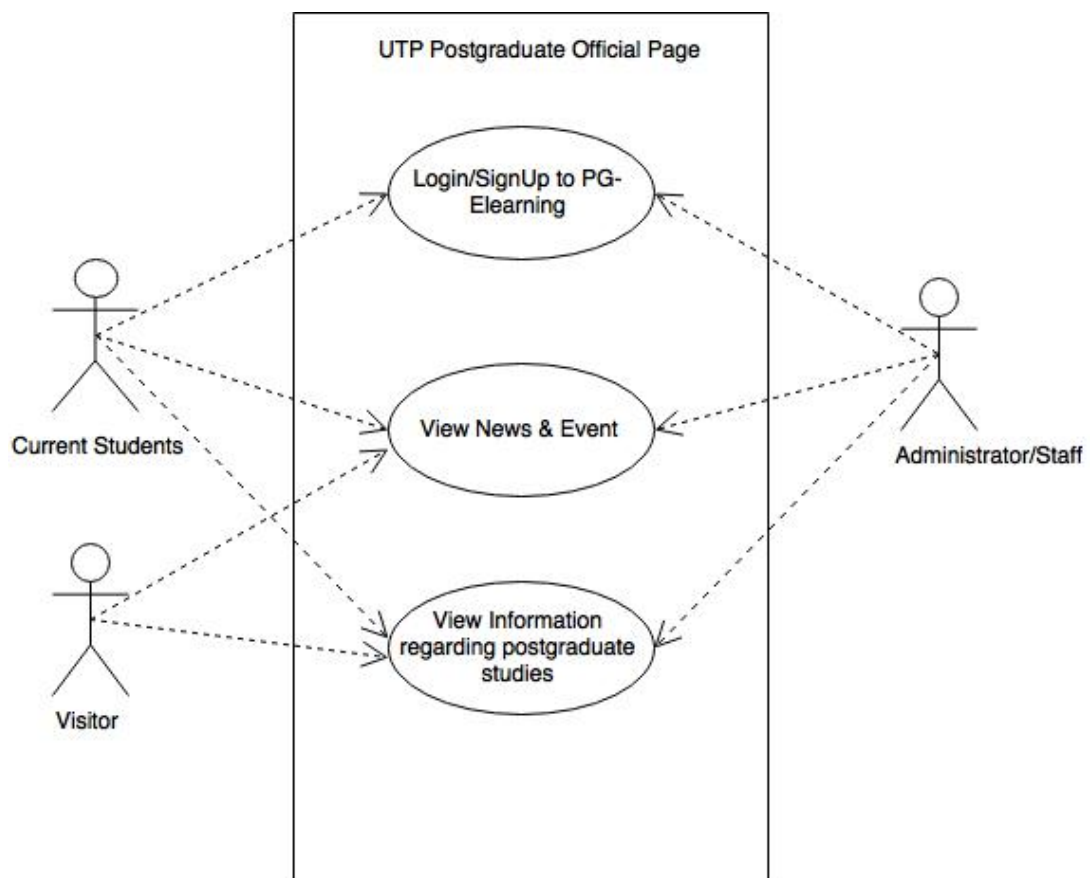


Figure 23: Use Case Diagram for UTP Postgraduate Official Page

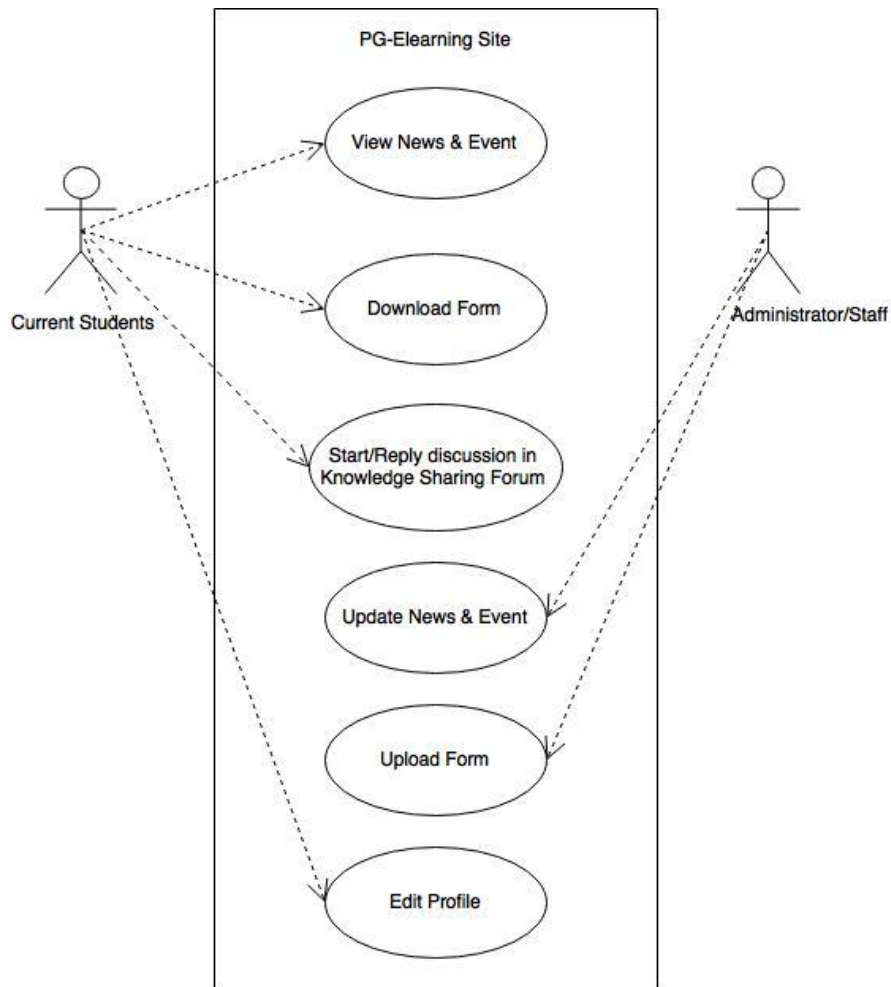


Figure 24: Use case diagram for PG-ELearning site

There are two use case diagrams provided in this project. The first use case diagram is regarding UTP Postgraduate Official Page which included three actors. The three actors are visitors, current students and administrator. The current students and administrator have access to all the functionalities involved in this use case diagram while the visitors only have access on two functionalities which are view news and views information regarding postgraduate studies. The second use case diagram in this project is regarding PG-ELearning site. In this use case diagram, there are two actors which are current students and administrator. Both of the actors have access to different functionalities. Current students have access to several functionalities such as view news, download forms, online forum and edit student profile while the administrator have access to update news and upload forms to PG-ELearning site.

4.2.3 Activity Diagram

Activity diagram is divided into three which they are separated based on visitors, current students and administrator view.

Activity Diagram (Visitor View)

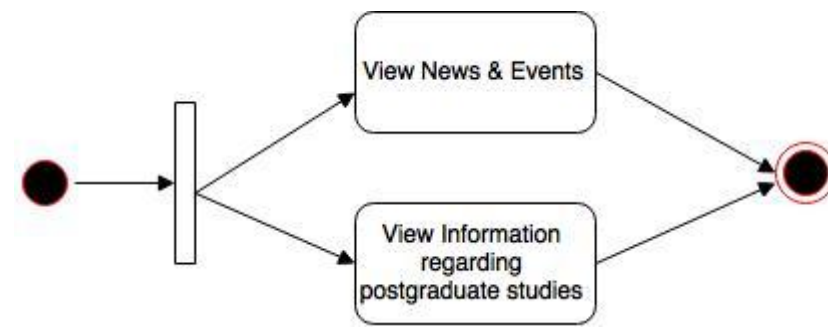


Figure 25: Activity Diagram for Visitors Point of View

From the visitors point of view, the flows of activities executed in the UTP Postgraduate Official Page. It started with the visitors to choose whether to view news and events and to view information regarding postgraduate studies.

Activity Diagram (Current Students View)

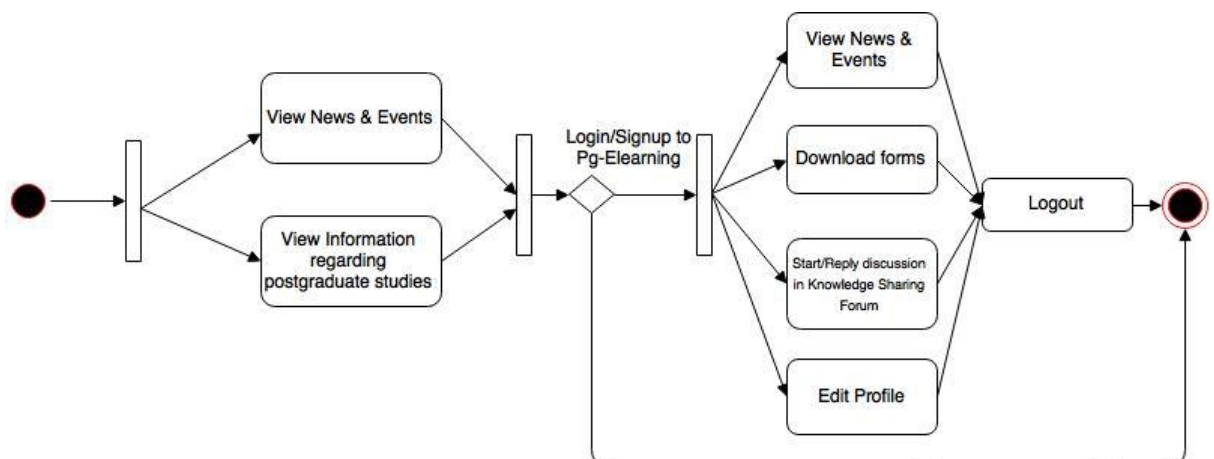


Figure 26: Activity Diagram for Current Students Point of View

The above figure shows the activity diagram from the current student's point of view. Student will start on choosing to view news and to view information regarding postgraduate studies in the UTP Postgraduate Official page. In order to enter the PG-ELearning site, the current students need to login or sign up and it will directly go to the PG-ELearning site. After enter to the site, current student able to choose to execute any functionality provided in the site such as view news, download form, online forum and edit their profile. Lastly, current students have to logout from the PG-ELearning site.

Activity Diagram (Administrator View)

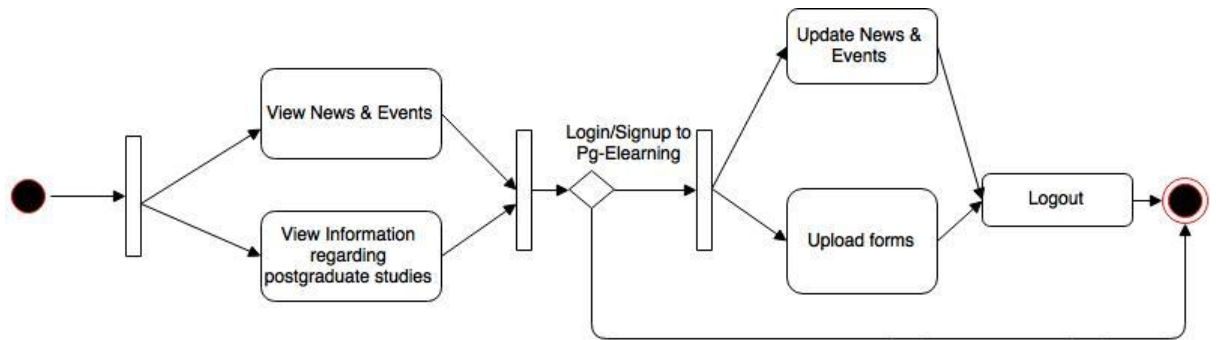


Figure 27: Activity Diagram for Administrator Point of View

The above figure shows the activity diagram from the administrator point of view. Administrator will start on choosing to view news and to view information regarding postgraduate studies in the UTP Postgraduate Official page. In order to enter the PG-ELearning site as an administrator, login is needed and it will directly go to the PG-ELearning site. After entering to the site, administrator able to choose to execute any functionality provided in the site such as update news and upload forms. Lastly administrator has to logout from the PG-ELearning site.

4.2.4 System Architecture

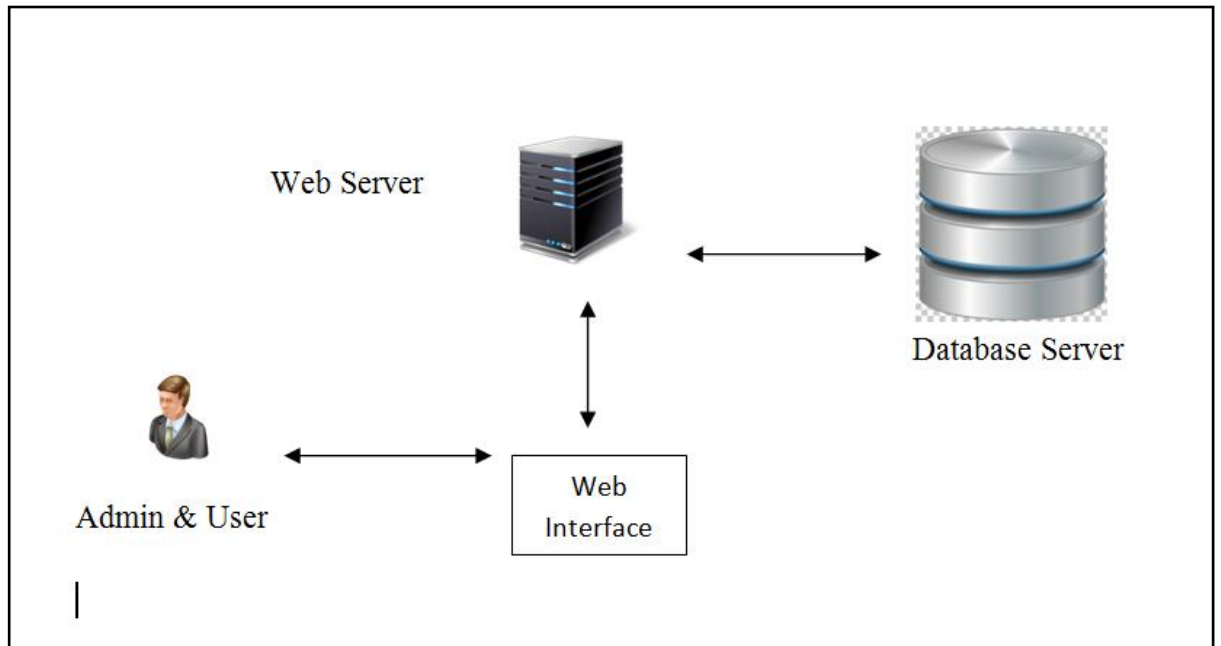


Figure 28: System Architecture for this UTP Postgraduate Portal

The system architecture for UTP Postgraduate Portal consists of several components such as page server and comment server, the reader or the user, application server and the administrator.

There is one machine or device is dedicated to process the information and serving pages from the user in this system architecture. The second machine purpose is to service user authoring content, modify data and execute others administrative function by administrator. The reason of separated server is to insulate the application server from load generated by trackback traffic and spikes in data.

As mentioned before, there are two part of this UTP Postgraduate Portal which are the UTP Postgraduate Official Page and PG-ELearning site. The author starts by explaining in detail regarding UTP Postgraduate Official Page. For this page there only three functionalities provided which are viewing news, viewing information regarding postgraduate studies in UTP and login or sign up function for entering the PG-ELearning site. For view functions, it can be access publicly which means all actors in this project can view the information in the UTP Postgraduate Official Page. Moreover, the login and sign up function are strictly only for current

postgraduate students and administrator. Figure below shows the screenshot the UTP Postgraduate Official Page.

4.2.5 Explanation of the Actual Product

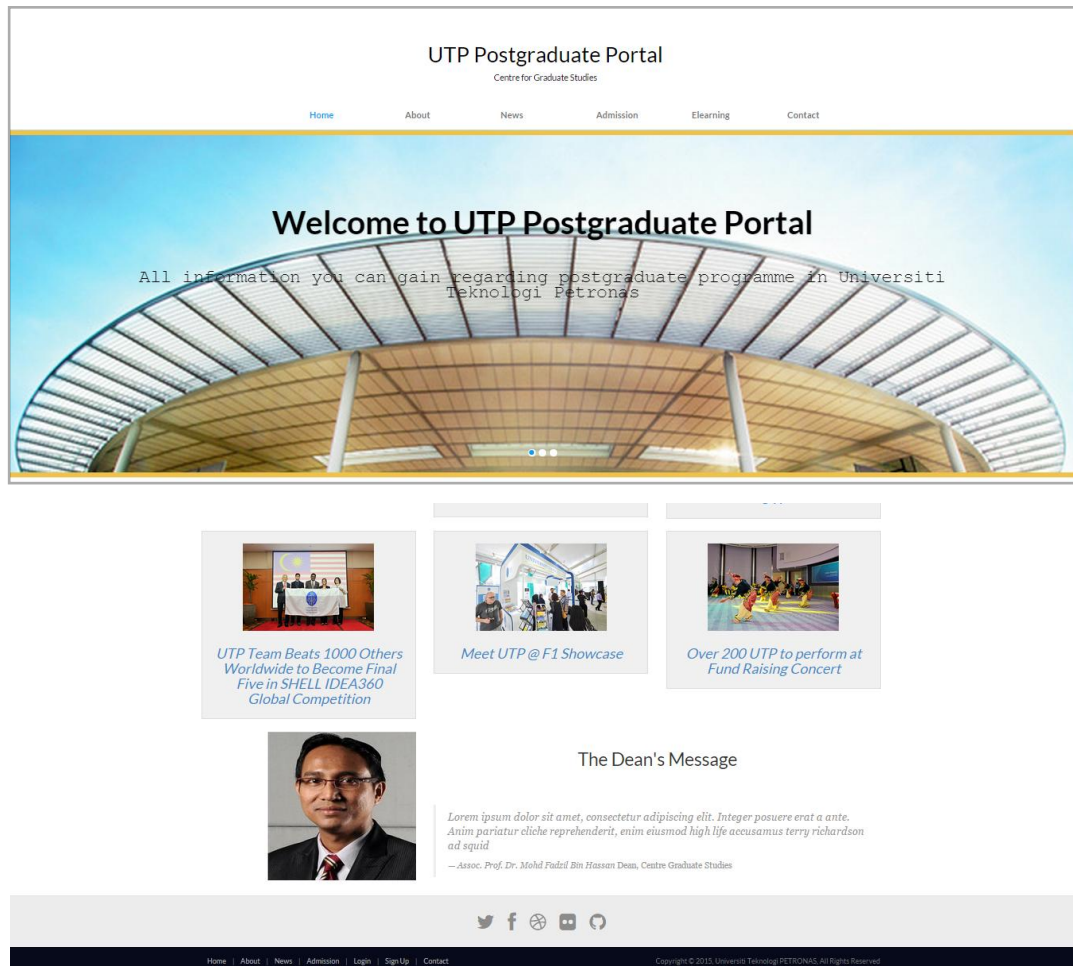


Figure 29: UTP Postgraduate Official Page/ Home Page

At the top of this UTP Postgraduate Official page, there is a title called UTP Postgraduate Portal Center for Graduate Studies and also have six differences menus tab with differences activities. At the center of the page, there a slideshow that moves every 3 second. This slideshow has been built in order for Center for Graduate Studies department to show important events or announcements. Below of the slideshow, there are news and event shortcut where user can view current news in Home page. By clicking the news title link, it will directly move user to another page

which consist full content of the news. At the below of the home page, there is a picture of the current Dean of Center for Graduate Studies and his message.

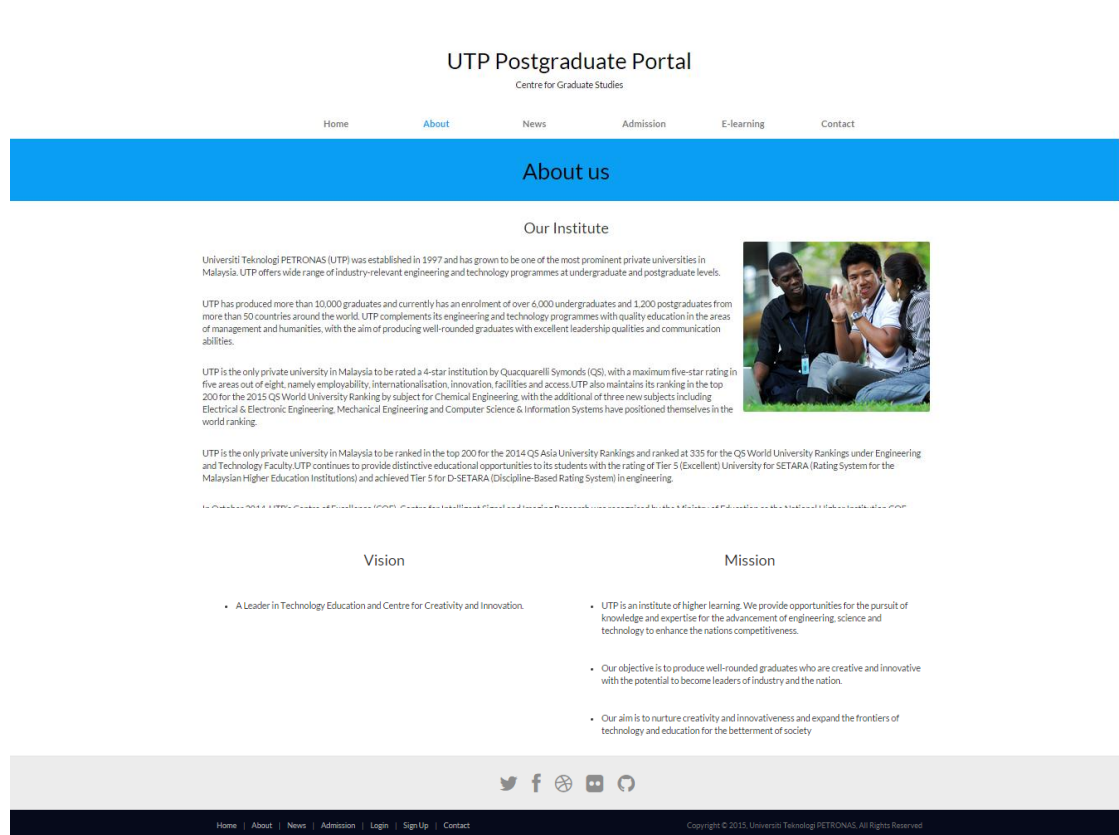


Figure 30: About Us Page

Figure above shows the second menu tab of this Postgraduate Official Page which is “About Us”. In this page, there is information display regarding Universiti Teknologi PETRONAS background and Center for Graduate Studies. Moreover, there are also vision and mission stated in this page.

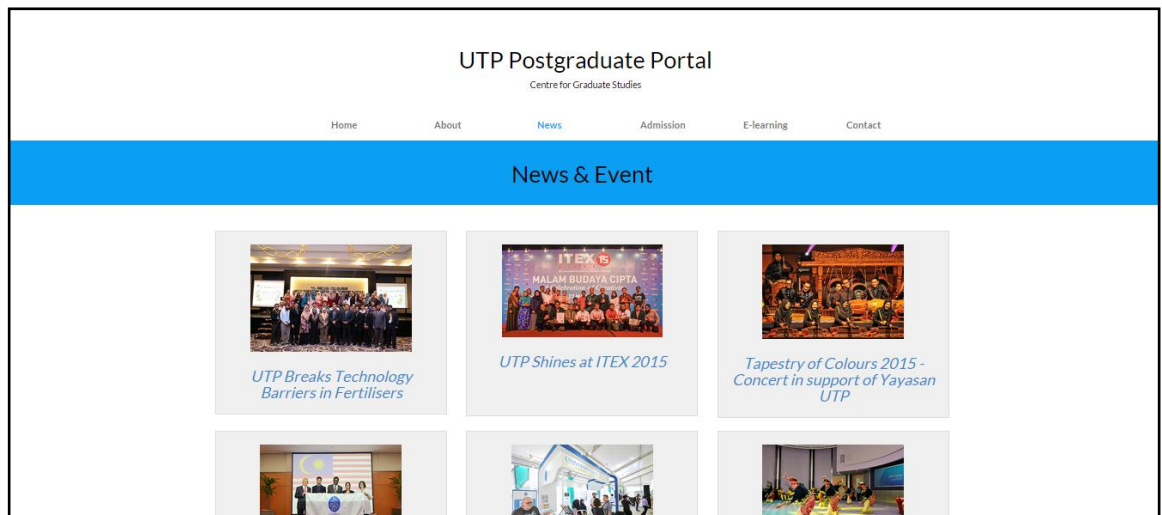


Figure 31: News & Event page

“News” is the third menu tab of this website. In this page, there will be all news and event regarding UTP Postgraduate Studies. Just simply click on the news menu tab, it will show the users all the news and events. Users have to click on the news title link to read the full content of the news.

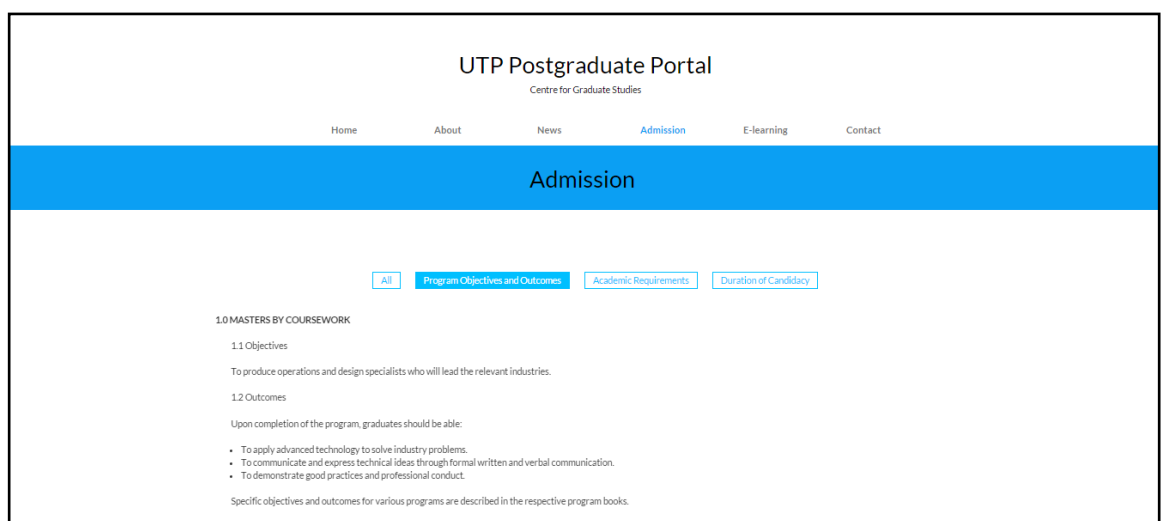


Figure 32: Admission Page

Figure above shows the forth menu tab for this website which is “Admission”. In this page, the author provided information regarding admission for postgraduate studies in UTP. It divided into four divisions which are All, Program Objectives and Outcomes, Academic Requirement and Duration of Candidacy. The division is made for user to easily to search on information they need.

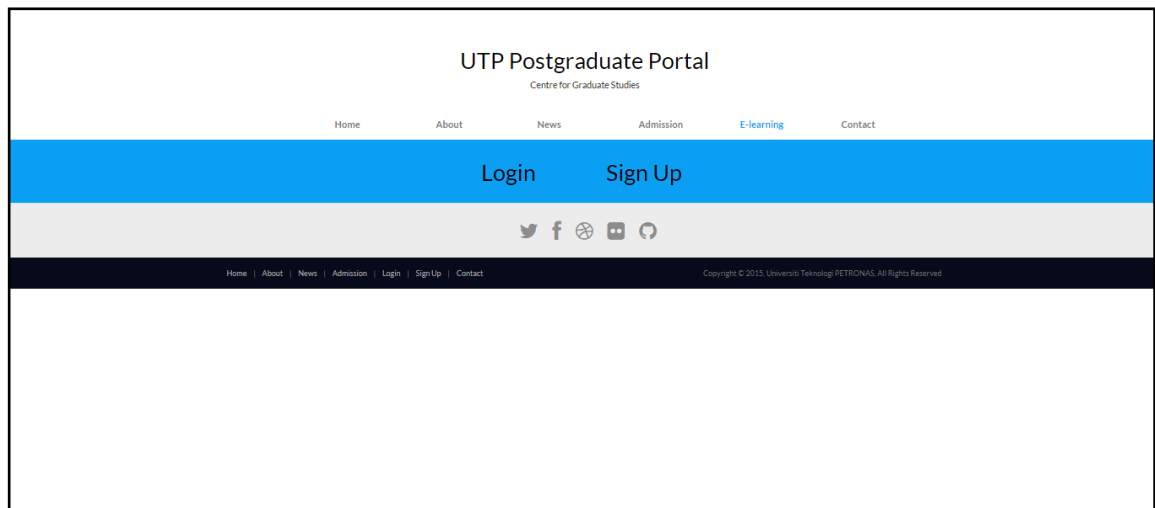


Figure 33: E-Learning Menu Tab

In this E-learning menu tab, it will display two links which are Login and Sign Up. Login link will direct to the Login Page while Sign Up links will direct to the Sign up Page. Below figures shows Login page and Sign Up page.

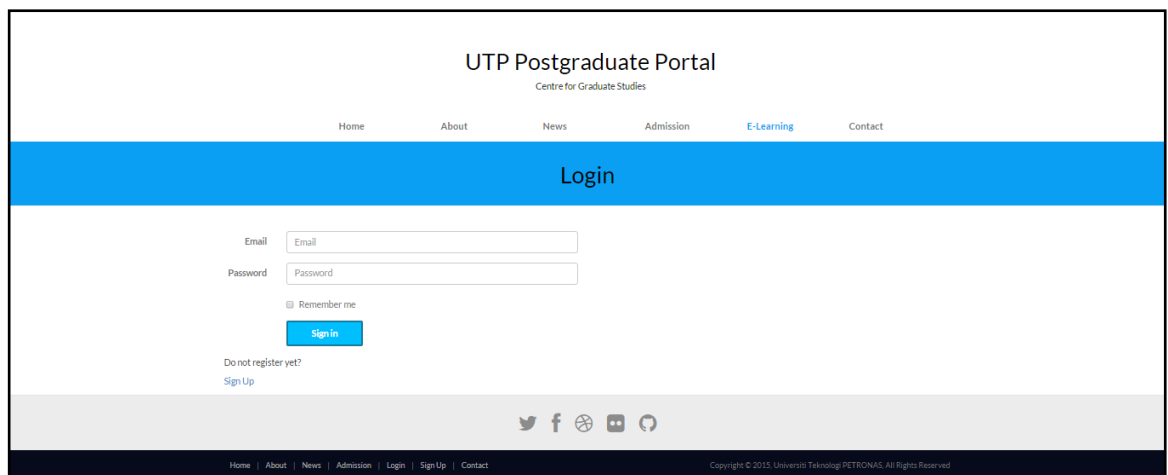


Figure 34: Login Page

This page provided two textbox which require user to fill in their registered email and password to enter the PG-ELearning site. By clicking the Log In button user will directly go to PG-ELearning site with the correct email and password. If the user put the wrong email or password, an error message will be display. At the below of the login button, there are a signup link which it directly to sign up page if the user does not yet register.

UTP Postgraduate Portal
Centre for Graduate Studies

[Home](#)
[About](#)
[News](#)
[Admission](#)
[E-learning](#)
[Contact](#)

Sign Up

Name:

Gender:

Email:

Password:
Minimum of 6 characters

Contact No:

Matrix No:

Department:

Confirmed password:

[Register](#)

[Already sign up?](#)
[Log In](#)

Figure 35: Sign Up Page

Figure above shows a sign up page which consist several textbox to be fill in by the user to register for PG-ELearning site purpose. By clicking register button, all the information that been fill in by the user will put in database and user have access to login to the PG-ELearning site. Below of the register button, there is login link which directly to the login page.

UTP Postgraduate Portal
Centre for Graduate Studies

[Home](#)
[About](#)
[News](#)
[Admission](#)
[E-learning](#)
[Contact](#)

Contact us

Your Message

Name:

Email:

Subject:

Message:

[Send message](#)

Office Address

Address
Bandar Seri Iskandar, 31750 Tronoh,
Perak, Malaysia

Email
utp@petronas.com.my

Phone
+60 5-368 8000

Timings

Monday - Friday
08:00 AM - 5:00 PM

Saturday
Closed

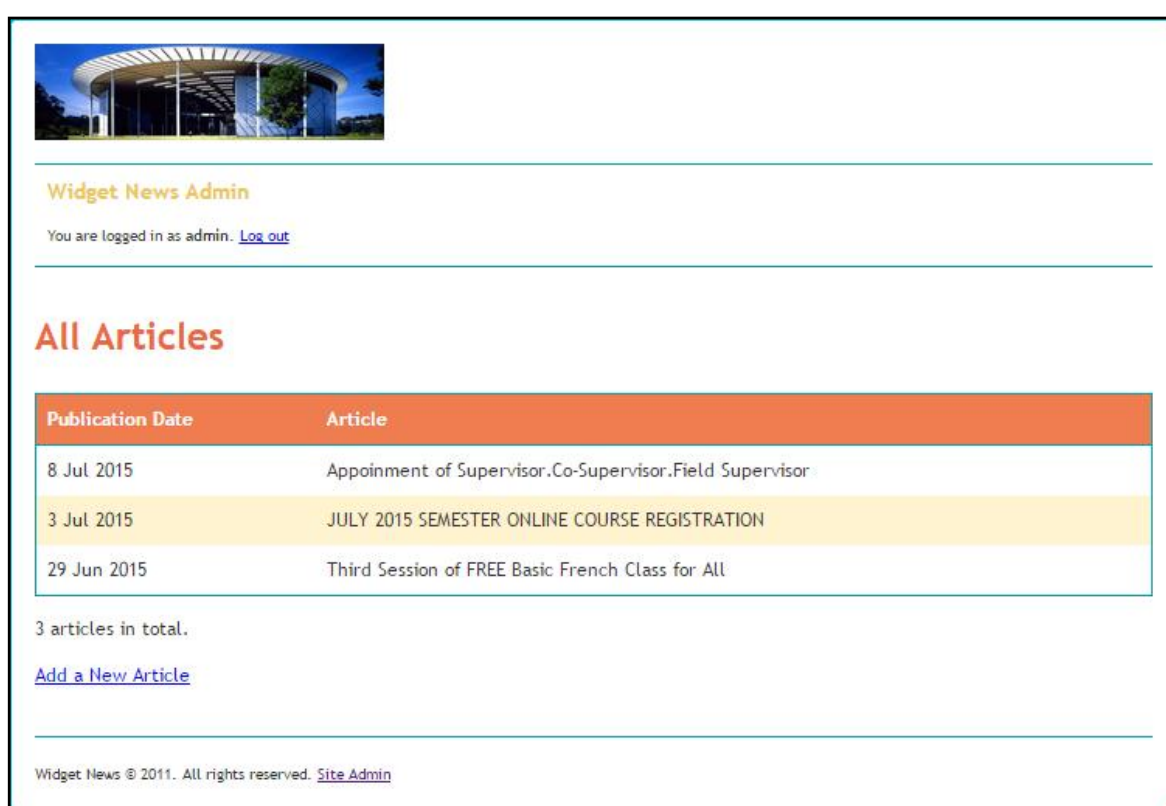
Sunday
Closed

Figure 36: Contact Us Page

The last menu tab in the UTP Postgraduate Official page is Contact Us. In this page users can gain detail on how to connect with UTP. Details such as address, email and phone number are provided in this page.

Now the author moves to the second part of this web portal which is PG-ELearning site. In this site, there are numerous functionalities which are different from the UTP Postgraduate Official Website and this site is strictly only for current postgraduate students and Center for Graduate Studies staffs which act as administrator. To demonstrate, the author had divided into administrator view and student view.

The author starts with administrator view. Administrator can execute several functionalities in this PG-ELearning site such as update news and event and upload form or files



The screenshot displays the 'Widget News Admin' interface. At the top, there is a header image of a modern building. Below the header, a message states 'You are logged in as admin.' with a 'Log out' link. The main section is titled 'All Articles' and contains a table with three rows of article data. Below the table, it indicates '3 articles in total.' and provides a link to 'Add a New Article'. The footer shows the copyright notice 'Widget News © 2011. All rights reserved.' and a 'Site Admin' link.

Publication Date	Article
8 Jul 2015	Appoinment of Supervisor.Co-Supervisor.Field Supervisor
3 Jul 2015	JULY 2015 SEMESTER ONLINE COURSE REGISTRATION
29 Jun 2015	Third Session of FREE Basic French Class for All

Figure 37: Admin Page for PG-ELearning

Figure above shows the admin page for PG-ELearning Page. As mentioned before administrator can upload news and event and can upload files. In the figure shows the news that been upload by the administrator and the news will automatically update in the student's news page for viewing. To add new news or events, administrator has to click the "Add a New Article" link which it will be directly to Add New Article page.

Widget News Admin

You are logged in as admin. [Log out](#)

New Article

Article Title:

Article Summary:

Article Content:

B **I** Source

Publication Date:

New Image No file chosen

Figure 38: Add New Article Page

This is the page where administrator will add new news. Administrator be provided several textboxes to be fill in such as title of the news, Summary of the news, full content of the news, and publication date. There are “choose file” button which user can upload image to the news.

Besides that, in Add New Article page, administrator can upload files or documents. All type of documents such as Word, Excel and PDF can be upload. The documents that been upload will appear in the student news page where student can download the documents. By pressing a button between image button and source button, administrator can upload the documents. Below are the screenshot of upload document to the PG-ELearning site.

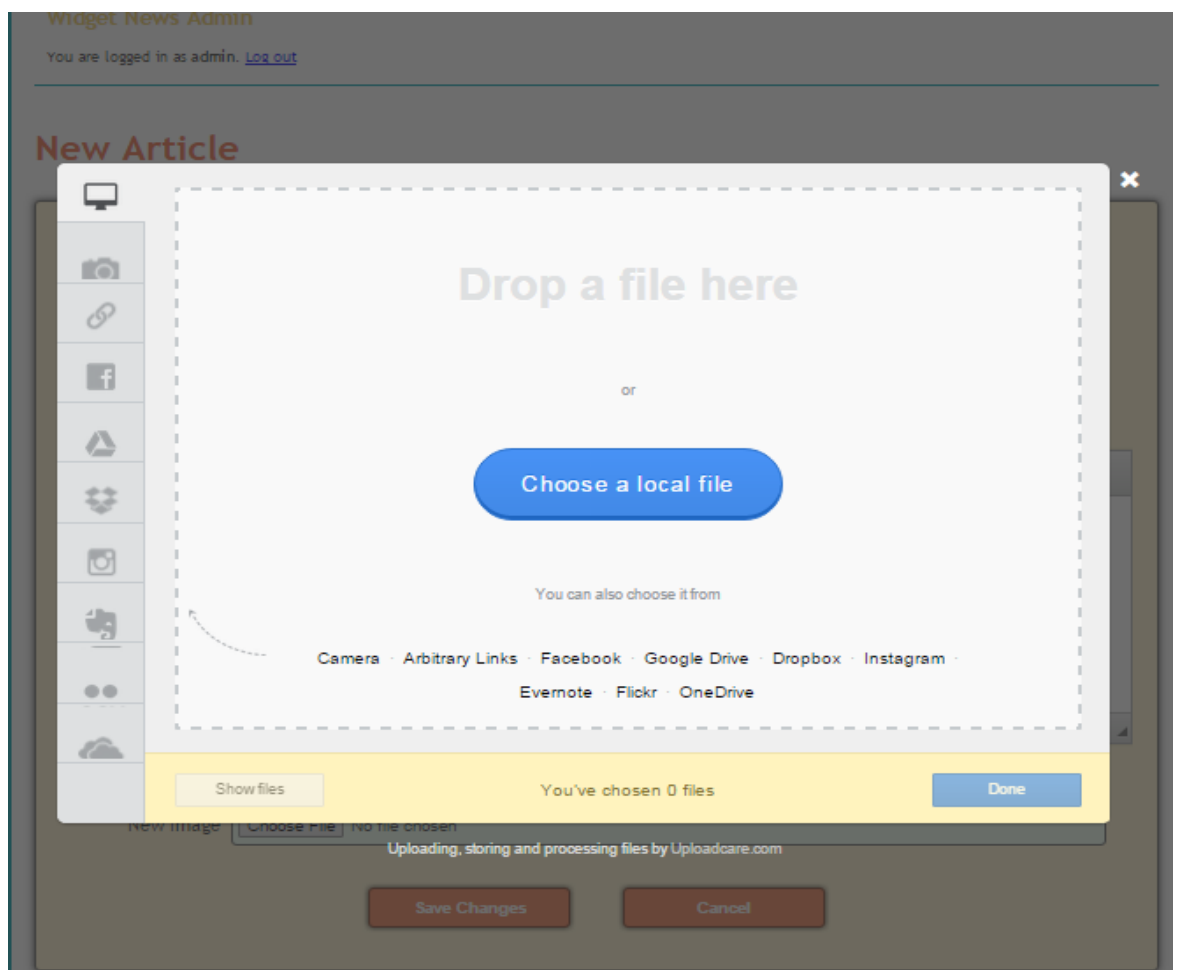


Figure 39: Screenshot of upload document into the PG-ELearning site.

Now the author will explain about student layout and functionalities in the PG-ELearning site. There are several functionalities provided for students in this PG-ELearning site such as view news and events, download files, update personal profile, start or reply conversation in knowledge sharing forum. Below is the Home page of student PG-ELearning page.

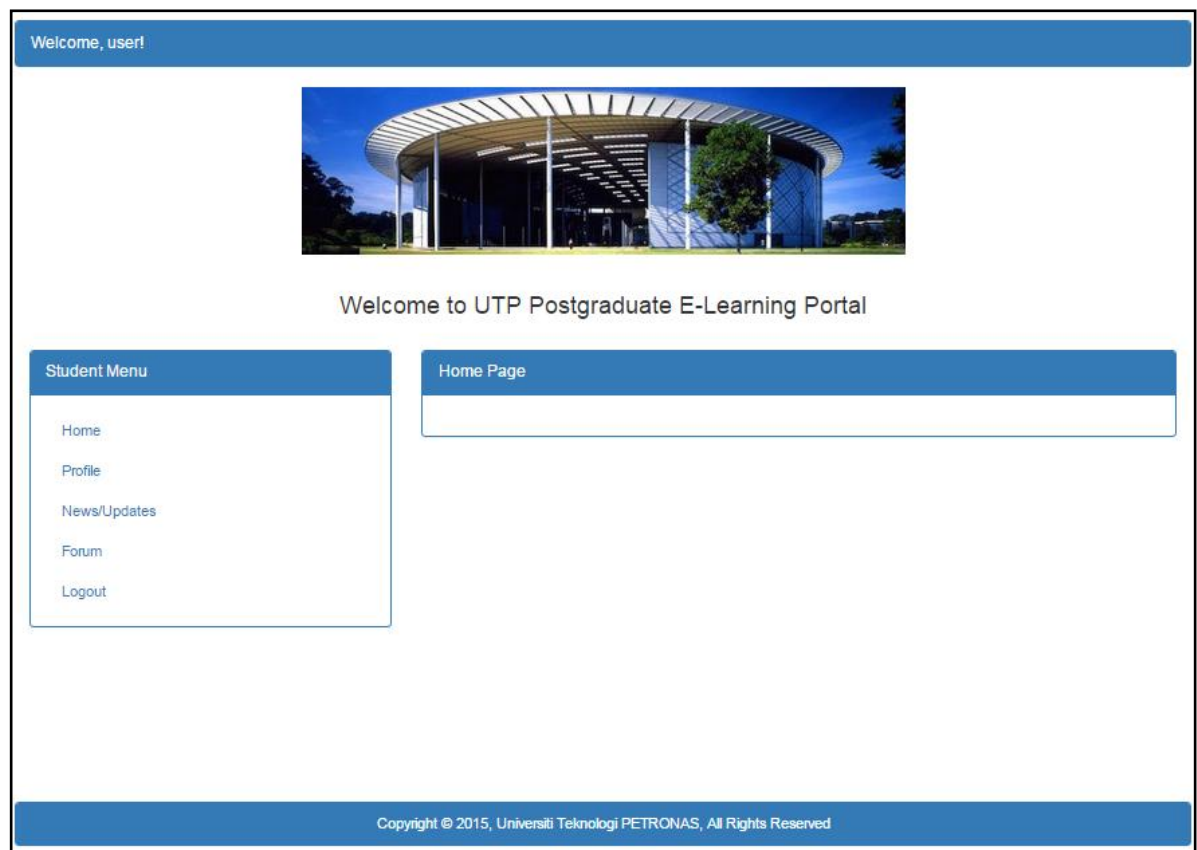



Figure 40: PG-ELearning Home Page for Student.

Figure above show the home page for student in PG-ELearning. This page will appear if the user have successful login from the UTP Postgraduate Official page. In this page, student will see a welcoming message and a box named "Student Menu" which consist several menus such as Home, Profile, News & Update, Forum and Log Out. Students can exit the PG-ELearning page by clicking the logout button.

Welcome, user!



Welcome to UTP Postgraduate E-Learning Portal

Profile

[Home](#)
[Profile](#)
[News/Updates](#)
[Forum](#)
[Logout](#)

Student Profile Page

Name

Ammar

Matrix ID

IT16405

Gender

Male

▼

Department

Computer and Information Sciences

▼

Phone

0134466350

Email

ammar@gmail.com

Password

Minimum of 6 characters

Save Changes

Cancel

Copyright © 2015, Universiti Teknologi PETRONAS, All Rights Reserved

Figure 41: Student Profile Page

When user click on Profile Menu Tab, a box named “Student Profile Page” will appear contain student’s information and students are allowed to change their information. Just by changing the information in the textboxes given and click on save change button, student information will be update in the database. Next the author move to news and update page where user or student need to click the on the “News/Update” link.



Figure 42: News & Update Page

In this News & Update Page, student will view news that been posted by administrator. By clicking the title of the news link, student can view full content of the news. The other functionality in this page is student can download files or documents.



Figure 43: News that contains files.

Figure above shows on the news that contains files in it. Therefore, student can download the file by clicking the link of the file. The file will be downloading to the user's computer.

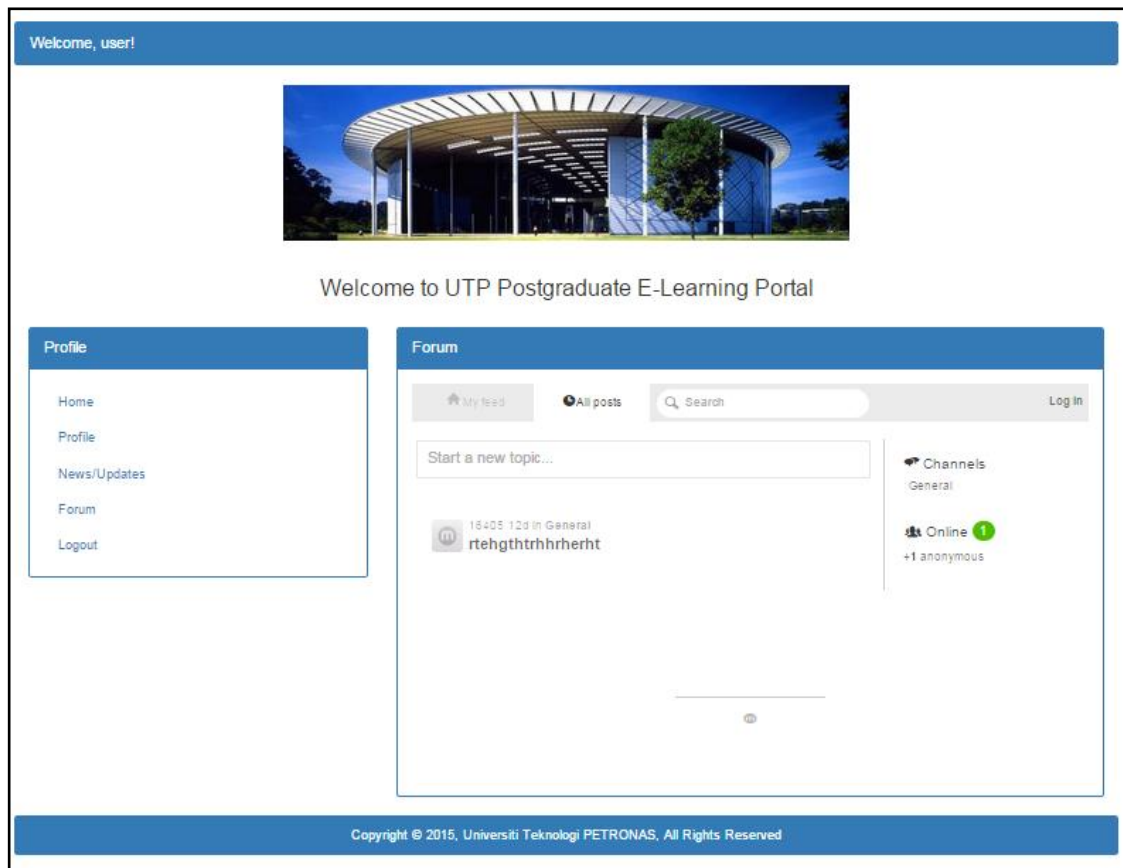


Figure 44: Knowledge Sharing Forum

Figure above show the last functionality for student in the PG-Elearning page which is knowledge sharing forum. This functionality is been create in order for student to interact with each other and share their knowledge. By clicking the forum link in the Menu box, MUUT forum will be appear in the box next to the menu box. In this forum, student can start and reply conversation.

4.3 Product Testing

4.3.1 Functionality Testing

The purpose of this functionality testing is to check the fulfilment of functionalities based on the requirement of this web portal. Table shows the data of each functions of this UTP Postgraduate Portal.

Table 3: Functionality Testing for Web Application

Location	Functions	Expected Outcome	Testing Frequency	Testing Result		Remark
				Success	Failure	
UTP Postgraduate Official Page	Home Button	Will directly to main page of the website	5	5	0	
UTP Postgraduate Official Page	About Button	Will directly to “About” page	5	5	0	
UTP Postgraduate Official Page	News Button	Will directly to “News & Event” page	5	5	0	
UTP Postgraduate Official Page	Admission Button	Will directly to “Admission” page	5	5	0	
UTP Postgraduate Official Page	E-Learning Button	Will display a page with a Login and Sign Up button	5	5	0	
UTP	Contact	Will directly	5	5	0	

Postgraduate Official Page	Button	to “Contact” page				
UTP Postgraduate Official Page	Slideshow	The content in the slideshow every 3 second	5	5	0	
UTP Postgraduate Official Page	News Title Link	It will directly to the specific page with full content of the news	5	5	0	
UTP Postgraduate Official Page	Program Objectives & Outcomes Tab	Will appear the regarding information.	5	5	0	
UTP Postgraduate Official Page	Academic Requirement Tab	Will appear the regarding information.	5	5	0	
UTP Postgraduate Official Page	Duration of Candidacy Tab	Will appear the regarding information.	5	5	0	
UTP Postgraduate Official Page	Login Link	Will directly go to login page	5	5	0	
UTP Postgraduate Official Page	Sign Up Link	Will directly to Sign Up page	5	5	0	
Login page	Email	Can key-in	5	5	0	

	textbox	alphabet, numeric and symbol				
Login Page	Password textbox	Can key-in alphabet, numeric and symbol	5	5	0	
UTP Postgraduate Official Page	Login button	Will directly go to E- learning portal	5	5	0	
UTP Postgraduate Official Page	Sign Up button	All of the key in information will be store in database	5	5	0	
Sign up Page	Name textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Sign up Page	Matrix No textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Sign up Page	Gender dropdown menu	Dropdown menu will be execute	5	5	0	
Sign up Page	Department dropdown menu	Dropdown menu will be execute	5	5	0	
Sign up Page	Email textbox	Can key-in alphabet, numeric and	5	5	0	

		symbol				
Sign up Page	Password textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Sign up Page	Confirmed password textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Sign up Page	Contact No textbox	Can key-in alphabet, numeric and symbol	5	5	0	
PG-Elearning site	Home button	Directly to E-Learning main page	5	5	0	
PG-Elearning site	Profile button	Appear a box contain all of the user information	5	5	0	
Student Profile Page	Name textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Student Profile Page	Matrix No textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Student Profile Page	Gender dropdown menu	Dropdown menu will be execute	5	5	0	
Student	Department	Dropdown	5	5	0	

Profile Page	dropdown menu	menu will be execute				
Student Profile Page	Phone textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Student Profile Page	Email textbox	A block to key in any value in it	5	5	0	
Student Profile Page	Password textbox	Can key-in alphabet, numeric and symbol	5	5	0	
Student Profile Page	Save Changes button	All the updated information will update in database	5	5	0	
PG-Elearning site	News button	Directly to E-Learning News Page	5	5	0	
E-Learning News Page	News title link	Directly to another page contain full content of the news	5	5	0	
E-Learning News Page	Article Archive link	Directly to Article Achieve page	5	5	0	
E-Learning News Page	Back to Home page link	Directly to home page of PG-	5	5	0	

		Elearning				
PG-Elearning site	Forum button	Will display Muut forum in the main page	5	5	0	
PG-Elearning site	Log Out button	Will directly go to UTP Postgraduate Official page.	5	5	0	

4.3.2 User Acceptance Testing

The purpose of this testing is to validate the user acceptance on this UTP Postgraduate Portal. This user acceptance testing is important in order to determine the success of this project. The author had conduct a survey consists of several questions regarding the project. The author had divided questions into two categories which are questions on design of the website and questions regarding the website functionalities. This survey been distributed to the targeted users which is postgraduate students. The author had gain 23 respondents throughout this online survey. Below are the results for each question in the online survey.

Feedback on the Web Portal Design

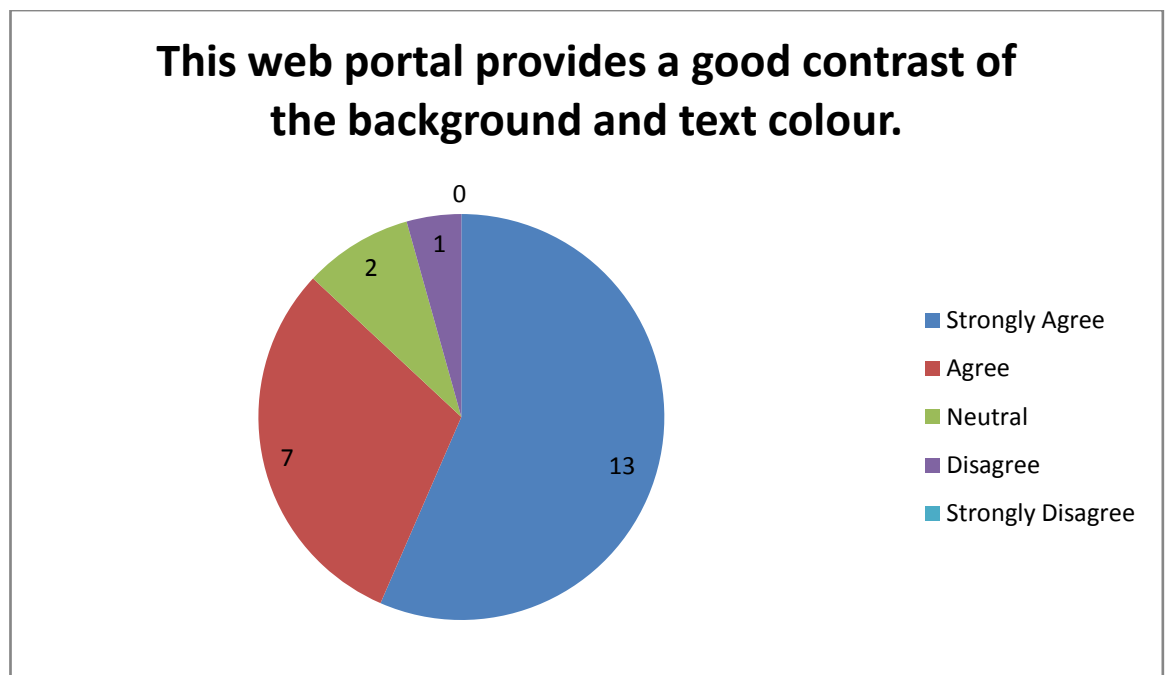


Figure 45: Feedback on the background and text colour

From the result above, it shows that the colour chosen by the author for the background and text of this web portal are satisfied by the users. Most of the respondents strongly agreed that this web portal provides a good contrast of the background and text colour. It shows that a bright background colour and dark text colour are the suitable choice for this web portal.

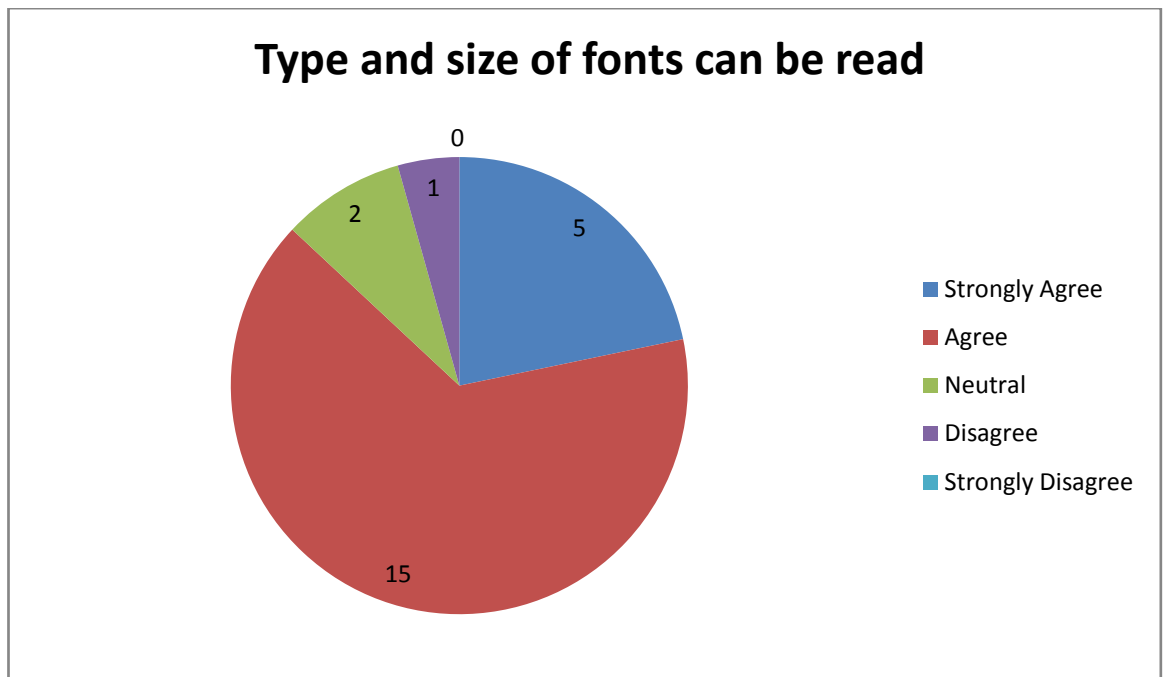


Figure 46: Feedback on type and size of fonts

Based on the figure above, most of the respondents agreed that the type and size of fonts are easily to read. It shows that all provided information in this web portal can be understand by the respondents.

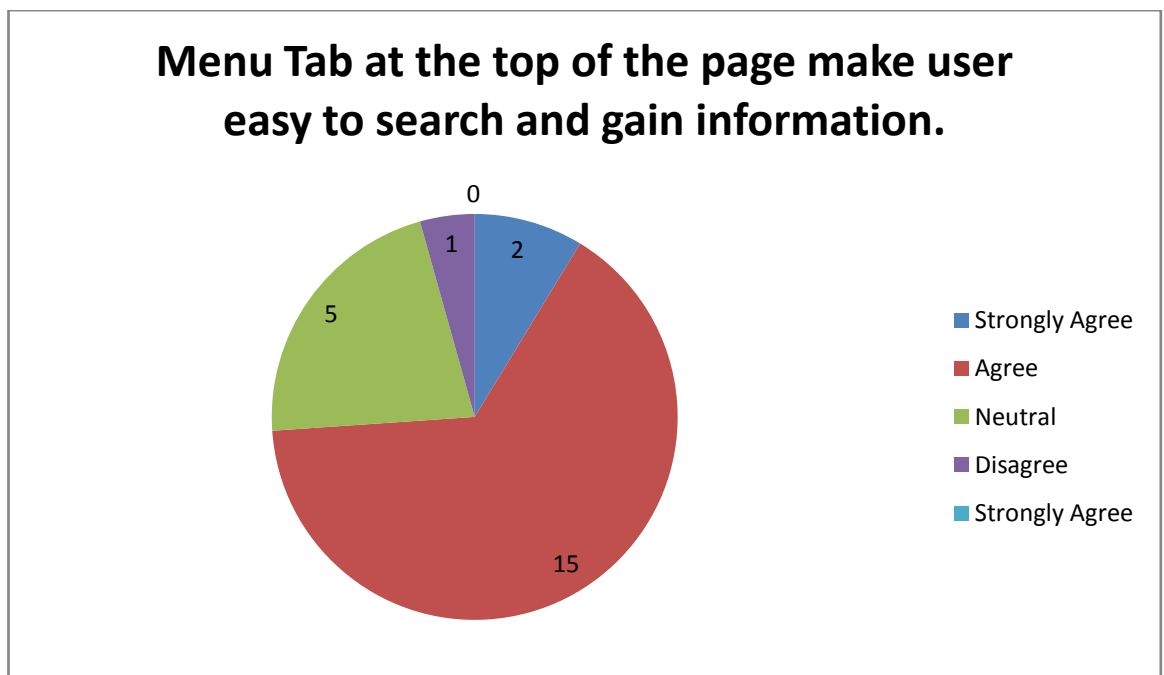


Figure 47: Feedback on menu tab position

Most of the respondents agreed and satisfied that menu tab at the top of the page will make user easy to search and gain information.

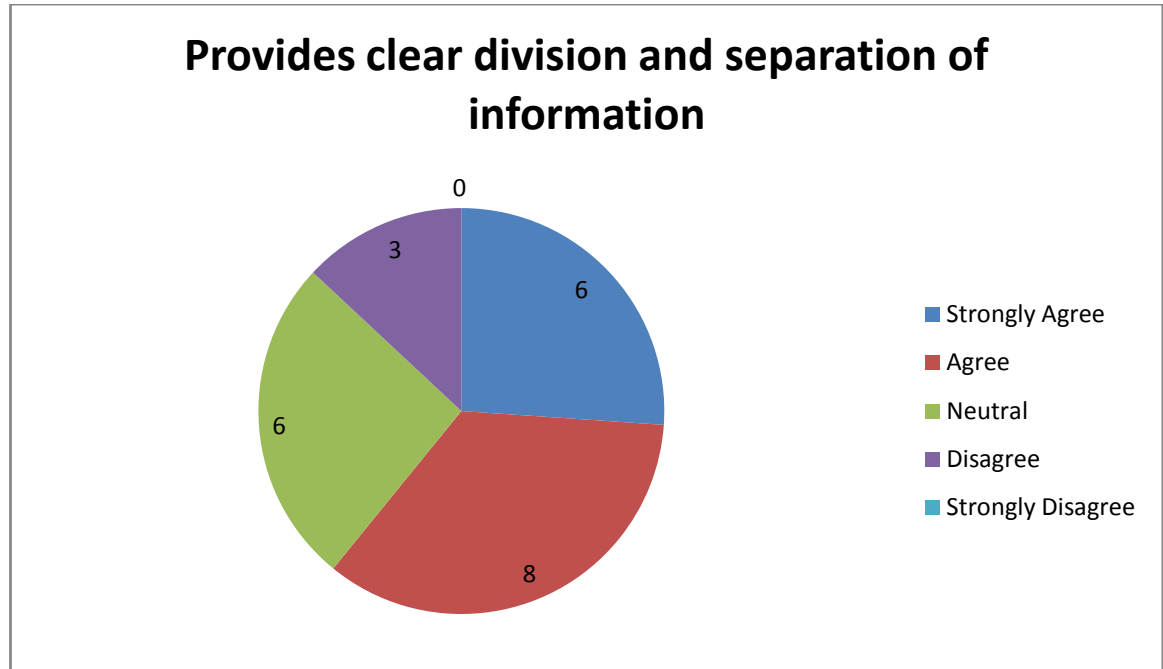


Figure 48: Feedback on clear division and separation of information

A clear division and separation of information in web portal will help user to search information they need. Most of the respondent agreed that this web portal provides a clear division and separation of information. It shows that respondents more comfortable to use website which provided a clear division of information and it will avoid any misunderstanding and confusion.

Feedback on the Web Portal Functionalities

Next, the authors proceed with the user's feedback on the functionalities provided in this web portal. Below are the results for each question given by the author to the respondents.

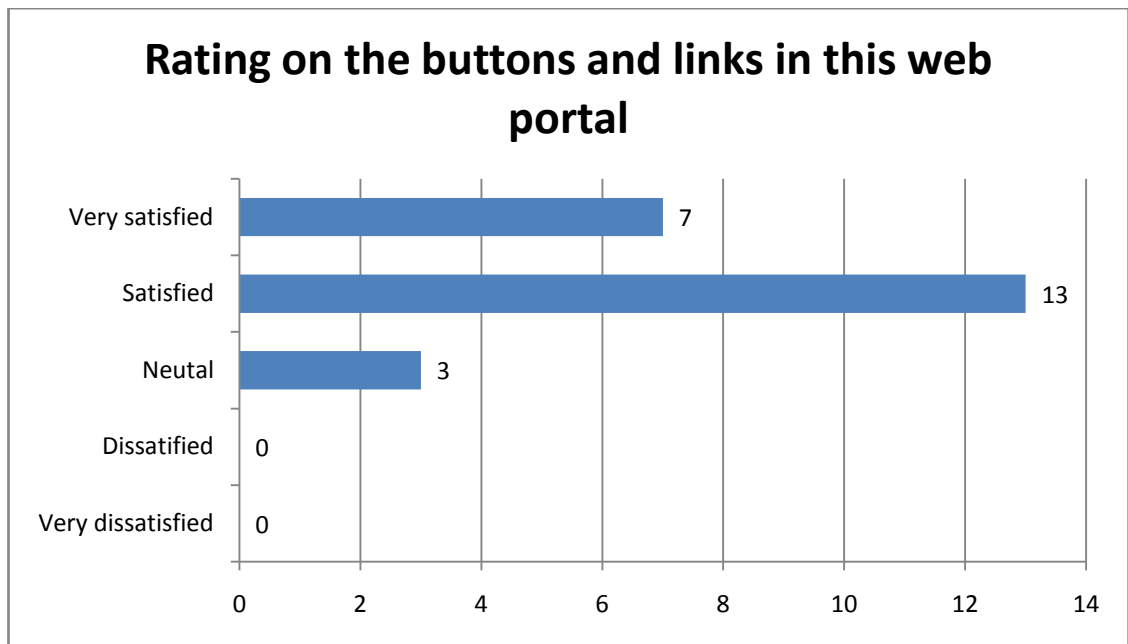


Figure 49: Feedback on buttons and links provided in UTP Postgraduate Portal

In this question, the author want to test on the buttons and links provided in this web portal. All of the respondents agreed that the buttons and links provided in this UTP Postgraduate Portal works well and takes a short time to reach to another page. It shows respondents satisfied with the buttons and links provided.

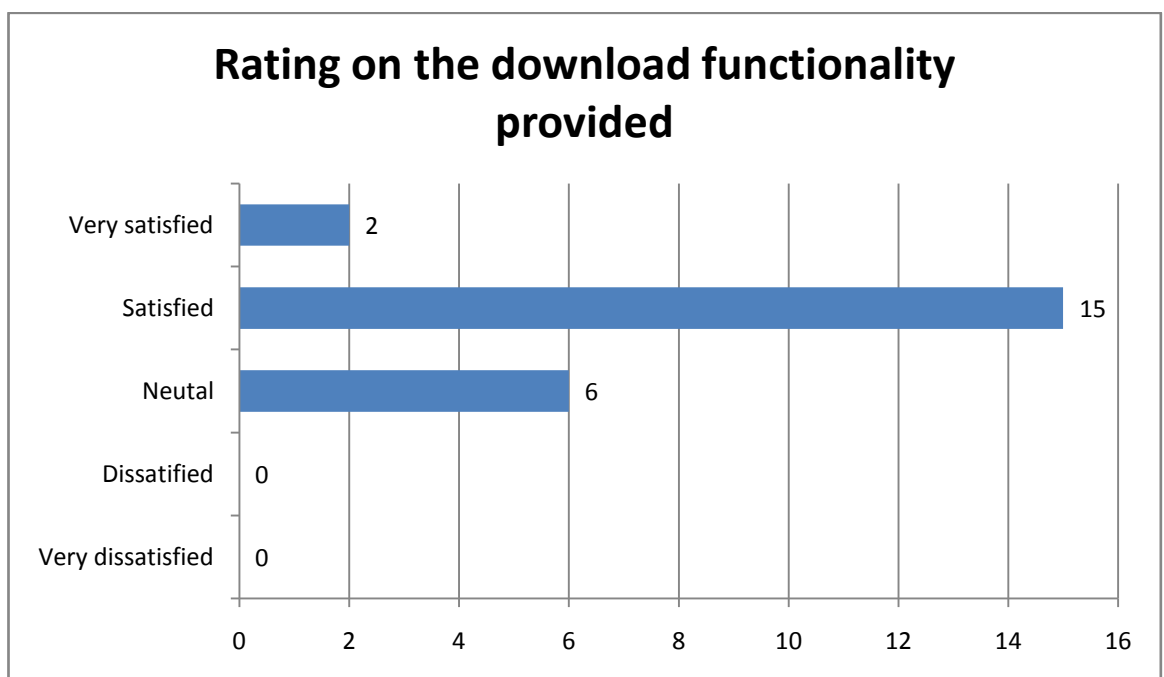


Figure 50: Feedback on download functionality

The question in figure above is to determine how well the download functionality works. Most of the respondents do not have problem in download any documents to their devices and computer. It show that this functionality works well and had satisfy the users.

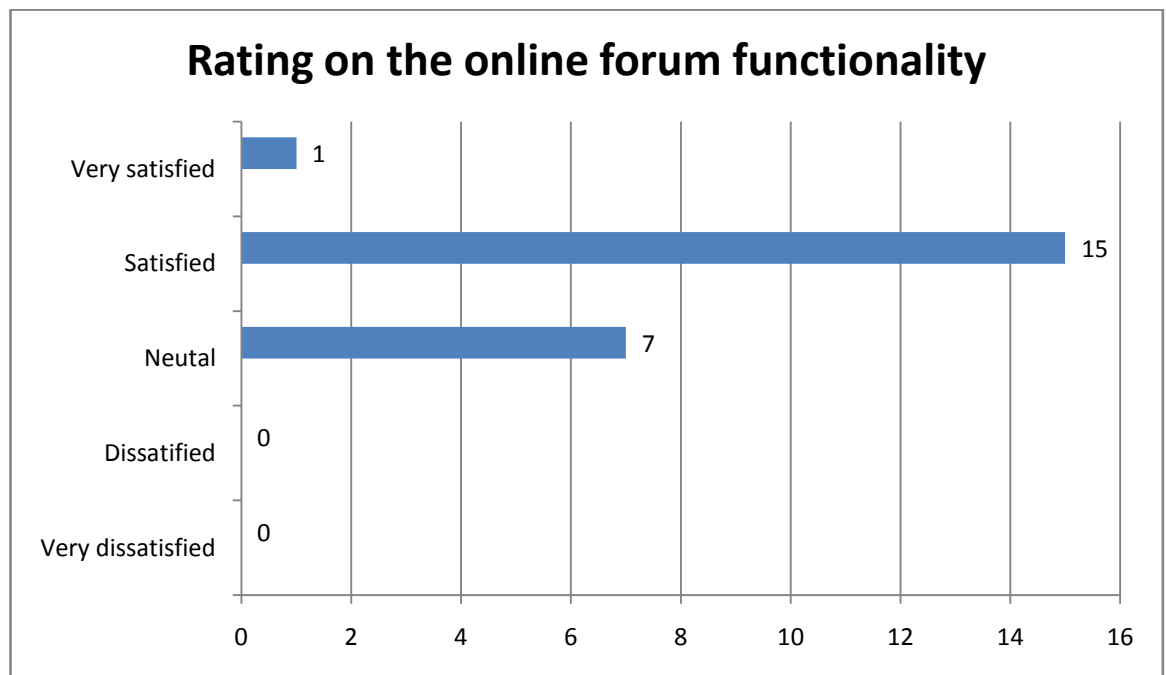


Figure 51: Feedback on online forum functionality

The reason of this question is to determine how well the online forum works for the users. Most of the respondents gave a positive answer on the online forum provided in the web portal. It shows that the user do not have problem on using the online forum.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This UTP Postgraduate Portal been implemented and developed because of various reasons such as the existing platform created by UTP only focus on undergraduate studies and UTP postgraduate student have difficulty to receive news or information. Furthermore students have difficulty to interact with the Center for Graduate Studies staffs. Therefore, the author had proposed and developed a web portal for postgraduate studies in UTP to overcome these problems.

Objectives have been created by the author in order to smooth the development process of this web portal. The first objective is to conduct detailed requirement gathering and analysis pertaining to postgraduate portal design customized for UTP postgraduate students. In order to accomplish the first objective, the author had conduct an online survey, online research and benchmarking in order to gain all the requirement and functionalities for this postgraduate portal. The second objective is to develop the design specified in above objective and the last objective is to deploy and conduct usability testing for the developed portal.

This UTP Postgraduate Portal is divided into two parts which are UTP Postgraduate Official page and PG-ELearning site. In UTP Postgraduate Official page only display information regarding all postgraduate studies which can view publicly while PG-ELearning have various functionalities such as download document, view news and interact in knowledge sharing forum which strictly for current postgraduate student and Center for Graduate Studies staffs.

Given these facts, the proposed web portal can be important sources of reference to be adopted by higher education institute that aim to develop a web portal for the needs and requirements of their postgraduate programs. Other than that, the proposed web portal also will be expected to act as communication and knowledge sharing tools for postgraduate students. In conclusion, the result from the survey concluded that the proposed web portal will give benefits to the students, lecturers and staffs in UTP.

5.2 Future Recommendation

This project can be improvise in future from time to time, depends on the usage of the postgraduate students. Improvement in term of functionalities of the web can make this web portal more usable for UTP Postgraduate student.

Therefore, the author suggests to add more functionality for the web portal in the future. The first functionality to be adding in the future is search functionality. Search functionality can be added in both parts of UTP Postgraduate Portal. User can use this search functionality to search old news or old documents in this web portal by key in the keyword. This functionality will save more times for user to search on what they needs in this web portal. This functionality also been used by other universities in their postgraduate portal.

Simultaneously, complaint form is one of the functionality that should be add in this web portal. The authors suggest that this function is added to the website as it will help students to make any complaint to the responsible person. . In conclusion, the development of this function, it will make it easier for students to lodge complaints and save more time

References

- [1] Anderson, G., & Grant, G. (2002). Customer Relationship Management: A Vision for Higher Education. Retrieved February 8, 2015 from <https://net.educause.edu/ir/library/pdf/pub5006f.pdf>
- [2] Baloglua, S., & Pekcan, Y. (2006). The website design and Internet site marketing practices of upscale and luxury hotels in Turkey.
- [3] Bradley, T., Thanasankit, T., & Corbitt, B. (2005). Factors Influencing the Implementation and Use of a Portal for Knowledge Management in Higher Education.
- [4] Brelage.C, Recker.J and Wienbergen.F.M, (2006) Navigational Design of Web Information Systems Framework Development and Case Study, Goteborg, Sweden.
- [5] Cannon, T. (2012). An Introduction to Color Theory for Web Designers. Retrieved from <http://webdesign.tutsplus.com/articles/an-introduction-to-color-theory-for-web-designers--webdesign-1437>
- [6] Dukic, G., & Kozina, G. (2012). Knowledge Management in Higher Education: ICT Equipment, Skills and Attitudes of Croatian Polytechnic Students.
- [7] Elliot, A., & Maier, M. (2007). Color and psychological functioning
- [8] Emamdadi, R., Zarrinkalam, F., Kahani, M.: A Focused Linked Data Crawler based on HTML Link Analysis . (2014)
- [9] Faisal A. Saeed, Noorminshah A.Iahad and Nadhmi A. Gazem (2012) Web 2.0-based Communication and Knowledge Sharing Modelin Higher Education Institutes (Case Study: Universiti Teknologi Malaysia), Journal of Information Systems Research & Innovation, Vol 1, pgs. 30-37
- [10] G.Kappel, et al. (2006) Web Engineering - The Discipline of Systematic Development of Web Application, Chichester, England

- [11] Gal, A., & Mylopoulos, J. (2001). Toward Web-Based Application. IEEE TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING, 663 - 700.
- [12] Hocenski , Z., Balen, J., Martino, G.vic: Network Performance Evaluation of Latest Windows Operating Systems . (2008).
- [13] John, M. (2001). Knowledge Management for Higher Education. ERIC Digest. Retrieved fro <http://www.ericdigests.org/2003-1/higher.htm>
- [14] Kidwell, Jillinda J., Vander Linde, Karen M., and Sandra L. Johnson (2001). "Applying Corporate Knowledge Management Practices in Higher Education." In Bernbom, Gerald, editor, Information Alchemy: The Art and Science of Knowledge Management. EDUCAUSE Leadership Series #3. San Francisco: Jossey-Bass. pp. 1-24.
- [15] Kotler, P., and Fox, K. (1995) Strategic Marketing for Educational Institutions. Englewood Cliffs, N.J.: Prentice Hall.
- [16] Levine.A, (2003) Writing HTML for Web Design, MCLI
- [17] Lim, D., & Klobas, J. (2000). Knowledge management in small enterprises.
- [18] Murphy.L.D, (2003) Digital Document metadata in organization: Roles, analytical approaches and .future research direction, IEEE.
- [19] Nan, Z., Ping, Y., & Hong-Wei, H. (2014). Design and implementation of a MySQL database backup and recovery system.
- [20] Nilashi, M., Ahmadi, H., Osmani, M., & Ibrahim, O. (2012). Customer relationship management model for UTM Alumni Liaison Unit.
- [21] Piedade, M.B., Santos, M.Y.: Student Relationship Management: Concept, Practice and Technological Support . (2008).
- [22] Reusch, P.: On the Scope and the Structure of E-Learning Platforms at Universities. (2013)
- [23] Rosen, D. E. (2004). Website design: Viewing the website as a cognitive Landscape. Journal of Business Research, 787 - 794.

- [24] Sarah. (2010). Which is the best font to use when developing a website? Retrieved from <http://www.yourinspirationweb.com/en/which-is-the-best-font-to-use-when-developing-a-website/>
- [25] Stallings, W. (2005, January 1). The Window Operating System. Retrieved February 30, 2015, from http://avellano.fis.usal.es/~lalonso/amp_inf/windows.pdf
- [26] Tatnall, A. (2009). Web Portal Research Issues. Retrieved February 8, 2015 from <http://www.irma-international.org/viewtitle/14186/>
- [27] Thorn, Christopher A. (2001). "Knowledge Management for Educational Information Systems" What Is the State of the Field?" Educational Policy Analysis Archives (9):47. November 19, 2001. Available online at: <http://epaa.asu.edu/epaa/v9n47/>
- [28] W3School. (2011). Cascading Style Sheets. Retrieved from <http://www.w3schools.com/css/default.asp>
- [29] Wikipedia. (2015). Web portal. Retrieved from https://en.wikipedia.org/wiki/Web_portal

Appendix

- **Survey Questionnaire on Requirement Analysis**

Section A

This section is to gather participant's background information

Age

- ☐ 20-25 years old
- ☐ 26-30 years old
- ☐ 31-40 years old
- ☐ 41-50 years old
- ☐ Other:

Current Position

- ☐ Undergraduate Students
- ☐ Postgraduate Students
- ☐ UTP Staff
- ☐ Lecturer
- ☐ Other:

Categories

- ☐ Local Students/Staffs
- ☐ Foreign Students/Staffs
- ☐ Other:

Section B

This section is to collect the participants' feedback on this web application.

How frequently do you browse a website for learning or job purpose?

- ☐ Few times per day
- ☐ Once per day
- ☐ Few times per week
- ☐ Once per week

- ☐ Once per month
- ☐ Once per year

Are the existing portal developed by UTP (ex: E-Learning, Prism) are more focused to undergraduate studies?

- ☐ Yes
- ☐ No

Do undergraduate portal and postgraduate portal need to be separated?

- ☐ Yes
- ☐ No

What expected functionality that need to be included in the postgraduate portal?

- ☐ Information display (regarding postgraduate studies)
- ☐ News and event display
- ☐ Upload and download form
- ☐ Upload and download learning material
- ☐ Online forum (Interaction between student and lecturer/staff)
- ☐ Other:

Do you have any experience browsing postgraduate portal from other universities?

- ☐ Yes
- ☐ No

Do you think portal can increase relationship between students, lecturers and UTP staff?

- ☐ Yes
- ☐ No

Do you think portal can develop knowledge sharing among students, lecturers and UTP staffs?

- ☐ Yes
- ☐ No

If this postgraduate portal is successfully built, will you use it?

- ☐ Yes
- ☐ No

Section C

This section is to collect the participants' feedback on this web functionality. (ONLY FOR LECTURER & STAFF) Below are the proposed functionalities for lecturer & staff in postgraduate portal.

- Update news & event
- Online forum
- Upload learning material

Do you think portal will be better tools on spreading news & event to the students?

- ☐ Yes
- ☐ No

Do you think forum in the portal, can save times in term of communication between student, lecturer & staff in UTP?

- ☐ Yes
- ☐ No

Do you think upload learning material functionality in the portal is better than the current method?

- ☐ Yes
- ☐ No

Section D

This section is to collect the participants' feedback on this web functionality. (ONLY FOR STUDENTS) Below are the proposed functionalities for students in postgraduate portal.

- View news & event
- Online Forum
- Download learning material
- Forum for knowledge sharing

Do you think gaining news & information from web portal will be better than the current method?

- ☐ Yes
- ☐ No

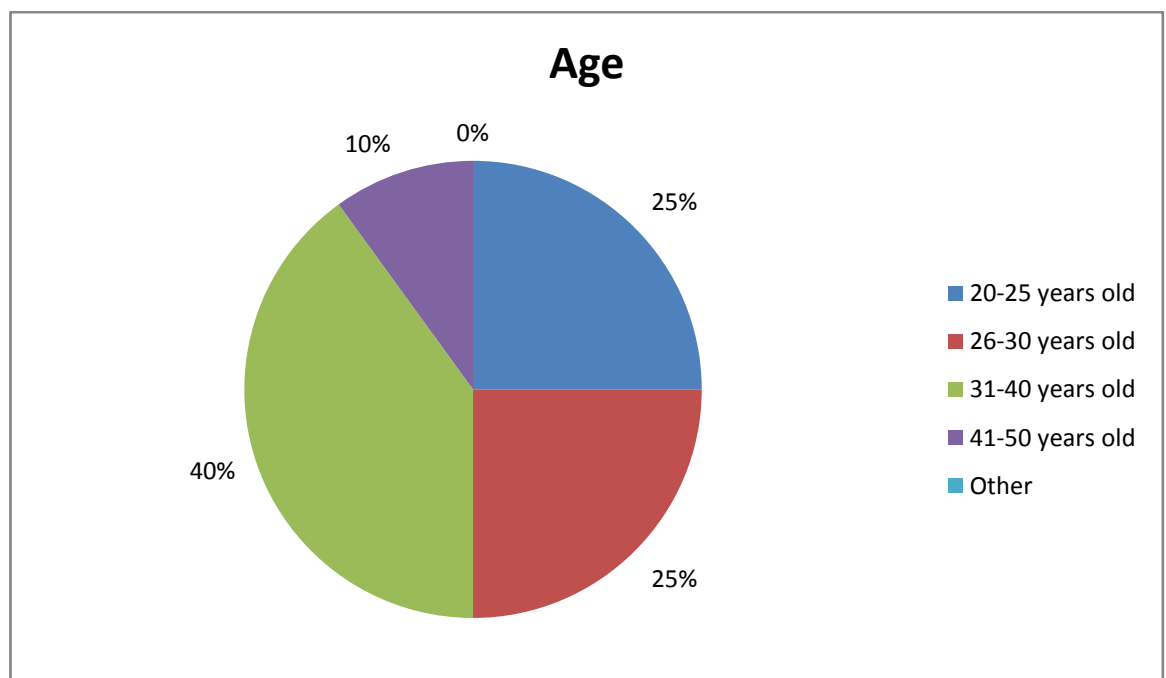
Will you share on what you had learnt with other student in the portal?

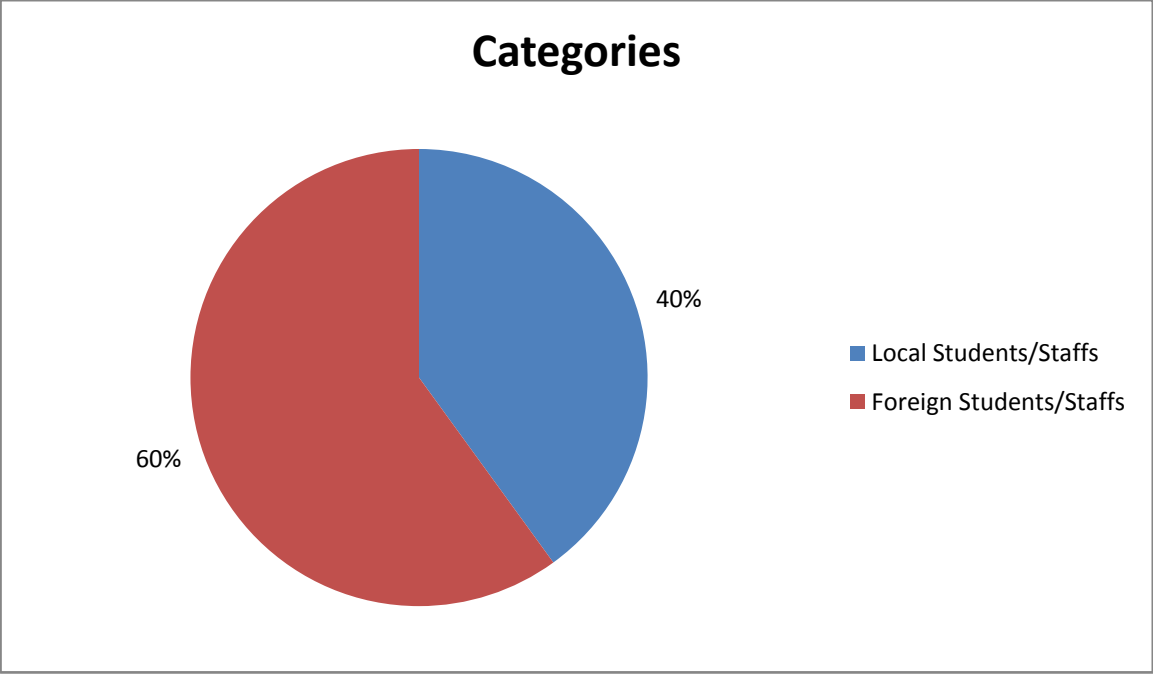
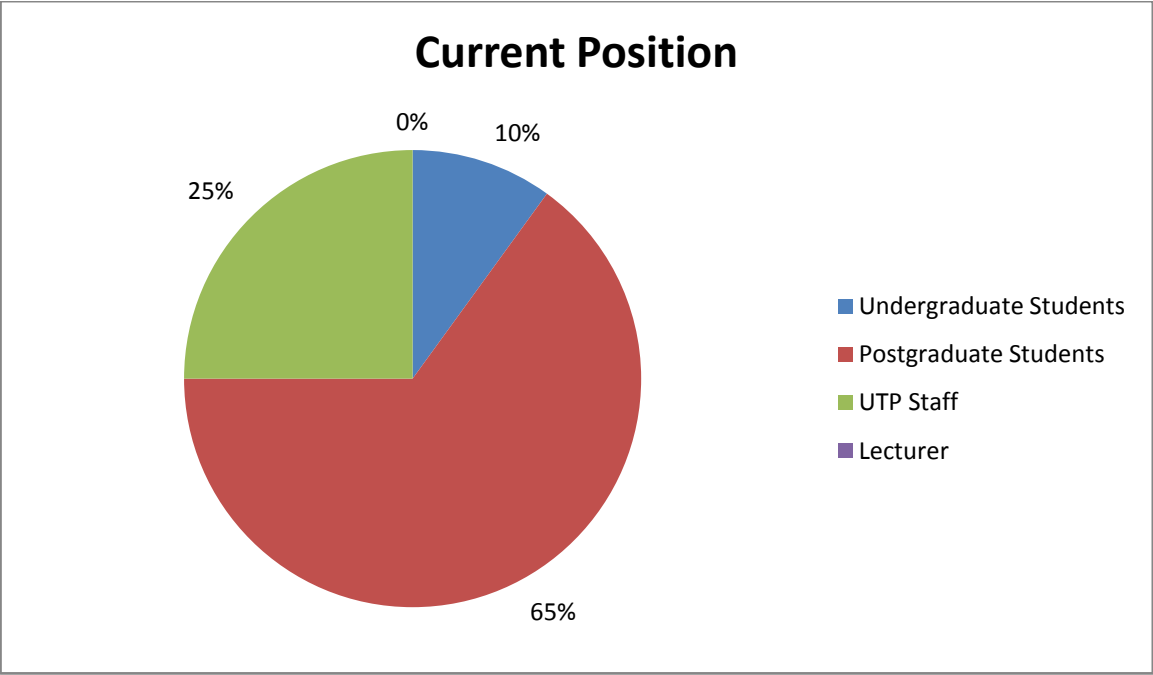
- ☐ Yes
☐ No

Will you use this portal as a tool of communication with lecturers or staffs?

- ☐ Yes
☐ No

- Demographic Survey Result on Requirement Analysis**





- **Survey Questionnaires on User Acceptance**

Section A

This section is to gather participant's background information

Age

- ☐ 20-25 years old
- ☐ 26-30 years old
- ☐ 31-40 years old
- ☐ 41-50 years old
- ☐ Other:

Current Position

- ☐ Undergraduate Students
- ☐ Postgraduate Students
- ☐ UTP Staff
- ☐ Lecturer
- ☐ Other:

Categories

- ☐ Local Students/Staffs
- ☐ Foreign Students/Staffs
- ☐ Other:

Section B

This section is to collect the participants' feedback on the design of this web portal

This web portal provides a good contrast of the background and text colour.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

Type and size of fonts can be read

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

Menu Tab at the top of the page make user easy to search and gain information.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

Provides clear division and separation of information

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

Section C

This section is to collect the participants' feedback on the functionalities of this web portal

Rating on the buttons and links in this web portal

- ☐ Very Satisfied
- ☒ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☒ Very Dissatisfied

Rating on the download functionality provided

- ☐ Very Satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Very Dissatisfied

Rating on the online forum functionality

- ☐ Very Satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Dissatisfied
- ☐ Very Dissatisfied

- **Demographic Survey Result on User Acceptance**

