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FCSIT E-PROCUREMENT SYSTEM

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ABSTRACT

This FCSIT E-Procurement System is developed to reduce the workload of the personnel involved in the direct purchase procurement process by allowing the workflow of the processes to be done automatically. It enables the different users to login to the system and perform their task effectively. In addition, this system allows the faculty account staff to reach the vendor in an easier way. At the end of the system, the system can generate the Purchase Order and send to the vendor directly. This makes the whole procurement easier and significantly reduces administration cost as most of the paper works are handled by the system.

ABSTRAK

Sistem E-Pemerolehan FSKTM ini dikembangkan untuk mengurangkan beban kakitangan yang terlibat dalam proses pembelian terus dengan membolehkan proses boleh dilakukan secara automatik. Hal demikian membolehkan pelbagai pengguna untuk daftar masuk ke sistem dan menjalankan tugas masing-masing dengan berkesan. Selain itu, system ini membolehkan fakulti staf akaun menghubungi pembekal dengan cara yang lebih berkesan. Akhirnya, sistem ini boleh menghasilkan Pembelian Pesanan dan hantar kepada pembekal secara langsung. Dengan ini, seluruh pengalaman pemerolehan menjadi mudah dan dapat mengurangkan kos pentadbiran kerana sebahagian besar kerja kertas akan dikendalikan oleh sistem.

1. INTRODUCTION

1.1 Introduction

In an institution of higher learning, the teaching and learning process involves the usage of various resources such as space and equipment. For example, in the Faculty of Computer Science & Information Technology (FCSIT), UNIMAS, the main physical resources are computers and other related equipment such as hard disk, projectors, speaker and etc. Therefore, one key aspect related to management of the faculty is the procurement process of this IT-related equipment.

Procurement is defined as the acquisition of goods, service or work from an external source. The procurement process has to adhere to a specific set of rules and steps. Each step has its own requirement and involves more than one person with different roles in that particular step. Currently, this complex procurement workflow is handled by staff of FCSIT manually. Since manual-based procurement activities are conducted without a centralized management system, this might cause many unnecessary problems and is also time-consuming.

A web-based procurement system is able to supervise the entire procurement activity more efficiently and speed up the procurement workflow in order to make sure the lecturer able to conduct their lecture with adequate resources. It also ensures that there is no extra expenses cost for human resources, paper resources or other related resources.

1.2 Problem Statement

Currently, each step of the procurement activities and workflows in FCSIT is conducted manually without a centralized management system. Current procurement system consists of many complex steps and involves many personnel. If there is a new employee

comes in, he/she might do not know the person in charged in certain procurement step, she/he might need to spend time to find out the right person.

Apart from that, current procurement system also incurred large amount of expenses of physical resources such as papers and other stationeries. The entire procurement system involved massive paperwork, which is difficult to store, manage, and find. In order to handle this heavy paperwork, FCSIT needs to spend more on these physical resources.

Besides that, current system is also not effective enough to handle all the massive workload of procurement activities from different lecturers. Currently, the whole procurement workflow is monitored by an Account Assistant of FCSIT namely Madam Hamizah binti Kawi. She is the only one personnel to monitor the whole procurement workflow. Mistake might happen in some of the steps, she needs to manually and physically notify others to take action to correct the mistake. If there are too many procurement requests at one time, the current system is hard to monitor all of the in-progress procurement activity and found the mistake step immediately. Productivity of the current system is also not as high as those other activities that handled electronically.

The current procurement system is also time consuming system. Faculty needs to always contact the potential vendors one by one in order to get the quotation list from them. The vendors need to fax the quotation list back to faculty if they are interested to involve in the business. After faculty make their decision, the respective personnel needs to personally contact the selected vendor again in order to send a direct purchase order to the vendor. Apart from that, the procurement process also needs approval from different level of management. Person in-charge from FCSIT needs to physically go to the office and get the approval from Head of Department and Registrar Assistant (Penolong Pendaftar) in order to proceed to next

step. Every steps of the system is also need certain period of time to complete. Therefore, manual based system will result in inefficiency, low productivity, higher cost (human resource and time), and inaccuracy/error.

1.3 Objectives

The main objective of the project is to design and develop a web-based platform for better management the procurement activity of FCSIT. Other objectives include:

To develop a web-based centralized procurement system

A centralized web-based management system can cater the whole procurement activities in FCSIT in a better way. The automated process ensures that every step in the procurement workflow can be completed within a specific time. Apart from that, the workload for every staff can be reduced so that the possibility for any human mistake also can be eliminated. The entire procurement workflow can be shorten and more hardware and software can be well-prepared to handles the increasing number of students.

To provide a more secure environment for procurement system

Each step of procurement workflow has its own requirements and involves more than one person with different roles in that particular step. Certain confidential information is only available to particular roles. Therefore, a role-based system is a must in order to make the system more secure. Role-based access will limit the activities and/or information presented to users based on a set of procurement rules.

1.4 Methodology

In order to fulfill the requirements and successfully complete this project, web development life cycle will be a good guideline. This is because web development life cycle works well for smaller projects where requirements are very well understood. The Web Development Life Cycle, somewhat similar to Software Development Life Cycle(SDLC) which will also be divided into planning phase, analysis phase, design phase, development phase and testing phase.

During the planning phase, the main problem of current procurement system and the main goal of this project are identified. All the requirements related to the system development will be gathered using interview method. Each steps of the procurement system is also need to be clarified through the interview process. The target user of this system should be identified and a proper plan or project proposal that describes how this system benefits the target user is needed. The project proposal should include the introduction, problem statement, objective, methodologies, scope, significant of the project, project schedule and the expected outcome in details.

During the analysis phase, a comparison between the proposed system with other existing procurement systems will be done and summarize a summary of literature review among the systems. The procurement requirement gathered from the FCSIT staff in-charged by interview session will be analyzed and came out with a detailed functional specification document.

Next phase of the web development life cycle is design phase. During this phase, a basic layout and navigation of the development system will be the prototype of the project. Data dictionary, Data Flow Diagram (DFD), Entity Relations Diagrams (ERD) based on the

Functional Specification Document should be developed. Database structure should also be developed based on DFD as well as the ERD.

Implementation phase is next phase after design phase. Implementation stage included the coding part. The suitable programming language should be choosing to present the procurement system best to the users. The database need to be designed based on the pre-design DFD and ERD. The designed database should works fine with the development system.

Lastly, the testing phase is an important phase to determine the accuracy of web site content such as report generation as well as the functionality of the system such as the responding time of the system. The system has to be tested repeatedly to make sure the prototype system can meet the expectations and requirements of the target user. Bugs need to fixed and test repeatedly to ensure the error eliminated to minimum level. All the databases and navigation of the system should working smoothly once the system is completed.

1.5 Scope

The data and requirements gathered are limited to the FCSIT staff only. There is a limitation amount (RM 3,000 – RM 20,000) for this FCSIT procurement system. The procurement types that are exceeding the limit will not handle by this procurement system. Other than that, payment mechanism for vendor to purchase or participate in the procurement process is excluded from the system.

1.6 Expected outcome

The main outcome of the project is a working prototype of the web-based system that handles the procurement process in the faculty (FCSIT). The system will serves as the user-friendly web application for faculty to manage the procurement system in a better and easier way.

1.7 Significance of Project

The e-procurement system helps to reduce the workload of FCSIT officer administrator and reduce the complexity of the manual-based procurement workflow. A centralized web-based system will help FCSIT to reduce cost in human resource and time. All of the procurement procedures have to be completed in time given. This makes the procurement system more efficient. The entire procurement workflow will be conducted under a supervised situation. An administrator can monitor the web-based procurement system in an easier way compare to manually system. Administrator can detect the system at first moment when the procurement system is not working in healthy situation.

Apart from that, web-based automated procurement system also can help to generate required reports just in few clicks. The person in-charged do no need to read through all the documents in order to generate a monthly report. The report generated by the system is accurate and human error can be reduced.

Besides that, a more eco-friendly environment can be produced. This is because every step of the web based procurement system can be handled by electronically and this will cut down the usage of paper. Expense of physical resources can be eliminated and the budget can be used for other purpose of the faculty.

The web-based procurement system enables the respective personnel to direct connect to the potential vendors to get the quotation list from them. The vendors can send the quotation list through the system instead of fax the quotation list to FCSIT office. The quotation list should be send in a more proper and confidential way. The direct purchase order also can be done prepared and sent to the selected vendor side in a shorter time compare to a manual system.

Last but not least, e-procurement system is a role-based access system which is indirectly makes the system more secure than manual-based system. Only authorized person with certain roles is available to view part of the confidential documents.

1.8 Project Schedule

Project schedule is an important part of a project to make sure the project can be completed on time and in a best quality. It used as guidelines for the progression of the project. Gantt chart is selected to identify the milestone of each step of the project as well as set a time frame to make sure the project can be completed on time. The project schedule is attached in the Appendix B at the end of the document.

1.9 Project Report Outline

1.9.1 Chapter 1: Introduction

Chapter 1 describes the introduction of the proposed system. The introduction is inclusive of the problem statement, objectives of the project, the methodology used, project scope, significant of study, project schedule and the expected outcome of this project. The problem statement explains the problems faced by the current manual-based system and provides the strong reason why this project has to be developed. The objectives define the goals of this proposed project while the scope lists out the limitation of the project to be developed. The significant of study emphasizes on the need of the project has to be developed. Project schedule describes the milestone and works going to be done within certain period of time. The expected outcome describes the expected result of this proposed system.

1.9.2 Chapter 2: Literature Review

This chapter discusses about the reviews based on existing systems on official web site or any related journal. The limitation of the existing systems and how it can be improved

by the proposed system will be discussed. This chapter also describes the software and technology used for this project implementation.

1.9.3 Chapter 3: Requirement Analysis and Design

The methodology used throughout the development of the project is discussed on this chapter. The Web Development Life Cycle is used as a guideline to develop the proposed system. The process on how to carry out the requirements analysis is also discussed on this chapter. Apart from that, design of the database is also done in this chapter. Database design is based on the Data Flow diagram as well as the Entity Relationship Diagram.

1.9.4 Chapter 4: Implementation and Testing

Chapter 4 is emphasizes on details description of system's implementation. The prototype of the proposed system has been done and the structure of the system is described in details by using screenshot method. The importance of testing and how it contributes to effectiveness of the system is also highlighted in this chapter. The functional and non-functional testing will be conducted to test the correctness and functionality of the system.

1.9.5 Chapter 5: Conclusion and Future Work

This is the last chapter that concludes the whole project developed and outlines of future works. Lessons learnt throughout the entire project development are also discussed by giving appropriate examples.

1.10 Summary

This chapter discusses about the introduction of the project. The project is about developing a web-based Procurement System for Faculty of Computer Science & Information Technology to use. The web-based Procurement System can enhance the security and reduce the workloads of the administrative staffs. This system had been proposed to overcome the restriction and problems in existing traditional manual-based procurement system.

2. LITERATURE REVIEW

2.1 Overview of Objectives

In this modern technology advanced world, most of the traditional paper based system already had been replaced by centralized and automated web-based system. It is because centralized web-based system is easier to be managed by the Faculty of Computer Science & Information Technology (FCSIT). It is very important to have a system to keep track of the purchased of IT related hardware and software components. The manual process of procurement of these related components are always a time-consuming process and involved of many complicated procedures. FCSIT E-procurement System automates and minimized every single step of procurement from requisitioning, approvals, RFQs (request for quotations), generation of purchase order until receive the procured components. The time period for entire procurement process also has been shorten because the traditional communication way by phone and fax already replaced by an email notification. An automated procurement system can eliminates the possibility of happening of errors and delays. The productivity and efficiency is increasing obviously when compare an automated e-procurement system to a traditional manual system.

According to world internet usage and population statistic by Miniwatts Marketing Groupon on June 30, 2012, there is a tremendous boost in growth of internet user from year 2000 to 2012, which is experienced an increase of 566.4%. Since people are getting more familiar with internet, it is necessary to transform the traditional procurement system of FCSIT into a web-based procurement system. Administration staffs can access the system from anywhere at any time.