E-Government: A gateway in helping the efficiency of public sector in Malaysia focusing on e-tendering system

By

Khairatul Azyyati bt. Badari

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

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CERTIFICATION OF APPROVAL

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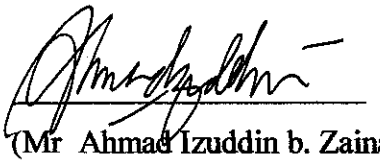
Approved by,



(Mr Ahmad Izuddin b. Zainal Abidin)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
January 2006

CERTIFICATION OF ORIGINALITY

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

KHAIRATUL AZYYATI BT BADARI

ABSTRACT

Electronic government is a new paradigm to Malaysia citizens which has been embarked by the government of Malaysia in order to provide services electronically. E-Government: A gateway in helping the efficiency of public sector in Malaysia focusing on e-tendering system is the collaboration between electronic government (e-government) and the application of electronic tendering system (e-tender). It can be regard as the adding value process to the e-government. The rationale to embedded e-tendering system in the e-government is to increase and improve the efficiency and effectiveness of the functionality of e-government in providing services to citizens. There are two objectives that have been set for this project. The first objective is to perform a small scale of study regarding e-government and tender system, and the second objective is to develop a simple prototype of e-government website that providing e-tendering system. For the methodology, Rapid Application Development (RAD) approach has been employed. The methodology has been chosen because it is effective and suitable for short duration project. It was designed for developer and user to join together and work intensively toward their goal. By using the RAD methodology, the project is able to be completed within the time allocated. In the discussion part, it covers all the result that obtains from the project completion which includes system architecture, database architecture and result testing. In order to provide better services, some suggestion being carried out for future enhancement. This can improve the current system to be more efficient and effective.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND NOMENCLATURES

e-government	electronic government
e-tender	electronic tender
RAD	Rapid Application Development
FYP	Final Year Project
IT	Information Technologies
ICTs	Information and Communication Technologies
MAMPU	Malaysian Administrative Modernization and Management Planning Unit
JAD	Joint Application Design
ASP	Active Server Pages
PHP	Hypertext Preprocessor
JSP	Java Server Pages
DBMS	Database Management System
ODBC	Open Database Connectivity
IIS	Internet Information Services
GUI	Graphical User Interface
DFD	Data Flow Diagram
CIDB	*Construction Industry Development Board*
PKK	*Pusat Khidmat Kontraktor*
MOF	*Ministry of Finance*
JPP	*Jabatan Perkhidmatan Pembentungan*
HCI	*Human Computer Interaction*
PC	*Personal Computer*
WWW	*World Wide Web*
CASE	*Computer Aided Software Engineering*
DSS	*Decision Support System*

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The title that has been chosen for the final year project (FYP) is "**E-Government: A gateway in helping the efficiency of public sector in Malaysia focusing on e-tendering system**". Before describing more details about the application that is going to be developed, let understand the definition of some important term in the topic. The term of e-government is refers to the technology that applies the concept of electronic commerce (e.g. information and marketing through Web sites, selling to customers on-line) to government operations. Via e-government, the federal government uses the information technologies such as the Internet to exchange information and services with citizens, businesses, and other arms of government. This technology has changed the way of government interacting and providing services to people. Some initiatives have included posting government information on web sites, providing on-line services to people, and communicating with people via on-line. The term of e-tendering is refers as a technology of an offer to carry out work, which has been specified by another person. The offer quotes a fixed price, which will be charged for doing the work. This technology applies the concept of electronic online services, which basically using the Internet. This project will focus on developing an application of government website providing electronic tendering system (e-tender) that is embedded from the result of this study.

1.2 PROBLEM STATEMENT

Currently, the advertisement about offering tender is done manually using printed media such a newspaper. Government agencies will advertise and announce the new tender in newspaper informing about the purpose and scope work of the tender and requirements needed. Using this type of announcement require the agencies to spend some cost for advertising purpose. Besides, the process of buying the tender also still is being done manually. In order to apply for that tender, the potential buyers need to buy the tender application form from the particular agencies with such amount and fill it up before submit it to the address stated in the advertisement. This condition will lead to time consuming for the buyers since they have to go for that agency to buy the tender as well as the cost for traveling and buying the form. Besides, this kind of medium is not very efficient for them to read newspaper everyday as the time constraint with working hours.

1.3 SIGNIFICANT OF THE PROJECT

E-government is an effective way for the federal government providing services to citizens and it also could ease the citizens reach the government. This provides a better way of communication between government and citizens. By having a portal of e-government that joining all the government agencies, people can easily get the government services regardless what the agency or address of the agency's website that they should visit. They do not need to remember and memorize address for each government agencies. They can visit the web for any government agencies based on their business reason that provided in the e-government portal. Via this portal, people can get government services easier and faster.

By having e-tendering system via e-government portal, several problems that face by potential buyer can be solved. Firstly, the buyer can simply use the online system to apply buying the tender. What they can do is insert the information of their company

and value of the tender they want to purchase. Secondly, the use of the system can minimize and save the time and cost for the potential buyer to buy the tender's application form. Sometimes they don't have enough time to travel far to buy a tender form. However, by using the system, the potential buyer can get the tender via online in anytime and whenever they like. Then, this system also can give the benefit to the government agencies side by providing a better way to announce and sell tender to potential buyer. Government agencies also can cut the cost for advertisement as they can announce and upload the tender advertisement on the government website.

1.4 OBJECTIVES AND SCOPE OF STUDY

1.4.1 Objectives

- To perform a small scale of study regarding e-government and tender system procedure
- To develop a prototype of e-government website that providing tender system

1.4.2 Scope of Study

In order to ensure the system that will be develop meet the requirement and functional as required, several scope of study have to be define. The scope of study for the project is stated as below:

- To study about the e-government such as its concept and functionality. For the project, the author will study on how the e-government helping the efficiency of public sectors in performing government services to people.

- To study about the current tender system and apply the concept to the system that will be developed. Based on the study, a prototype of an end product will be developed, which will improve the efficiency of government services in e-tendering system and also will benefit the user of the system.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION TO E-GOVERNMENT

Introducing information technology (IT) to government services is one way to enhance public sector transparency. It becomes one of the dominant topics of public administration and reform. Driven by an electronic commerce (e-commerce) focus, it says that e-government is about the use of information and communication technologies (ICTs) to improve public sector service delivery. Mike Hernon, is the vice president of e-government software and services, and the former CIO of the City of Boston and the District of Columbia, defines e-government as:

"..simply using information technology to deliver government services directly to the customer 24/7. The customer can be a citizen, a business or even another government entity. E-government delivers services in a manner that is most convenient for the customer, while at the same time allowing government to provide those services at a significantly cheaper cost."

Similarly, Theresa A. Pardo in *Realizing the Promise of Digital Governance: It's More than Building a Web Site (2000)* claims that e-government is about transforming government services delivery through the use of technology. J.H. Snider in *E-Government vs. E-Democracy (2001)* writes; "e-government uses information technology to make government operate more effectively." Jeffrey Roy in *E-Government: Enabling & Empowering Tomorrow's Public Service (2001)* defines e-government as "smarter government – one that is better enabled to harness new

information, communication and social technologies to empower the public service of tomorrow."

From the statements above, we can say that e-government is a transformation of government business processes based upon service delivery opportunities that offered by web-based technologies. The government activities took place by digital processes over a computer network, usually the Internet, between the government and members of the public. These activities generally involve the electronic exchange of information to acquire or provide products or services, to place or receive orders, to provide or obtain information, or to complete financial transactions. E-government is known as an application of electronic business and strategies for government to provide better services to citizens and give information effectively and efficiently. Besides, e-government also provides the easiness for accessing government services at everywhere in any time with least cost using current technologies. It is developed with the aim to improve the business of government and provide interactive communication between the government and citizens. Thus, contributing to the uptake of ICT by citizens and businesses, e-government helps bridging the digital divide and enhances citizens' empowerment.

2.2 WHAT DRIVING THE EMERGENCE OF E-GOVERNMENT

2.2.1 A New Governance Environment

Roy (2001) points to three main sets of interrelated forces driving the emergence of a new governance environment which he refers to as "e-governance": Spatial; Digital; and Cognitive. Driven by globalization, new *spatial* considerations are changing our notion of place as economic, social, and political forces create new interdependencies beyond national borders. Also, a *digital* world driven by "Internet time" has led to "instantaneous decisions and accessibility", where "speed and responsiveness become the hallmarks of performance." Finally, the rapid expansion of both information and

education is changing *cognitive* capacities by empowering populations to become "less passive and better educated", shifting traditional centers of power. In this new environment, organizations are struggling to "define and retain the right mix of competencies in a knowledge-based workforce increasingly characterized by mobility, diversity and assertiveness." [4]

2.2.2 Technology

The idea of ICTs (particularly the Internet) as the root cause of the emergence of e-government dominates current thinking in all sectors of society. For example, Alfred Tat-Kei Ho in *Reinventing Local Governments and the E-Government Initiative* (2001) writes: "The explosive growth in Internet usage and the rapid development of e-commerce by the private sector have put growing pressure on the public sector to serve citizens electronically, which is often known as the 'e-government' initiative." He adds that "the Internet has brought more than a technological breakthrough in service delivery. It has stimulated a transformation in the philosophy and organization of government." The work of Robert D. Atkinson in *Digital Government: The Next Step to Reengineering the Federal Government* (2000) builds on this theme. Atkinson states that "digital technologies are fundamentally transforming our economy and society, and have the potential to transform government. In fact, a key next step in reinventing government involves the widespread application of information and communications technology to the delivery of government services – in short, fostering a digital government." A related point is made by Riley, who much like Lester Thurow in the book *Building Wealth* (1999), contends that technology is the key driver that is changing the world around us, particularly the nature of government. Both Riley and Thurow liken the revolutionary nature of ICTs to that of the printing press:

"...today's new information and communications technology holds the potential to bring about revolutionary change in the concept of governance, and alter current view

of democracy, society and public administration. It is for that reason the Internet has rightly been called the 'spiritual successor to the printing press'."
[Riley, 2001] [4]

2.2.3 Globalization

Robert J. O'Neill in *Forces of Change in the Public Sector* (2000) accurately sums up the force of globalization (one inherently driven by developments in ICTs) as the decreasing relevance of the classic division of responsibilities in most democratic systems of government among federal, state, and local governments. "With increasing frequency, issues and outcomes of importance do not fit within the parameters of the federal system. Issues are more likely to be global, regional, or neighbourhood-based" [O,Neill, 2000]. Roy (2001) similarly suggests that "new notions of place mean that e-government emerges not within a traditional order of national processes, but rather a more complex picture of both globalizing and localizing pressures." As a result, we have seen the rapid rise and increasing relevance of super-national organizations such as the World Trade Organization and the International Monetary Fund, and of city-region institutions such as The Ottawa Centre for Research and Innovation. [4]

2.3 E-GOVERNMENT INITIATIVES IN MALAYSIA

Many countries such as The United States, Brazil, Egypt, Korea, New Zealand and Singapore has embarked electronic government (e-government) services as more advanced facilities to their citizens and Malaysia has becoming one of them. E-government is a new paradigm of the government operations which is not only change the traditional ways of government services to the citizens, but also increase the efficiency of its operations to a higher standard. The use of technology in government can enhance the access to and the delivery of public services, and thus improving the overall efficiency of government. Malaysia's e-government initiative, similar to that

of many other governments around the world, is designed to create a paperless public sector, while also strengthening relationships with citizens and businesses through greater transparency and information flows.

The electronic government initiative was launched to lead the country into the Information Age. It will improve how the government operates internally, as well as how it delivers services to the people of Malaysia. It seeks to improve the convenience, accessibility and quality of interactions with citizens and businesses. At the same time, it will improve information flows and processes within government to improve the speed and quality of policy development, coordination and enforcement. [1]

Malaysia has certainly taken the first bold steps towards making e-government a reality which is the 7 pilot projects of the Electronic Government Flagship Application. The 7 pilot projects are:

- Project Monitoring System (SPP II)
- Human Resource Management Information System (HRMIS)
- Generic Office Environment (GOE)
- Electronic Procurement (E-Procurement)
- Electronic Services (E-Services)
- Electronic Labour Exchange (ELX)
- E-Syariah

According to Tan Sri Samsudin Osman (Berita Minggu, 2005);

> *"Government has started developing Information and Communication Technology (ICT) since 10 years ago and we always upgrading the facilities from time to time. The Prime Minister, Datuk Seri Abdullah Ahmad Badawi also stressed in many times that the usage of ICT can increase government's conveying system."*

The Malaysian Administrative Modernization and Management Planning Unit (MAMPU) seek to enhance the use of ICTs and have mandated that each agency create

an IT strategic plan to help facilitate greater communication between agencies and the public.

Based on a newspaper article, the Malaysian Administrative Modernization and Management Planning Unit (MAMPU) now seeks to enhance the use of ICT by joining all the government agencies under one portal that much easier to remember, which is www.gov.my. This portal is known as myGovernment. User can reach government services much easier via myGovernment portal which joining 844 websites from variety of agencies. The portal offers 356 online services for people, businessman, government personnel and non-citizen including downloading 2,930 forms. (Berita Minggu, 2005) By having this portal, people do not need to memorize other websites' address as all the agencies have been joining with one portal.

The Malaysian Electronic Government project is fully implemented with all government agencies linked and providing electronic delivery services that can be accessed from anywhere and at anytime. After all, the initiative seeks to improve the convenience, accessibility and quality of interactions with citizens and businesses; simultaneously, improve information flows and processes within government to improve the speed and quality of policy development, co-ordination and enforcement.

2.4 ELECTRONIC TENDERING SYSTEM (E-TENDER)

Electronic tendering system (e-tendering) is a web based system which could enhance transparency through automation in the tendering process in addition to the conventional tendering procedure. Any organisation with internet access can use it. Once registered with the system, user can get all the privileges provided in the system. Person of any organisations are required to logon to the site prior to apply for any tender.

The system provides information on current and future tenders and in addition it is being able to view information and enables potential buyer to apply and submit tenders electronically. With an objective to realize better-cost efficiency, e-tender has been

provided to replace the manual paper-based tender procedures. The system bridges the gap in moving government from decentralized control of contracts to fully integration within a central repository of tenders and contracts, with comprehensive search, management reporting and data export capability. It provides an e-tendering facility for preparing and publishing tenders online. With an automated e-tendering system that equipped with a suite of integrated tools, reduced paper trail on tendering exercises and labor intensive tasks can be achieved by government. Besides, tender specification, advertising, tender aggregation as well as the evaluation and placing of the contract can be prepared at ease.

What can be done by e-tendering system?

Electronic tendering system could help in obtaining more profitable contracts with:

- Reduced cost – costs of participation for purchasers and vendors, advertisement cost
- Reduce labor intensive tasks – works for receipt, recording and distribution of tender is greatly reduced
- Minimize paper trail – tendering exercises are electronic facilitated
- Less manual forms – filling on tender application form and data re-entry upon receiving the tender are digitized
- Single point of access - Both vendors and purchasers can do business efficiently in a convenient and user-friendly manner.

CHAPTER 3
METHODOLOGY

3.1 INTRODUCTION TO METHODOLOGY APPROACH

Methodology is defined as step by step approach that essential in every system development. In other word, methodology can also be refers as system development life cycle. In developing any kind of project, developer has to do detail analysis on what kind of methodology that can be used to ensure its suitability with the nature of the project. There are many types of methodology that can be use by developers such as waterfall model, spiral model, rapid application development model and others. However, those methodologies cannot easily been choosing and used for every project.

There are several factors that should be concern by developer in order to choose the best methodology. The most important factors that should be underline are time constraints, cost of the project and the level of user involvement.

3.2 FACTORS FOR CHOOSING METHODOLOGY

3.2.1 Time Constraint

Time constraint is very crucial factor to be considered in the process of selecting appropriate methodology. It is important to ensure that the project can be developed in the allocation time.

3.2.2 Cost for System Development

The cost for the system development can be regarded as the major aspect to be considered for every project. The cost is basically associated with the time. The reason is, people that work in the project must be paid for the work that they done. It means that, the longer the project, the higher the cost. When the development time increase, then the cost needed to carry out the project also increases.

3.2.3 Level of User Involvement

The involvement of user in a project is very important. User acts as an entity for the developer to get user requirement. Thus, working closely with user is very helpful in order for developer to gather requirements and produce right product according to user requirements. Besides, we can get fast feedback from them and perform any changes instantly. Different methodologies have different level of user involvement.

3.3 PROCESS FLOW

The following diagram depicts the dependency relationships between the stages in the Rapid Application Development Process template.

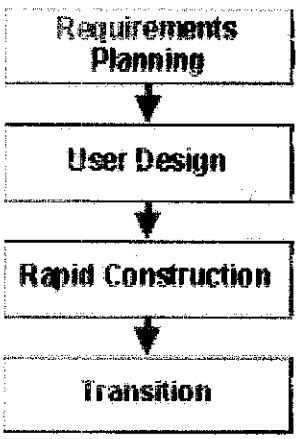


Figure 3.1: RAD Process Flow

3.3.1 Four Phases of RAD Lifecycle

To help ensure that developers build what the user really needs the RAD lifecycle has four phases:

- Requirements planning phase.
- User design phase.
- Construction phase.
- Cutover phase.

Requirements Planning Phase

The requirements planning phase requires that high level or knowledgeable end-users determine what the functions of the system should be. It should be a structured discussion of the business problems that need to be solved. It can often be done quickly when the right users and executives are involved.

User Design Phase

The user design phase requires the users to participate strongly in the no technical design of the system, under the guidance of IS professionals. User design is done in a Joint Application Design (JAD) workshop. In the first two phases the users and executives should play a larger part than the IS professionals. Prototyping is used to aid in requirements specification and design. The user does not sign off a paper design, they sign off a CASE representation.

Construction Phase

The design created during the User Design Phase is added to using I-CASE tools. As each transaction is built it may be demonstrated to the end-users for revision. The CASE environment allows for the continuous changes in design. End-users are closely involved in the construction phase. Testing occurs throughout the process. The I-CASE

toolset should generate the code as well as the database descriptions for the final product. Code optimizers may be used to improve the performance of the generated code.

Cutover Phase

When the cutover phase occurs, a variety of actions are needed, comprehensive testing, training of the end-users, organizational changes and operation in parallel with the previous system until the new system settle in.

3.4 DELIVERABLES FOR EACH RAD PHASE

In this section, the deliverable of each phases will be discuss. Every phase is necessary to produce output or deliverable that will be use as the input for the next phase. Without deliverable, the process of development can't be proceeding.

Deliverable Phase 1 – During this phase, the scope and objectives of the project have been defined in order to have a clear picture of the project. The feasibility study also has been carried out in order to ensure the project is worthwhile. All the problems and constraints regarding to the system development has been identified before conducting the system requirements study. This is important to identify the problems in order to make sure the development of the systems is running properly. System requirements also can be regard as guideline to developer in designing the system. In this stage, a system planning also has been carried out to plan for other phases. These are the outputs on the planning stage:

- Determine possible problems.
- Determine possible solutions.
- Determine system requirement specification
- Define the scope and objectives.
- Project schedule timeline.

From the analysis that have been done during this phase, the author have come out with the requirements specification that were stated as below which was divided into 4 sections; development tools requirement, workstations requirements, server requirements and security requirements.

Development Tools Requirements

Macromedia DreamweaverMX

Macromedia Dreamweaver MX is an easier tool used to design a website which makes the ordinary and repetitive tasks of coding easier. The visual editing features in Dreamweaver let us quickly create pages without writing a line of code. However, Dreamweaver also includes many coding-related tools and features. It helps us to build dynamic database-backed web applications using server languages such as ASP, ASP.NET, ColdFusion Markup Language (CFML), JSP, and PHP.

Macromedia Dreamweaver MX provides a set of visual objects that can be drawn easily onto a window. These controls eliminate the need to develop the code to construct visual interface. The layout of the windows that contain the controls can be changed easily by dragging and dropping the controls to a new location, without require a change in the code. The process for program development and revision becomes much easier and requires much less time and effort.

Microsoft Access

Microsoft Access is used to develop the database for the systems. All the data entry and processed data will be stored on the database. This database will be linked to the interface of the systems for the completion of the systems process. Database Management System (DBMS) is used to create access control and manage the database. The core of the DBMS is database engine that responds to specific commands to create, read, update and delete records in the database.

Open Database Connectivity (ODBC)

Open Database Connectivity (ODBC) is a methodology for providing access to database sources and the primary focus is to provide a consistent interface to database data sources.

Active Server Pages (ASP)

Active Server Pages (ASP) is a great tool for creating dynamic and interactive web pages. ASP is a Microsoft technology and it works by allowing us the functionality of a programming language. Programming code will generate the HTML for the web page dynamically. So, whenever a user browsers to our web site and requests one of our ASP pages, the ASP code is processed at that time by a special piece of software, called the web server.

Internet Information Services (IIS)

Internet Information Services is a web server and needed to run ASP. This is because; any web pages containing ASP cannot be run by just simply opening the page in a web browser. The page must be requested through a web server that supports ASP. In order to run ASP on our own system, we need to install IIS that comes free with Windows.

Workstation Requirements

The requirements for the workstation in order to run the system effectively, the PC must have the minimum hardware and software. The requirements for the workstation were stated as follows:

An INTEL based PC with the minimum speed 100 MHz

- We have to comply with this minimum speed because the CPU processor speed is important to make the systems is running smoothly and the response time to wait the completion of the data process is short.

50 MB of memory

- The systems need a space on the hard drive to perform the software, 50 MB is the minimum space needed to run the system.

CD ROM drive

- CD ROM drive is used for the installation of the system but it is optional, as the system can be distributed via network.

Other requirements:

- 32 MB RAM drive
- Microsoft Windows 2000/ XP/ NT 4.0/ UNIX
- Network card

Server Requirements

Server will be a host to run the system and also as the system database. The minimum requirements for the e-tendering system server are as follow:

Intel based PC with Pentium processor

- The PC must be fast enough in order to get a fast response time while running the systems. So the minimum speed for the PC which run as a server must not below than 2.0 Gigabyte.

Other requirements:

- 32 MB SD RAM drive

- 40 Gigabyte of free hard disk to put all the data in a server.

Security Requirements

To maintain the security level of the systems, the author specified to use the following access right parameters:

- User Level Access

User only can view the data without having the access to modify and manipulate current database. This is important to maintain the integrity of the database.

- Authorized Level Access

An authorized user entered the system using user identification has the right to view, modify and manipulate the data.

- Database Administrators

DBA is the owner of the systems who has the access to make a change or modification throughout the times, subject to the future requirements.

Deliverable Phase 2 – This phase cover the activities done in designing the system including detail design of context diagram and data flow diagram (DFD), and Graphical User Interface Design (GUI). This deliverables then is use as the input for the next phase which is constructing phase. The detail design for the context diagram and data flow diagram, and GUI is important because the shape of the system will be based on this phase. So, the detail design phase was divided into two sections which are context diagram and DFD.

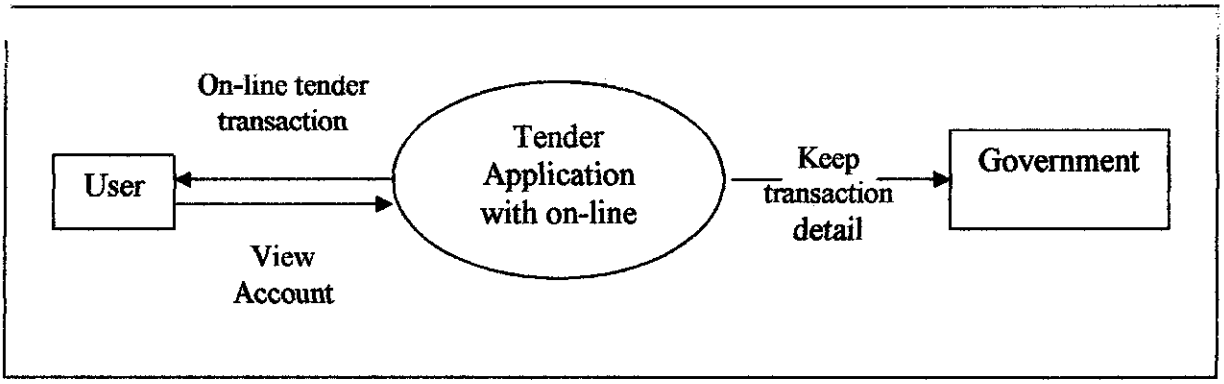


Figure 3.2: Context Diagram

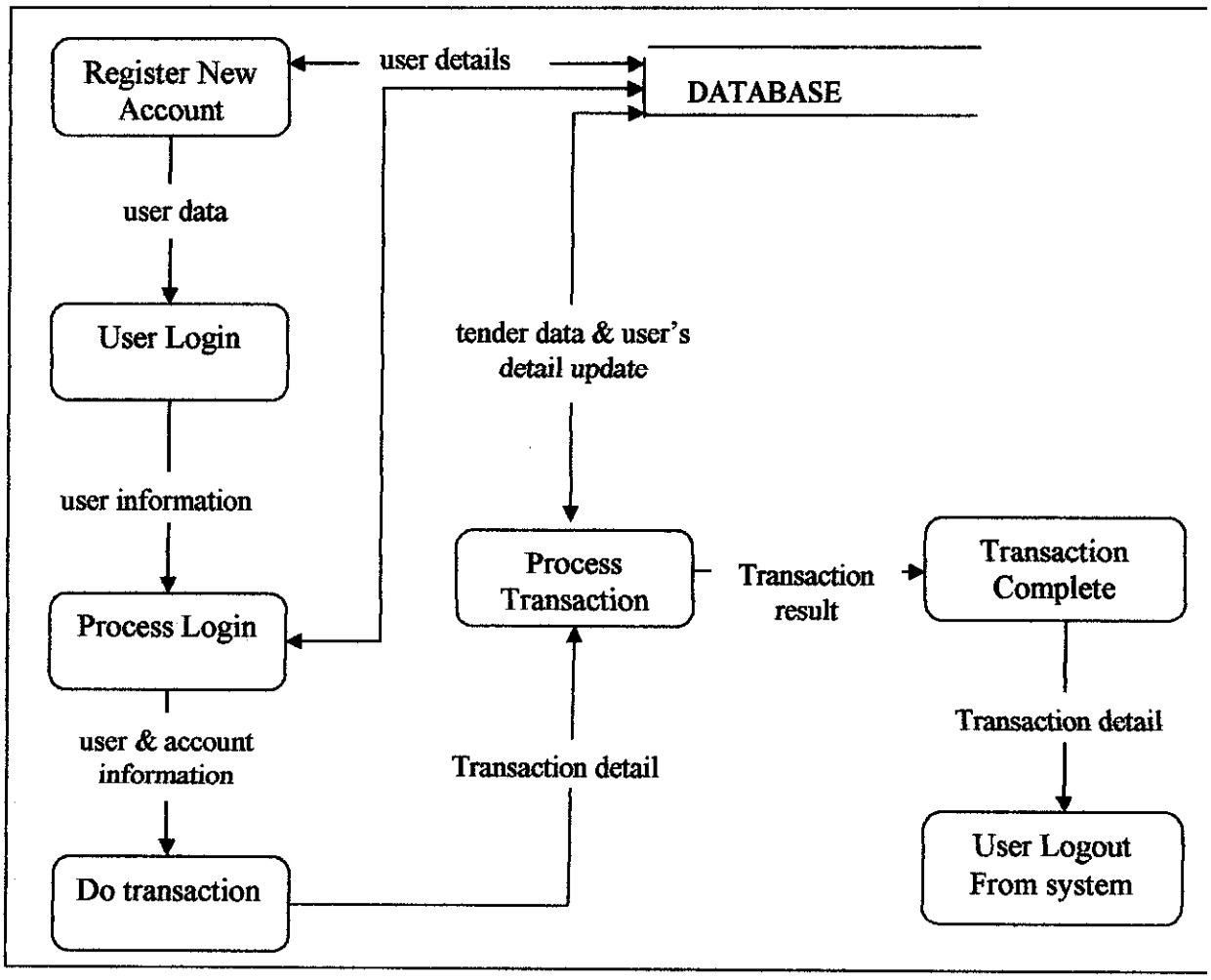


Figure 3.3: Data Flow Diagram (DFD)

Figure 3.4 below shows the system architecture of the electronic tendering system. From the architecture, we can see that the user can access the system that resides in the main government server via internet or World Wide Web (www). Users have to connect their personal computer (PC) to the router in order to access the internet and enable them to access electronic tendering application.

The government center should have net server in order to hosting or publish the web based application through the internet. This server will maintain the connection between the user and the web application. The net server is connected to the government center's database where the information about contractor is store and update.

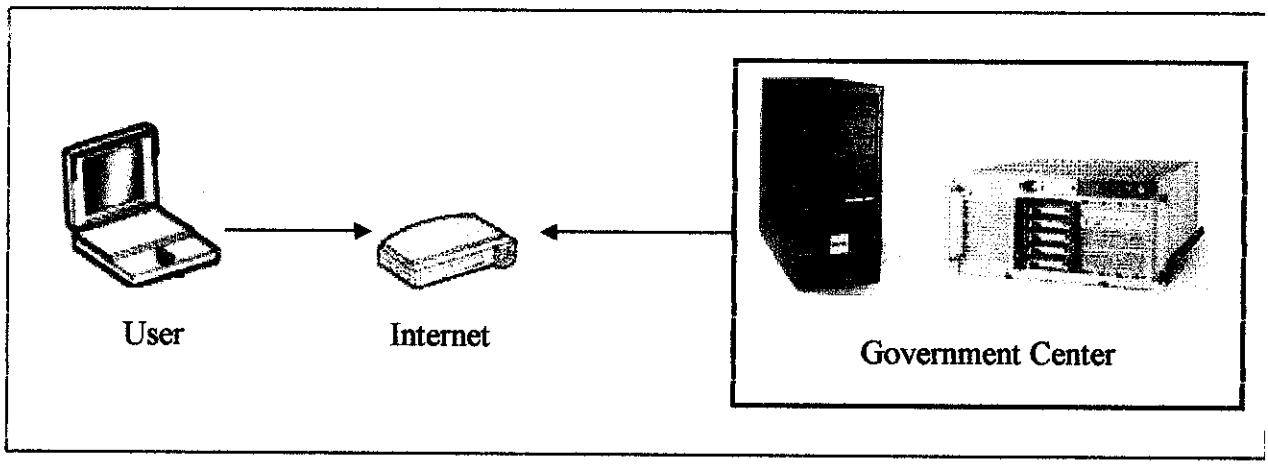


Figure 3.4: System Architecture

Deliverable Phase 3 – In this phase, system development has been took place to turn the detailed design into code. Complete system which is the final product is the deliverable for constructing phase which will be the input for the next phase. A complete system is means that the system has been tested by user and they are agreeing to accept the system. For this stage, the development of system is including develop the template design for interface into system, create data entry, and database and server configuration.

Deliverable Phase 4 – In this phase, system testing is being conducted to detect and fix the bugs and errors. It was divided into two, which are developer testing and user testing. The testing comes with the intent to ensure that the system meets all the requirements stated during the early phase. Complete project documentation is the final deliverable for the final phase of the Rapid Application Methodology (RAD). This not means that the output is not going to be used. The documentation will be keep for references for other project and also for reference to other persons who will enhance this project in future. There are 2 deliverables during this phase which are;

- Documentation
- User manual and training

CHAPTER 4
RESULT AND DISCUSSION

4.1 RESULT

In this section, the result that obtained from the project will be explained in detail. The main purpose of this chapter is to tell the audience about the final product of the project such as how the system work and what functions that offer by the system. For better understanding, this chapter will be divided into two major parts. The first part is result part and the second part is discussion part. For the result part, the topic that will be present is result of study. This part will present the result of study that has been gone through in gathering information and data for the project including survey and questionnaire result.

4.1.1 Result of Study

For this study, four hundreds (400) of people were distributed with the questionnaires through personal distribution, local university network and electronic mails (e-mail). The author has used a set of questionnaire which has been adapted from the previous study, with some enhancements and modifications by adding two (2) sections which are section E and section F. The results gathered have been summarized in the table according to the different sections in the set of questionnaires. There are six (6) sections in the questionnaire which are:

- Section A – Respondents' Background
- Section B – Computer and Internet Usage
- Section C – Use of e-government services on the Internet

- Section D - Respondents' view on the benefits of e-government services to Malaysian citizen
- Section E – Perception towards electronic tendering system
- Section F – Level of acceptance of the proposed electronic tendering system

The results are described in the tables below:

Section A

Table 4.1: Results that addresses respondents' background

Category	No. of Respondents	Percentage %
Age range:		
15 – 20 years	62	15.0
21 – 25 years	82	19.9
26 – 30 years	135	32.8
31 – 35 years	44	10.7
36 – 40 years	29	7.0
41 – 45 years	33	8.0
46 – 50 years	12	2.9
51 – 55 years	10	2.4
56 – 60 years	5	1.2
above 60 years	0	0.0
Race:		
Malay	201	48.8
Chinese	148	35.9
Indian	61	14.8
Others	2	0.5
Gender:		
Male	197	47.8
Female	215	52.2
Employment category:		
Banking or finance	28	6.8
Administration	36	8.7
Education sector	105	25.5
Executive	20	4.9
Business	43	10.4
Student	133	32.3
Trainee	8	1.9
Self-employed	2	0.5

Retiree	6	1.5
Unemployed	2	0.5
Others	29	7.0
State:		
Perlis	26	6.3
Kedah	12	13.1
Pulau Pinang	22	5.3
Perak	83	20.1
Wilayah Persekutuan	41	10.0
Selangor	37	9.0
Negeri Sembilan	25	6.1
Melaka	19	4.6
Johor	21	5.1
Pahang	13	3.2
Terengganu	54	2.9
Kelantan	18	4.4
Sabah	22	5.3
Sarawak	19	4.6

Section B

Table 4.2: Results that addresses computer and Internet usage among Respondents

Category	No. of Respondents	Percentage %
Presence of computer at home:		
Yes	367	89.1
No	33	8.3
Computer at home with Internet connection:		
Yes	289	72.3
No	111	26.9
Frequency of Internet usage:		
[1] Never	12	2.9
[2]	14	3.4
[3] Moderate	41	10.0
[4]	189	47.3
[5] Very frequent	144	35.0
*Reasons for using Internet:		
Education	245	45.3
Business	126	23.3
Occupation	48	8.9
Entertainment	69	12.8
Others	53	9.8

*Use Internet from:		
Home	127	24.2
Work place	169	32.3
Schools	26	5.0
University	133	25.4
Cyber Café	58	11.1
Public library	11	2.1

*Respondents could tick all that apply

Section C

Table 4.3: Result that addresses the use of e-government services on the Internet

Category	No. of Respondents	Percentage %
Usual way of contacting government offices:		
Telephone	105	21.7
In person	93	23.3
Letter	86	17.8
E-mail	65	13.5
Website/ Internet	51	10.6
Others	0	0.0
Awareness of the existence of e-government initiatives:		
Yes	266	66.5
No	134	33.5
First to know about e-government through:		
Television	183	45.8
Radio	49	12.3
Magazines	30	7.5
Colleagues	56	14.0
Internet	65	16.3
Others	17	4.3
Experience in using e-government:		
Yes	266	66.5
No	134	33.5
Level of understanding about e-government		
[1] Don't understand at all	8	2.0
[2]	38	9.5
[3] Moderate	92	23.0
[4]	166	41.5
[5] Really understand	96	24.0

Managed to find the desired information/ complete the transaction:		
Yes	147	55.3
No	119	44.7
Face difficulties when using e-government services:		
Yes	102	38.3
No	164	61.7

Section D

Table 4.4: Respondents' view on the benefits of e-government services to Malaysian citizen

Government services on the Internet will benefit the citizens by:	Strongly disagree [1]	[2]	Moderate [3]	[4]	Strongly agree [5]
Making it easier to find information	0	0	62	125	225
Making government services available on the Internet	1	0	41	184	186
Bringing people close to government through the easiness of information searching	0	18	68	168	158
Increasing the quality of services through the Internet	43	66	79	131	93
Making the easier for people to communicate their views to government	19	36	47	161	149

*Respondents could tick all that apply

Section E

Table 4.5: Perception towards E-Tendering System

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Respondents	0	13	97	166	124
Percentage (%)	0	3	24	42	31

Section F

Table 4.6: Level of acceptance of proposed E-Tendering System

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Respondents	0	0	97	161	129
Percentage (%)	0	0	24	42	33

4.2 DISCUSSION

4.2.1 Discussion on the study

The questionnaires that have been conducted throughout the project are being done successfully. From the data that gathered from the focused group of respondents, we can see clearly that the initiatives of government providing electronic services through the launching of e-government had gave benefits to users. This contributes to the effectiveness and efficiency of government in providing services to citizens and users. To be more precise, let's look at the chart below.

The Figure 4.1 below shows the effectiveness of e-government services. This has been summarized from the result that was conducted through the questionnaires. Based on the chart above, we can see that e-government services provide 55 percent of effectiveness. This was approved based on the analysis that, 147 out of 266 respondents who used the e-government services are managed to find the desired information that they want and they are able to complete their transactions successfully, while, 119 (45%) respondents are not manage to find their desired information and are unable to complete their transactions. This shows that, e-government services can provide the effectiveness to users in getting and having the result that they want.

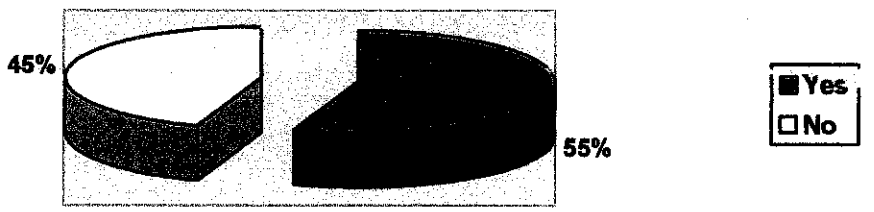


Figure 4.1: The Effectiveness of E-government Services

The Figure 4.2 below shows the efficiency of e-government services. Based on the chart above, we can see that e-government services provide 62 percent of efficiency. This was approved from the result of questionnaires which that, 164 out of 266 respondents are not face difficulties in using electronic government services, while 38 percent or 102 respondents facing some difficulties in using the services. In this context, the term of efficiency means that the application of services provided are working well without wasting time or energy. It refers in terms of time cost.

Based on the result, 164 respondents not facing with difficulties, so the respondents can do the transaction or any other services successfully without wasting their time and energy to reach an agency personally.

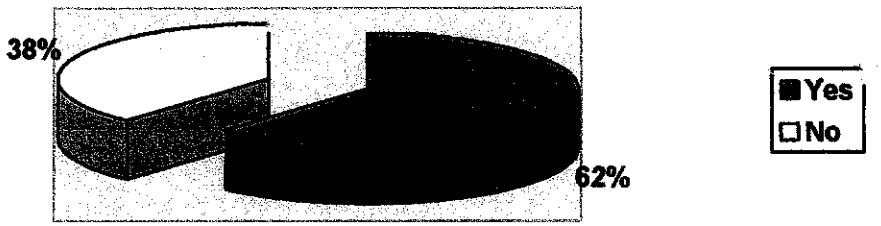


Figure 4.2: The Efficiency of E-government Services

From the survey that has been conducted, majority of the respondents are satisfied and pleased with electronic tendering system. This can be proved from the Figure 4.3 below which shows that, almost half of the respondents agree with the development of e-tendering system, while 31 percent of the respondents strongly agree to have an e-tendering system. This is directly shows that the system is acceptable among respondents.

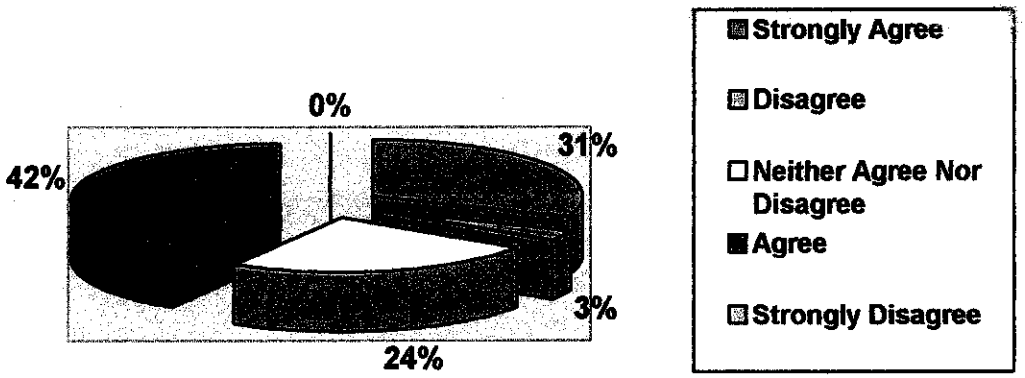


Figure 4.3: Perception towards E-Tendering System

Based on the Figure 4.4 below, majority of the respondents agree that the proposed e-tendering system would give a good impact in tender and government services through electronic application. This means that contractors and government are expecting to have better services in tender application and at the same time will benefit them much in terms of cost and time management. From the result itself, it shows that respondents are able to accept the application technology that led high quality and performance to government and citizens as well.

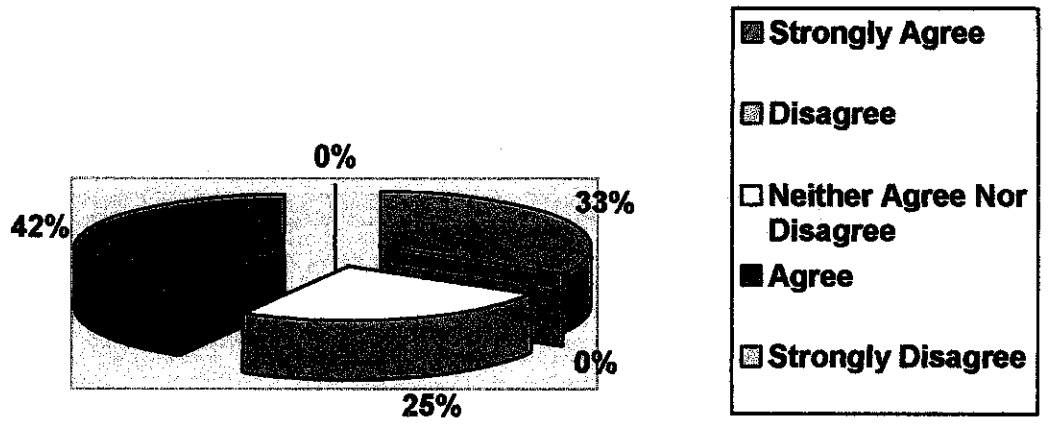


Figure 4.4: Level of Acceptance of E-Tendering System

4.2.2 System Prototype

This part will present about the overall of system manual including the system flow and system functionality.

The overall system functionality will be discussed here. Basically, the total interface of the system is ten (10) pages. The discussion will be started on the main page or the first interface of the system, follow by the page that describe the search function, log in, tender list finally the feedback page. This system does not provide with registration page because this system is based on ready information about contractors that automatically stored in this database system once they registered manually with CIDB and PKK.

Figure 4.5 below shows the main page of the system. From this page, user can navigate through five more pages which is searching page, about us, tender notice, feedback and contact us. Searching page is linked by the hyperlink "Click here". This link is for new user to search their username and password to access the system if they have been registered with CIDB and PKK.

The main interface is designed based on human computer interaction (HCI) concept where it should be simple, balance and interactive. The term "simple" means that the interface is not too crowded with information. The term "balance" means the layout of the interface is stable or position well and finally the term "interactive" means the interface is equipped with acceptable graphic element or simple decoration that could be acceptable. Other than that, interactive means that the user and the application inside the system able to interact with each other.

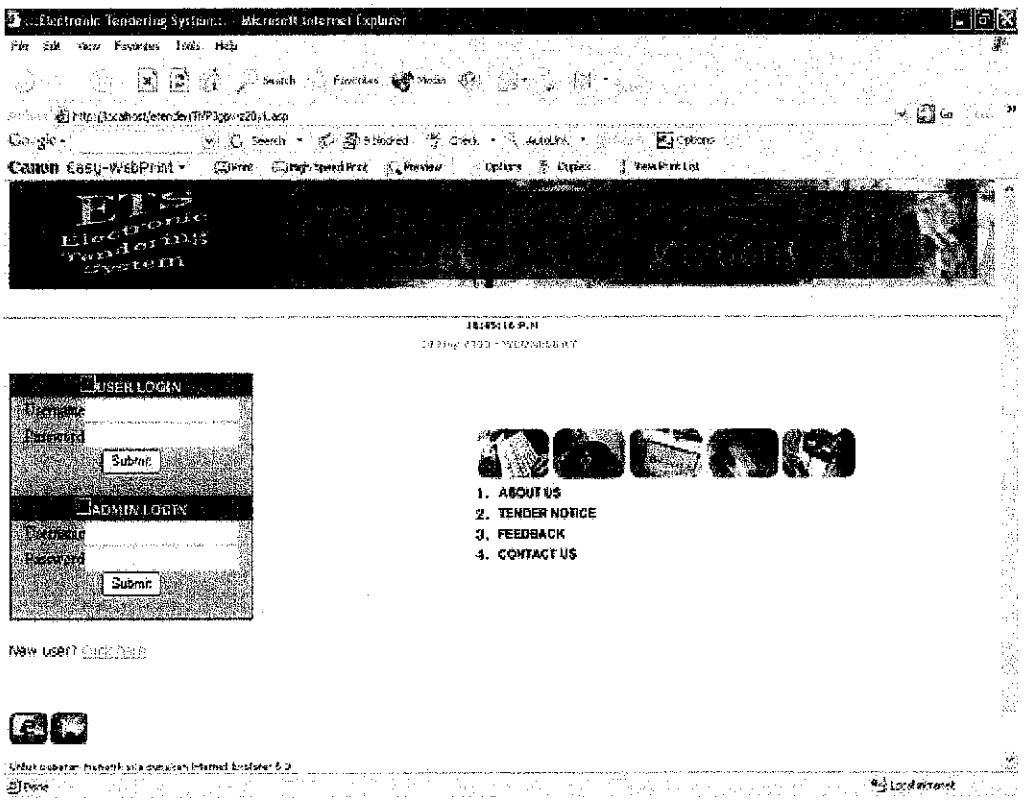


Figure 4.5: Main page

E-tendering system is dedicatedly developed for contractors who have been registered with government contractor association which are CIDB and PKK. All their data automatically stored in this system database once they registered with those associations. So that, the search page that depicted in Figure 4.6 below is designed for them to find their username and password in order to access the system. For this purpose, user needs to key in his or her ROC registration number and PKK certification number.

This function is designed as a security function that restricts unauthorized persons to get access in the system. They can still visit the website and view all the tender lists but, they cannot get the privilege as an authorized person. Only contractors that registered with CIDB and PKK can get the privilege to access the system and buy tender via on-line.

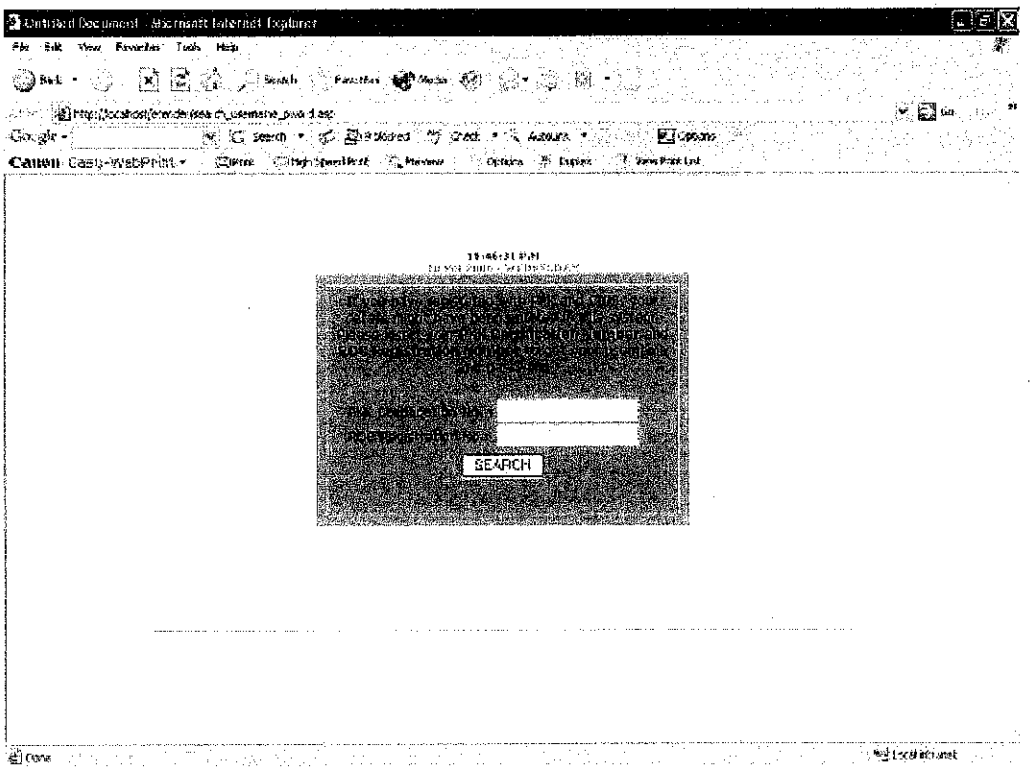


Figure 4.6: Search page

Figure 4.7 below is the interface that will be prompt out once user enters correct PKK certification number and ROC registration number. If the numbers match with information in the database, user will get their username and password. Otherwise, error message will be prompt as shown in Figure 4.8.

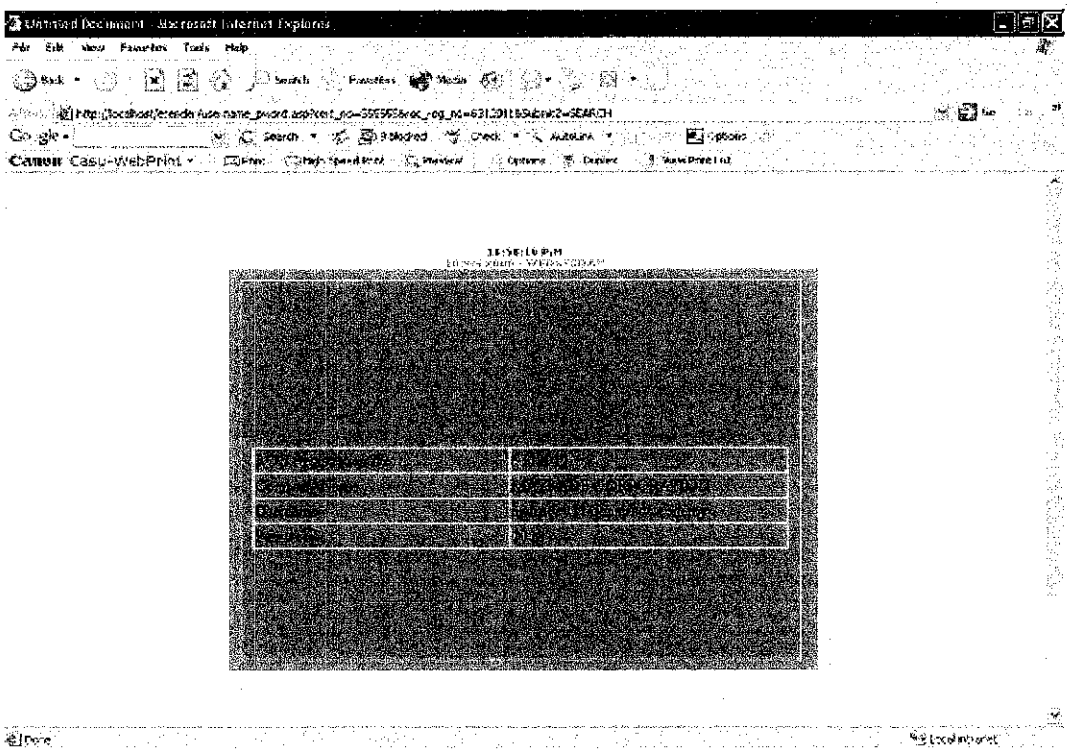


Figure 4.7: Found username and password

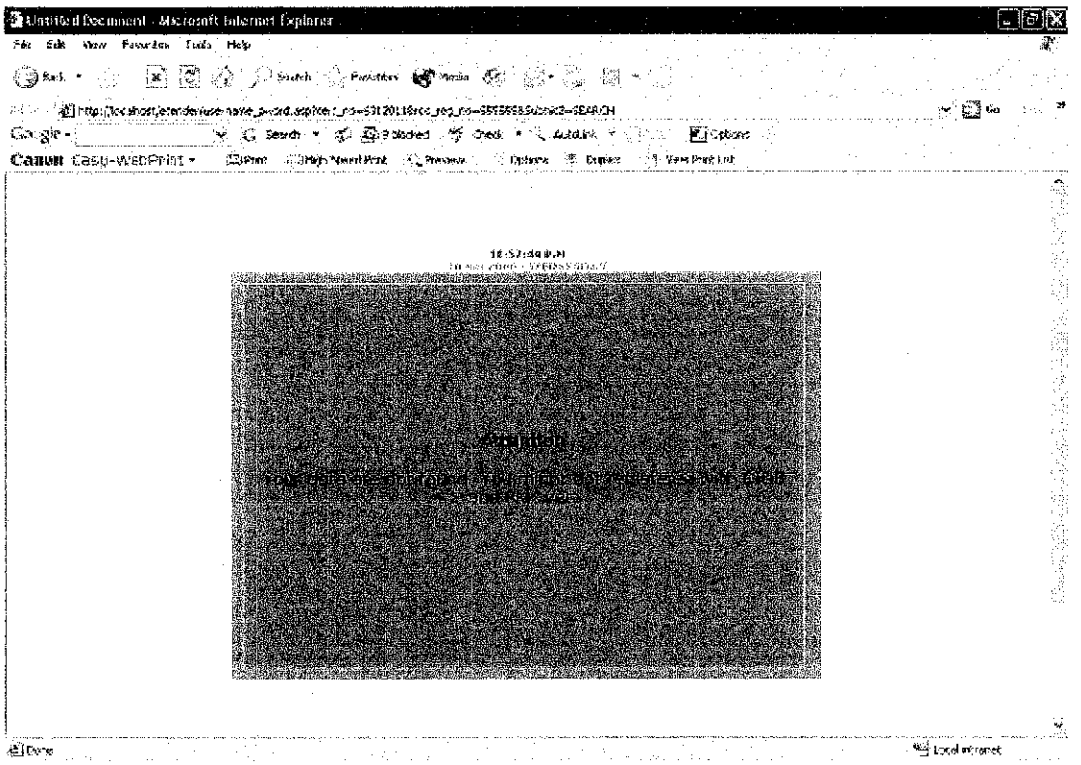


Figure 4.8: Data not found

The Figure 4.9 below will be prompt if user logs in the system successfully. The name of company will be displayed. From this interface, user can navigate through the links provided which are My Account, Tender List, Application Status, Application History and also Log Out. Through the link My Account, user can view their personal information and also can update or edit their current information in the database if necessary. From the link of Application Status, user can check their status of tender application either being approved or rejected. User also can check their history of application through the link Application History. From this link, user can know what tenders they have been applied and bought in past.

Through the link Tender List, user will be displayed with the interface as depicted in Figure 4.10. In this interface, user can see all the tender lists from all over Malaysia that have been collected and advertised in this single system. From the table, it shows the tender ID, project title, location of the project, date of posting tender and date of closing tender. To get further information about the tender, user can click on the project title that has been link to its details. This tender list interface is for registered contractor and only can be viewed once user logs in the system.

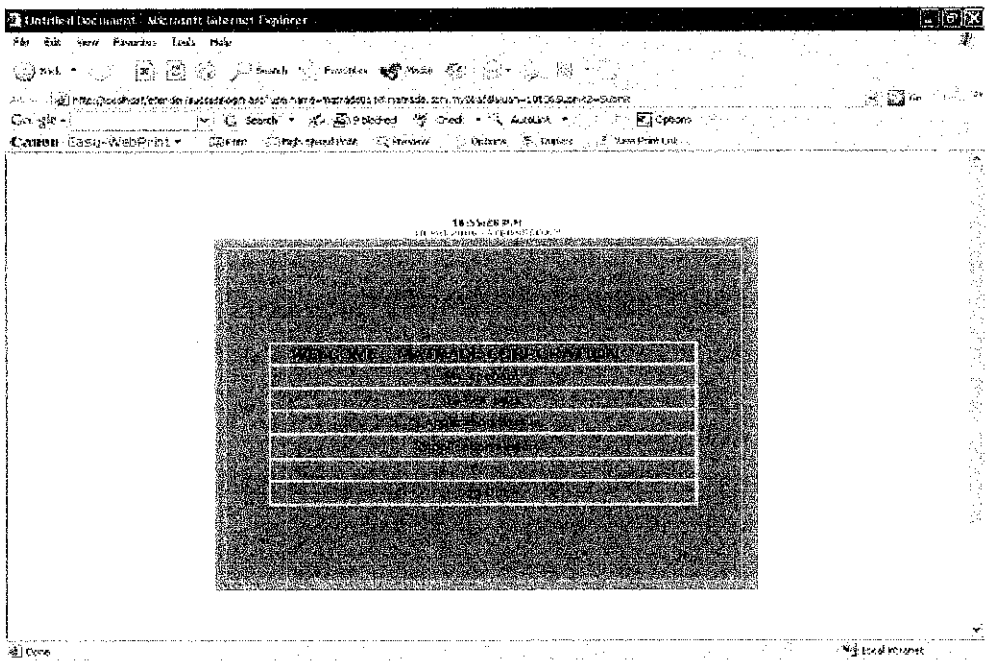


Figure 4.9: Welcoming user

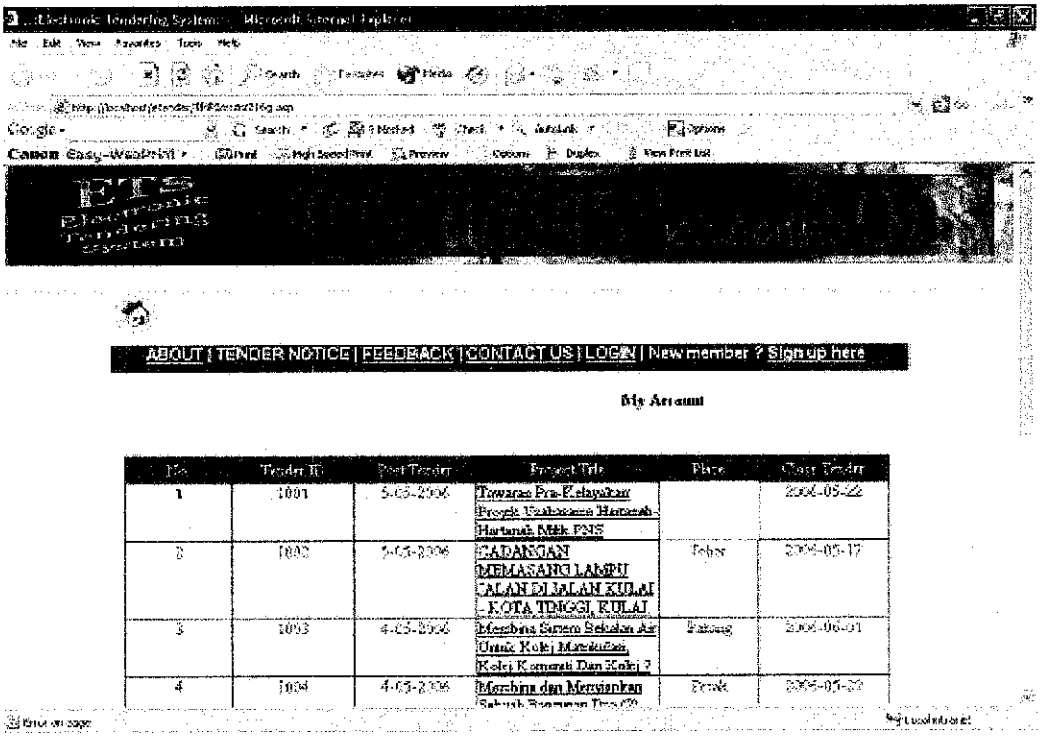


Figure 4.10: Tender List – for registered contractor

The Figure 4.11 below, will be displayed when user click on the project title link. This interface shows the details that related with the tender including price of the tender document and qualification requirements. There is one button provided in the details, labeled with "BUY". The button is for user to buy and apply to award the tender via on-line.

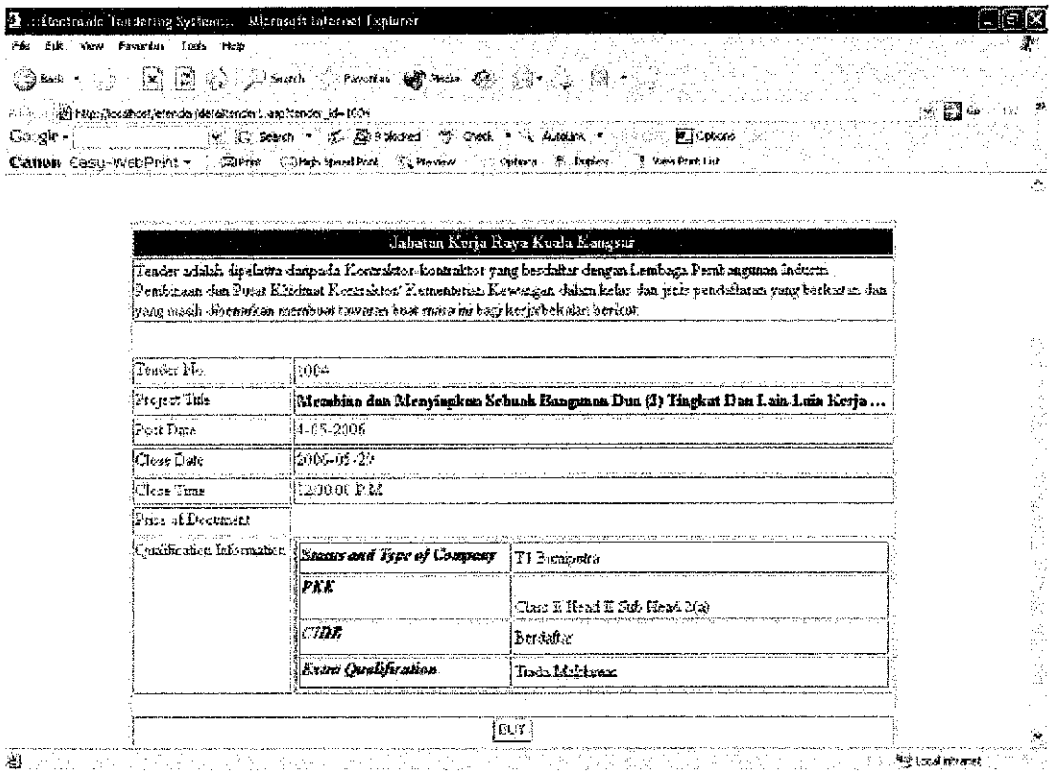
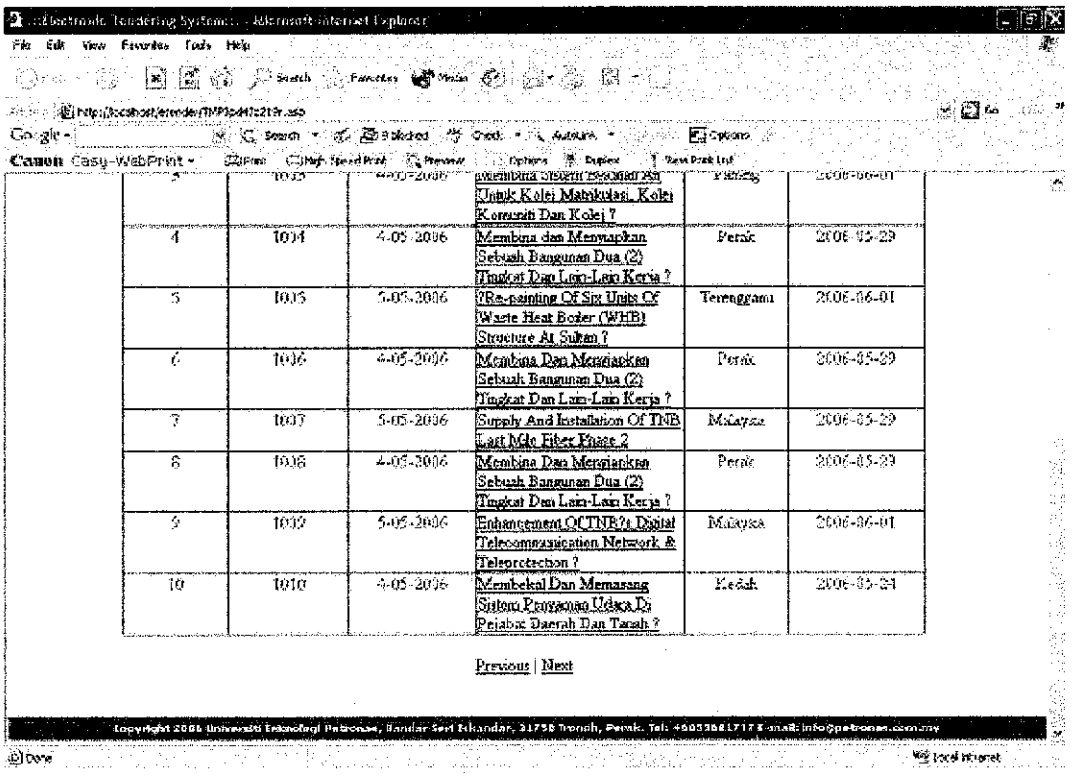


Figure 4.11: Tender Details

The Figure 4.12 below is the interface of tender list that designed for visitor or non-registered person. This interface is linked from the hyperlink Tender Notice that placed in the main page. For the tender details, the hyperlink is differ with the previous one. If user click on the hyperlink of project title, it will shows user with the interface that provide with tender details, but in the interface, no "BUY" button is provided because only registered contractor can have the privilege to buy tender via on-line. It is shown in the Figure 4.13.



			Untuk Kolej Matrikulasi, Kolej Komuniti Dan Kolej ?		
4	1004	4-05-2006	Membina dan Menyiapkan Sebuah Bangunan Dua (2) Tingkat Dan Lain-Lain Kerja ?	Perak	2006-05-29
5	1005	5-05-2006	Re-painting Of Six Units Of Waste Heat Boiler (WHB) Structure At Sultan ?	Terengganu	2006-06-01
6	1006	4-05-2006	Membina Dan Menyiapkan Sebuah Bangunan Dua (2) Tingkat Dan Lain-Lain Kerja ?	Perak	2006-05-29
7	1007	5-05-2006	Supply And Installation Of TNB Last Mile Fiber Phase 2	Malaysia	2006-05-29
8	1008	4-05-2006	Membina Dan Menyiapkan Sebuah Bangunan Dua (2) Tingkat Dan Lain-Lain Kerja ?	Perak	2006-05-29
9	1009	5-05-2006	Enhancement OCTNB?s Digital Telecommunication Network & Teleprotection ?	Malaysia	2006-06-01
10	1010	4-05-2006	Membekal Dan Memasang Sistem Penyaman Udara Di Pejabat Daerah Dan Tanah ?	Kedah	2006-05-31

Previous | Next

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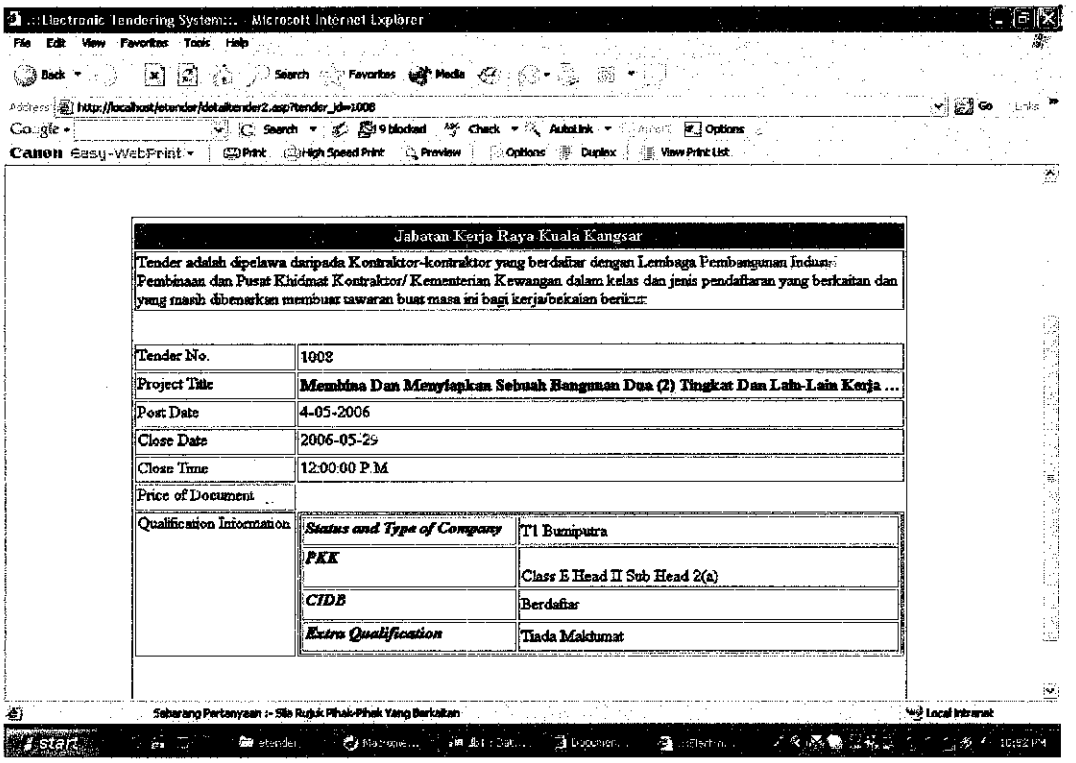
Done

Local Intranet

Figure 4.12: Tender List – for non-registered (visitor)



Jabatan Kerja Raya Kuala Kangsar

Tender adalah dipelawa daripada Kontraktor-kontraktor yang berdaftar dengan Lembaga Pembangunan Industri Pembinaan dan Pusat Khidmat Kontraktor/ Kementerian Kewangan dalam kelas dan jenis pendaftaran yang berkaitan dan yang masih dibenarkan membuat tawaran buat masa ini bagi kerja/bekalan berikut:

Tender No.	1002	
Project Title	**Membina Dan Menyiapkan Sebuah Bangunan Dua (2) Tingkat Dan Lain-Lain Kerja ...**	
Post Date	4-05-2006	
Close Date	2006-05-29	
Close Time	12:00:00 P.M	
Price of Document		
Qualification Information	***Status and Type of Company***	T1 Bumiputra
	PKK	Class E Head II Sub Head 2(a)
	CIDB	Berdaftar
	Extra Qualification	Tiada Maklumat

Seberang Pertanyaan :- Sila Rujuk Pihak-Pihak Yang Berkaitan

Local Intranet

Figure 4.13: Tender Details

Figure 4.14 below is the final interface for the system. This interface is designed with the purpose to give an opportunity for user to give their feedback or own comments toward the application or anything that related to the system and organization. However, to use this opportunity is an optional.

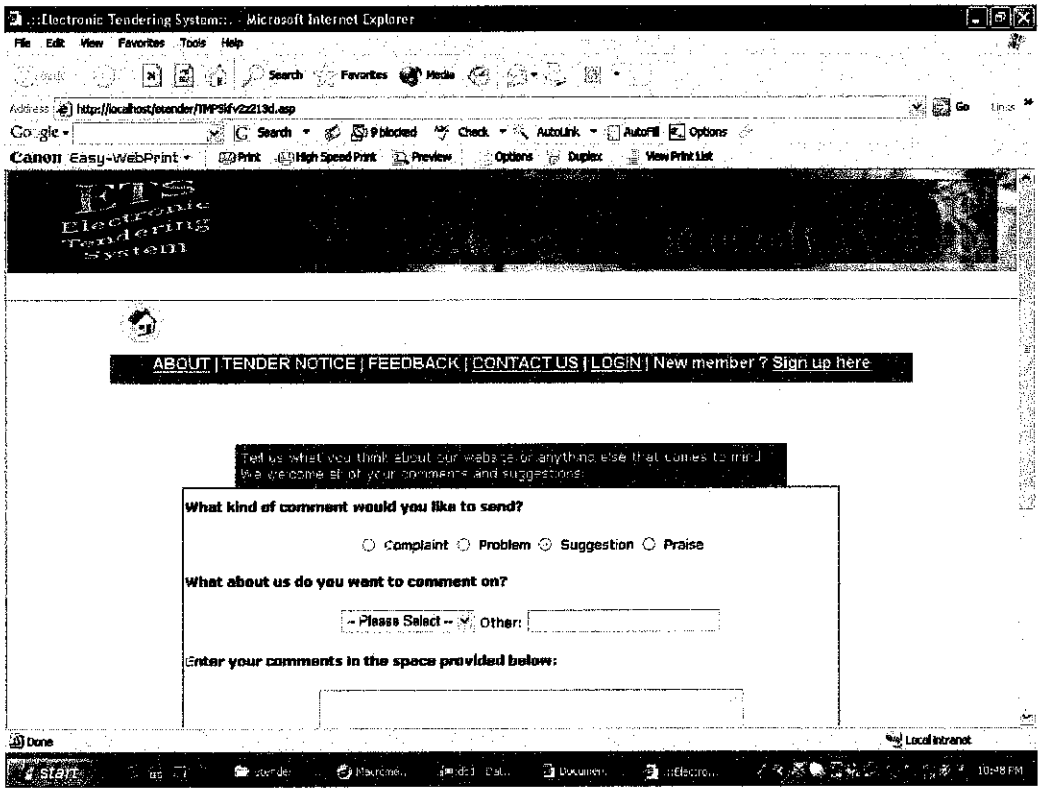


Figure 4.14: Feedback

4.2.3 Database Prototype

This part will present about the structure of system database which store data that capture from user

Database is the important part for this system. The main purpose to have database is to store data that captured from user, to update tender information as well as user data and finally to query data from database. For this project Microsoft Access database has been used.

There are seven (8) tables in the database like shown in Figure 4.15 below. They are 'cidb', 'company_info', 'jpp', 'komen', 'mof', 'pkk', 'senarai tender' and 'admin'. Table 'admin' is used to store data about the admin which is username and password that will be use for database administration purposes such as insert tender, update user data, update user status and so on.

The second table is 'cidb'. This table is use to store contractors' data that have been registered under Construction Industry Development Board (CIDB). The details that stored in the table are including CIDB registration number, category, specialization, and financial grade. The third table is 'company_info'. In this table, all details about the company will be stored including company name, business registration number, business address, contact person, email and so on.

The fourth table is 'jpp'. 'jpp' is stand for Jabatan Perkhidmatan Pembentungan. This table will store contractors' details if they involved with that type of work and registered under the agency. The fifth table is 'komen' that will store comments and feedback from users. Next is 'mof' table. This table store data that related with financial category. The seventh table is 'pkk'. This table contains all contractors' details including certificate number, class of contractor, nationality status, head and also subhead. The final table is 'senarai tender'. This is the table that will store all data about tenders which include project title, date of posting the tender, close date, qualification and price of the tender document.

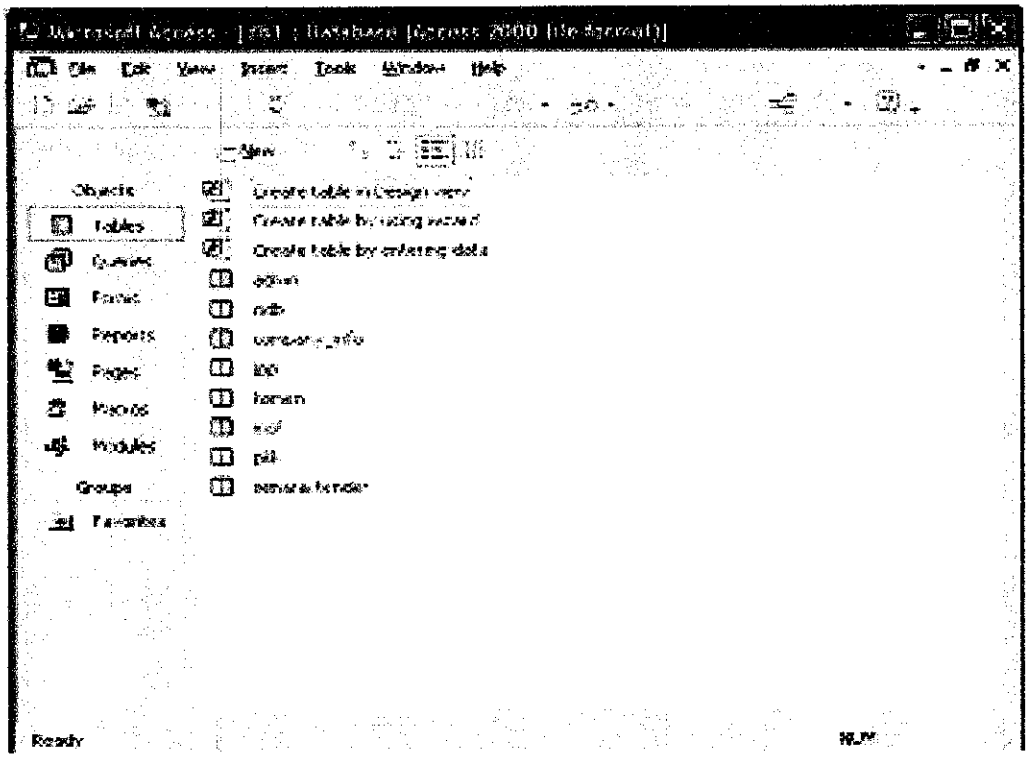


Figure 4.15: Database

CHAPTER 5
CONCLUSION & RECOMMENDATION

5.1 CONCLUSION

Malaysia government structure eventually results in new paradigm of the government operations. It not only change the traditional ways of government services to the citizens but also increase the efficiency of its operation to a higher standard. The use of technology in government can enhance the access to and the delivery of public services, thus improving the overall efficiency of government. In this paper electronic tendering system is implemented for government services so that contractors and suppliers can share the data that provided in the services. It can be shared and search in the system which can be expected to ease those contractor and suppliers who have the potential to buy tenders.

This research shows that e-tendering system is a useful vehicle for accessing on-line tender application. Electronic tendering system is a web-based system that enables customer to seek for available tender and to make an on-line application to buy the tender. E-tendering system combines both tender system and e-government technologies that create a powerful and reliable web-based system. By having e-tendering system, users would have more and better alternatives to search and buy tender. While for the government have the opportunity to expand their services by having promotion through the Internet and to boost up their services' effectiveness and efficiency.

For this project, there are two objectives that have been set up. The first objective is to perform a small scale of study regarding e-government. In order to satisfy this

objective, the author has gather information from variety of sources such as internet, books and asking some advice and idea from expert. The purpose to perform small scale of study is to find out the information about e-government and tender system such as its concept and functionality. The author has done some study on how the e-government helping the efficiency of public sectors in performing government services to people and also how the procedure of tender system. Beside that, the study on the existing system that using electronic government services also being done.

The first objective of the project is important and prerequisite for the second objective to be executed. The second objective is to develop a simple prototype of e-government website that providing e-tender system. The knowledge regarding e-government and e-tender that have been gathered to fulfill the first objective is then used for system development purpose. This is the key factor that determines the achievement of the project. The successful or failure of the project is depend on the ability to accomplish all of the objectives that have been defined during the beginning of the project.

It is difficult to cope up with user requirements that always change over the time. The incremental development or system enhancement must progress constantly in order to satisfy them. The selection of the suitable system development life cycle is also important. Developer has to analyze the characteristics of the project such as the time, cost, user involvement and other issue that related to the project in order to choose the best methodology. If all of the important criteria or characteristic is not carefully being analyze, the project might face several problem such as it cannot be completed in the period that has been defined or the cost of the project may be exceed the planned cost.

In conclusion, many important things should be realized and take into consideration in developing any kind of project. The most important thing is to clearly understand the scopes and objectives of the project. This is to ensure the end product of the project meet all the requirements and expectations. The second thing is to determine the time to be taken to complete each task and follow the schedule that has been set up during the planning phase. This is to ensure the progression of the project run smoothly and

able to be completed as scheduled. Next, is to ensure all information and data regarding the project is properly documented into meaningful information and stored for future reference. The selection of the suitable methodology is also important. Developer cannot easily employ any methodology that they like without performing proper analysis and investigation. This is because every methodology has difference purpose and can resulting different impact.

5.2 RECOMMENDATIONS

5.2.1 Recommendations on the research

In future, it is hoped that this research will be able to use a focus groups as one of the data collection methods. By using focus groups, this study is able to gather several respondents in one group and ask them to view certain services and transactions, and their responses can be obtained at once with better physical contacts with the researcher. This will enable them to clearly voice out the responses and opinions.

5.2.2 Recommendations on the prototype

Future enhancement is needed in order to ensure the system can be reconstructed to be more interactive and effective. There are six (6) opinions regarding this matter. These opinions come from author and some of the users that performed user testing. The opinions will be explained in detail with some relevance points as below.

1. System should be integrated directly in real time basis with government agencies which are Construction Industry Development Board (CIDB), Pusat Khidmat Kontraktor (PKK) and also Ministry of Finance (MOF). The purpose to integrate the system with those agencies is to link one database in one agency to another database in another agency in order to get the actual data regarding contractor information, tender information, latest announcement and others.

2. Embedded the system with a decision support system (DSS) that could provide a decision for government to award tender to the potential contractor or buyer. This could ease government to make a decision based on criteria that have been fixed in the DSS. .

3. Embedded the system with agent features. The main purpose to have agent is to ensure the agent can work independently and able to make their own decision. To have an interactive system, the agent should be programmed to have variety of functionality. For instance, the agent should have the ability to travel into network and find information regarding the tender market, do analysis on tender information based on previous data and forecasting the future tender price.

4. System should be design more interactive and informative. The interface of the system should be designed more interactive by adding some multimedia elements such as animated graphic and updated tender price chart. Other than that, some educational information should also be included in the system in order to attract more traders to use the system.

5. Testing it with several users that really in the area of study. The system should be tested by person that involved in the area as they more familiar with the thing. The potential persons are contractors and government's personnel that working in CIDB or PKK. By getting their involvement, their opinions is valuable in determining if there is any issues with the system design and its functionality from users' point of view.

6. Adding more services in the system. The system can be enhanced by adding more services and application in it so that users can get fully advantage from the services that offered by the system. This could ensure that, the system is successfully in achieving the effectiveness and efficiency of project development.

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[7] Governments Must Move beyond eGovernment Initiatives to Enhance Customer Service for Citizens, Accenture Study Finds
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APPENDICES

APPENDIX A

PROJECT TIMELINE

Project Timeline for One (1) Semester Final Year Project

No.	Details/ Activities	Week													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Research Title Initial Proposal														
2	Preliminary Research Work - Introduction - Objective and Scope of Study - Methodology - Literature Review - Project Planning														
3	Submission of Preliminary Report														
4	Project Work - Reference/ Literature - Tools and Software - User Design Process - Contruction Phase														
5	Submission of Progress Report														
6	Project Work Continue														
7	Submission of Dissertation Final Draft														
9	Preparation on Project Dissertation														

Submission date

Work plan

APPENDIX B

SET OF QUESTIONNAIRES

(Adapted from Fazlina Mohamed Farouk, January 2005)

Instruction / *Arahan:*

Please tick (/) on your answer / *Sila tandakan (/) pada jawapan anda*

SECTION A: RESPONDENT'S BACKGROUND

SEKSYEN A: LATAR BELAKANG RESPONDEN

1. Age range / *Lingkungan umur*

[ ] 15 – 20 years / *tahun*
[ ] 21 – 25 years / *tahun*
[ ] 26 – 30 years / *tahun*
[ ] 31 – 35 years / *tahun*
[ ] 36 – 40 years / *tahun*
[ ] 41 – 45 years / tahun
[ ] 46 – 50 years / tahun
[ ] 51 – 55 years / tahun
[ ] 56 – 60 years / tahun
[ ] > 60 years / tahun

2. Gender / *Jantina*

[ ] Male / *Lelaki*
[ ] Female / *Perempuan*

3. Race / *Bangsa*

[ ] Malay / *Melayu*
[ ] Chinese / *Cina*
[ ] Indian / *India*
[ ] Others / *Lain-lain*

4. Employment category / *Kategori pekerjaan*

[ ] Banking or Finance / *Perbankan atau Kewangan*
[ ] Administration / *Pengurusan*
[ ] Education sector / *Sektor pendidikan*
[ ] Executive / *Eksekutif*
[ ] Business / *Perniagaan*
[ ] Student / *Pelajar*
[ ] Trainee / *Pelatih*
[ ] Self-employed / *Bekerja sendiri*

[ ] Retiree / *Pesara*

[ ] Unemployed / *Tidak bekerja*

[ ] Others / *Lain-lain*

5. Which state is your hometown / *Dari negeri manakah anda berasal* ?

_____

SECTION B: COMPUTER AND INTERNET USAGE

SEKSYEN B: PENGGUNAAN KOMPUTER DAN INTERNET

1. Do you have computer at home / *Adakah anda mempunyai komputer di rumah* ?

[ ] Yes / *Ya* [ ] No / *Tidak*

2. Does your computer have internet connection / *Adakah computer anda mempunyai talian internet* ?

[ ] Yes / *Ya* [ ] No / *Tidak*

3. How frequent do you use internet connection / *Sekerap manakah anda menggunakan talian internet* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Never		Moderate		Very frequent

4. What is your main reason in using Internet / *Apakah tujuan paling utama anda menggunakan Internet* ?

[ ] Education / *Pelajaran*

[ ] Business / *Perniagaan*

[ ] Occupation / *Pekerjaan*

[ ] Entertainment / *Hiburan*

[ ] Others / *Lain-lain*

5. Where do you usually access the Internet / *Di manakah anda selalu menggunakan Internet* ?

[ ] Home / *Rumah*
[ ] University / *Universiti*
[ ] Work place / *Tempat kerja*
[ ] Cyber café / *Kafe Siber*
[ ] School / *Sekolah*
[ ] Public library / *Perpustakaan awam*

SECTION C: USE OF E-GOVERNMENT SERVICES ON THE INTERNET

SEKSYEN C: PENGGUNAAN PERKHIDMATAN KERAJAAN MELALUI INTERNET

1. How do you normally make contact with government officers or offices / *Lazimnya, bagaimanakah anda menghubungi pejabat atau pegawai kerajaan* ?

[ ] Phone / *Telefon*
[ ] Email / *Emel*
[ ] In person / *Bersemuka*
[ ] Website / *Laman web*
[ ] Letter / *Surat menyurat*
[ ] Others / *Lain-lain*

2. Are you aware of the e-government services through Internet in Malaysia / *Adakah anda menyedari bahawa wujudnya perkhidmatan kerajaan melalui Internet di Malaysia* ?

[ ] Yes / *Ya*
[ ] No / *Tidak*

3. How did you first know about e-government initiatives in Malaysia / *Dari manakah pertama kali anda mengetahui tentang perkhidmatan kerajaan melalui Internet di Malaysia* ?

[ ] Television / *Televisyen*
[ ] Colleagues / *Rakan*
[ ] Radio / *Radio*
[ ] Internet / *Internet*
[ ] Magazines / *Majalah*
[ ] Others / *Lain-lain*

4. How far is your understanding with regards to e-government concept in Malaysia / *Bagaimanakah tahap kefahaman anda mengenai konsep e-kerajaan di Malaysia* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Don't understand at all		Moderate		Really understand
Langsung tidak faham		*Sederhana*		*Sangat faham*

5. Have you ever used any of e-government services / *Pernahkah anda menggunakan khidmat e-kerajaan* ?

[ ] Yes / *Ya* [ ] No / *Tidak*

6. Did you manage to get what you were looking for in the e-government services / *Adakah anda berjaya mendapatkan apa yang anda cari melalui khidmat e-kerajaan* ?

[ ] Yes / *Ya* [ ] No / *Tidak*

7. Have you had any difficulties in using e-government services / *Pernahkah anda mengalami kesulitan ketika menggunakan perkhidmatan e-kerajaan* ?

[ ] Yes / *Ya* [ ] No / *Tidak*

SECTION D: RESPONDENT'S VIEW ON THE BENEFITS OF E-GOVERNMENT SERVICES TO MALAYSIA CITIZENS

SEKSYEN D: PENDAPAT RESPONDEN BERKAITAN KEBAIKAN PERKHIDMATAN E-KERAJAAN KEPADA RAKYAT MALAYSIA

1. Government websites make it easier to find what you want / *Laman web kerajaan memudahkan anda mencari informasi* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree		Moderate		Strongly agree
Langsung tidak setuju		*Sederhana*		*Sangat setuju*

2. How important is it to you that government information / services are available on the Internet / *Adakah penting bagi anda bahawa informasi tentang kerajaan dan perkhidmatan yang ditawarkan oleh kerajaan dapat dilakukan melalui Internet* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree		Moderate		Strongly agree
Langsung tidak setuju		*Sederhana*		*Sangat setuju*

3. The concept of e-government on the Internet brings people closer to government / *Wujudnya konsep e-kerajaan akan mendekatkan lagi rakyat dengan kerajaan* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree		Moderate		Strongly agree
Langsung tidak setuju		*Sederhana*		*Sangat setuju*

4. E-government services increasing the quality of government services through Internet/ *Perkhidmatan e-kerajaan meningkatkan lagi kualiti perkhidmatan kerajaan melalui Internet* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree		Moderate		Strongly agree
Langsung tidak setuju		*Sederhana*		*Sangat setuju*

5. E-government services through Internet making it easier for people to communicate their views to government / *Perkhidmatan e-kerajaan memudahkan orang ramai untuk menyuarakan pendapat mereka mengenai kerajaan melalui Internet* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree		Moderate		Strongly agree
Langsung tidak setuju		*Sederhana*		*Sangat setuju*

SECTION E: PERCEPTION TOWARDS E-TENDERING SYSTEM

SEKSYEN E: PERSEPSI MENGENAI SISTEM ELEKTRONIK TENDER

1. How your perception towards electronic tendering system in e-government services / *Apakah persepsi anda mengenai sistem elektronik tender di dalam perkhidmatan kerajaan* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree	Disagree	Neither agree	Agree	Strongly agree
Langsung tidak setuju	*Tidak setuju*	Nor Disagree	*Setuju*	*Sangat setuju*
		Tidak kedua-duanya		

SECTION F: LEVEL OF ACCEPTANCE OF THE PROPOSED E-TENDERING SYSTEM

SEKSYEN F: TAHAP PENERIMAAN MENGENAI CADANGAN SISTEM ELEKTRONIK TENDER

1. How is your level acceptance of the proposed electronic tendering system / *Apakah tahap penerimaan anda mengenai cadangan system elektronik tender* ?

[ ]	[ ]	[ ]	[ ]	[ ]
1	2	3	4	5
Strongly disagree	Disagree	Neither agree	Agree	Strongly agree
Langsung tidak setuju	*Tidak setuju*	Nor Disagree	*Setuju*	*Sangat setuju*
		Tidak kedua-duanya		