

**THE DEVELOPMENT OF KEY PERFORMANCE INDICATOR  
(KPI) PORTAL**

by

**Khairul Hafiz bin Mohd**

Dissertation submitted in partial fulfillment of

the requirements for the

Bachelor of Technology (Hons)

(Information & Communication Technology)

**JULY 2009**

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**CERTIFICATION OF APPROVAL**

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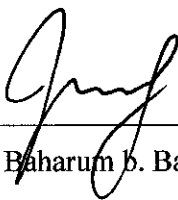
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Approved by:



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(Dr. Baharum b. Baharudin)

July 2009

Universiti Teknologi PETRONAS

Tronoh, Perak

## **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.



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(Khairul Hafiz bin Mohd)

## **ABSTRACT**

Nowadays, internet is leading the world to the top of communication technology. The functions of internet can never be narrowed down; it is just full of potential to be improved even more. Website is one of the most potential internet tools which can be used without any limitation. Nowadays website application has been widely used for management purposes too, because people will always tend to use the technology in order to perform and complete several tasks in a systematical ways. Via the development of websites, government and non government organizations can always manage their management system in fast and practical manners. In UTP, there are many types of system like this that are already exist and one of them is on Key Performance Indicators (KPI). KPI help an organization define and measure progress toward organizational goals. Once an organization has analyzed its mission and defined its goals, it will use KPI to measure progress toward those goals. KPI are quantifiable measurements that reflect the critical success factors of an organization. They will differ depending on the organization (Moshood Adeniji Bello, 2008). As in UTP, one of KPI measurement is based on lecturers' performance with respect to their publications and consultancy work. The existing KPI system is not centralized and the functions are quite limited. This is the reason why the development of KPI Portal is proposed with the hope that the new system can help to motivate each lecturer in UTP to improve their skills as it also would be able to build healthy competition environment among UTP lecturers.

## **ACKNOWLEDEGEMENT**

Herein, I would like to take the chance to praise to the Al-Mighty Allah SWT for giving me opportunity and also a good health to finish my Final Year Project. Final Year Project has provided me an incomparable and worthless knowledge and experience. For all this two semester, I would like to show my sincere appreciation to the project supervisor, Dr. Baharum bin Baharudin for helping me by giving his guidance, ideas and motivation. Not to forget, Mr. Muhaiyuddeen bin Shaik Allauddin, a person who willingly offering his helps, opinions and supports. Their helpful suggestion, tenacious supervision, patience and moral support deserve a special mention. I would like to express gratitude to my colleague who had helped me giving idea, support and help during this time to help me to finish my study. Special thanks also to our lecturers who helping us throughout the FYP lectures. This FYP lectures is very good to us because we have guidance to follow throughout this project. I would love to thanks to Department of Computer and Information Sciences who have always help us through this pass two semesters by giving guidance about this project. Last but not least, I would like to thank my parents for their support to help me to finish my degree in UTP.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Performance management is a process which contributes to the effective management of individuals and teams in order to achieve high levels of organizational performance. The ever changing dynamism in the academic environment affects the Education Industry too, bringing usage of KPIs within the education providers in the Country.

A key performance indicator (KPI) is a business metric used to evaluate factors that may be vital to the success of an organization. KPIs differ per organization; an educational organization may have a key performance indicator like the graduation rate and success in finding employment after graduation. Further to this the key performance indicators can trigger tasks related to the department in the college or university. During the process of the design of KPIs, all the employees in the organization play a crucial role. It is important to see that all employees understand the KPIs of the organization and have the ability to relate to the KPIs set for the department or the organization as a whole.

KPIs allow for long term monitoring of operational efficiencies. They ensure consistency in the type of information being tracked and in how it's measured. KPIs are used for on-going processes and they offer an excellent opportunity for organizations to target specific areas of growth and to achieve maximum business performance. This completely to an educational set up too (Kakul Agha, 2007).

## **1.2 Problem Statement**

KPI has been widely used nowadays; but here in UTP, there is still no centralized online system which would help to ease the current KPI management system. Because of that:

1. Rector unable to keeps track KPI status for each lecturer as it is important to ensure UTP is progressing positively towards UTP goals and values.
2. Administrators that are responsible for managing UTP KPI records are unable to update the databases of KPI records almost immediately which would lead to inaccurate information later on.
3. Lecturers unable to check their KPI details and all the related information that would contribute to their KPI performance such as conference paper and journal paper.
4. Lecturer's publications records are not well preserve for future usage and reference.

## **1.3 Objective**

The main objective of this project is:

1. To develop an online system that would perform all the functions needed to enhance the current UTP's KPI system.
2. To enable the administrators such as the Rector to keep track lecturers performance with respect to their publications and consultancy work.
3. To create an archive as to store the contents of the conference papers and journals.

#### **1.4 Scope of Study**

The scopes of study for this project are:

1. To determine cut-off point for keying the information into the database.
2. To decide on the person(s) responsible for keying-in the information.
3. Initialization of the respective KPI targets.
4. Accessibility issues – who is authorized to see or edit, to determine key fields required.
5. To determine the database structure and number of databases required.
6. Accessibility within UTP network only.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Overview

Basically the outcome of this project is an online system which is integrated with a database system working as a storage manager for data of the system itself. Only the identified key personnel will have the privilege to alter or update the database and also the system. While the users such as lecturers can only interact with the system online via UTP networks. The connections between the System, Database, Administrator and Users are demonstrated in **Figure 1**.

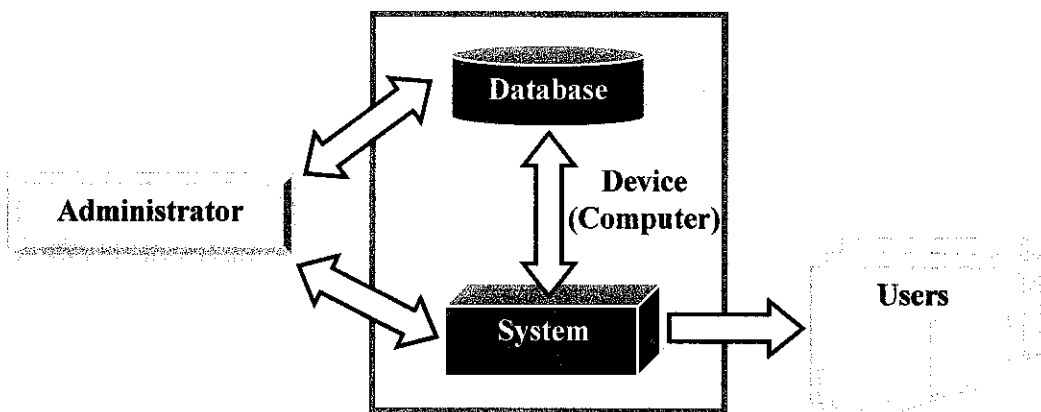


Figure 1: System, Database, Administrator and Users

## **2.2 Online System**

KPI Portal is an online system which will be installed in a device (computer) that will work as a server; where all users can interact with the server using their own workstation.

To be considered online, one of the following must apply to the selected device:

1. Under the direct control of another device
2. Under the direct control of the system with which it is associated
3. Available for immediate use on demand by the system without human intervention
4. Connected to a system, and is in operation
5. Functional and ready for service (Wikipedia, 2009a).

## **2.3 Database Management System (DBMS)**

A database is a structured collection of data that is stored in a computer system. The structure is achieved by organizing the data according to a database model (Wikipedia, 2009b).

A DBMS is computer software that manages databases. DBMSs may use any of a variety of database models. In large systems, a DBMS allows users and other software to store and retrieve data in a structured way (Wikipedia, 2009c).

KPI Portal will have its own structured databases which will be managed using XAMPP. XAMPP is an Apache web server software distribution containing MySQL, PHP and Perl.

## **2.4 Developing Web Application with PHP**

PHP stands for “PHP Hypertext Preprocessor” which is designed for creating dynamic web pages. It is actually an embedded scripting language for HTML, a language that combines elements of Perl, C and Java.

PHP is particularly strong in its ability to interact with databases. It can handle the connection to a database and communicate with it. By telling PHP the name of the database and where it is; it will connect to the database, pass all the instructions to the database, and return the database responses (Janade Valade, 2004a).

### Advantages of PHP

KPI Portal will be developed using PHP because:

1. Fast. Since it is embedded in HTML code, the response time is short.
2. Easy to use. PHP contains many special features and functions needed to create dynamic web pages. The PHP language is designed to be included easily in an HTML file.
3. Compatibility. It runs on a wide variety of operating systems and web browsers.
4. Secure. The user does not see the PHP code.
5. Support databases. PHP includes functionality designed to interact with specific databases.
6. Customizable. Allows the programmer to modify the PHP software, adding and modifying features as needed to fit their own specific environments (Janade Valade, 2004b).



## CHAPTER3

### METHODOLOGY

#### 3.1 System Development Life Cycle (SDLC)

SDLC in systems engineering and software engineering refers to the process of creating or altering systems, and the models and methodologies that people use to develop these systems. The concept generally refers to computer or information systems (Wikipedia, 2009d).

This project is going to follow all the steps involved in SDLC phases. This method is practical and systematic as to ensure the final product would be a big success to both the developer and also the customer. SDLC consist of four major phases which are Planning, Analysis, Design and Implementation.

The details of each phase are as **Figure 2** below:

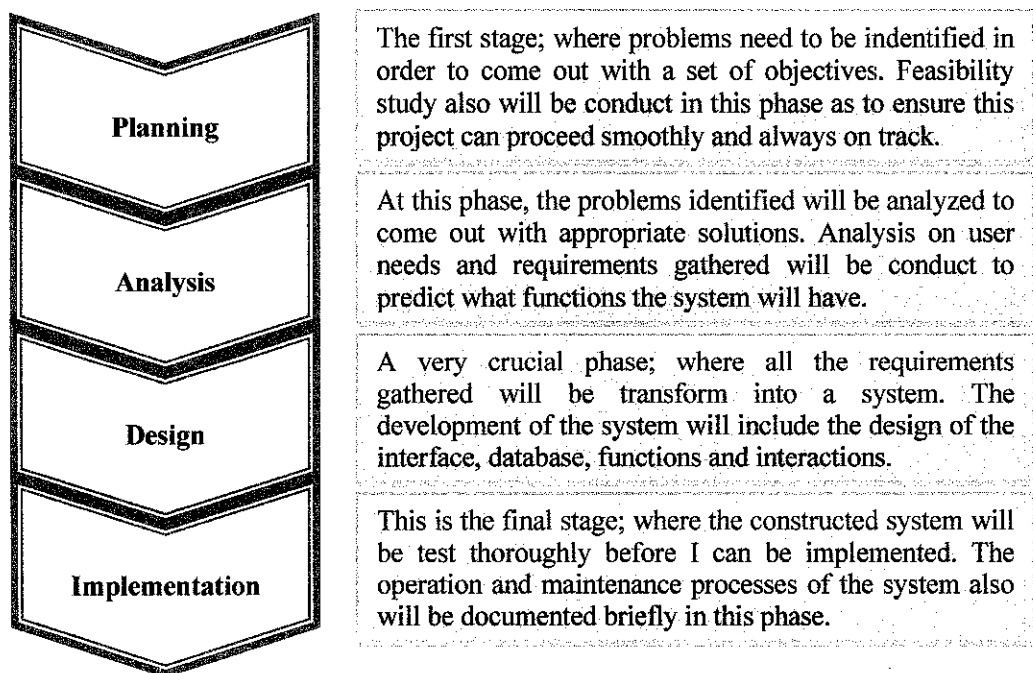


Figure 2: Phases of System Development Life Cycle

A methodology is a formalized approach to implementing the SDLC. There are many systems development methodologies, and each one is unique based on order and focus it places on each SDLC phase. Listed below are some of the methodologies that can be used:

1. Structured Design
2. Rapid Application Development (RAD)
3. Agile Development

### **3.1.1 Rapid Application Development (RAD)**

RAD-based methodologies attempt to address both weaknesses of Structured Design methodologies by adjusting the SDLC phases to get some part of the system developed quickly and into the hands of users. In this way, the users can better understand the system and suggest revisions that bring the system closer to what is needed (Alan Dennis, Barbara Haley Wixom and David Tegarden, 2005a)

Listed below are some of RAD methodologies that can be used to develop this system:

1. Phased Development
2. Prototyping
3. Throwaway Prototyping

### **3.1.2 RAD: Phased Development**

A phased development-based methodology breaks the overall system into a series of versions that are developed sequentially. The analysis phase identifies the overall system concept, and the project team, users, and system sponsor then categorizes the requirements into series of versions (Alan Dennis, 2005b).

The main reason of choosing this methodology is to ensure that the users can get partial of the system run quickly. The system does not perform all the functions users need at first as it is not fully completed, but it should at least have met minimum requirements of the system.

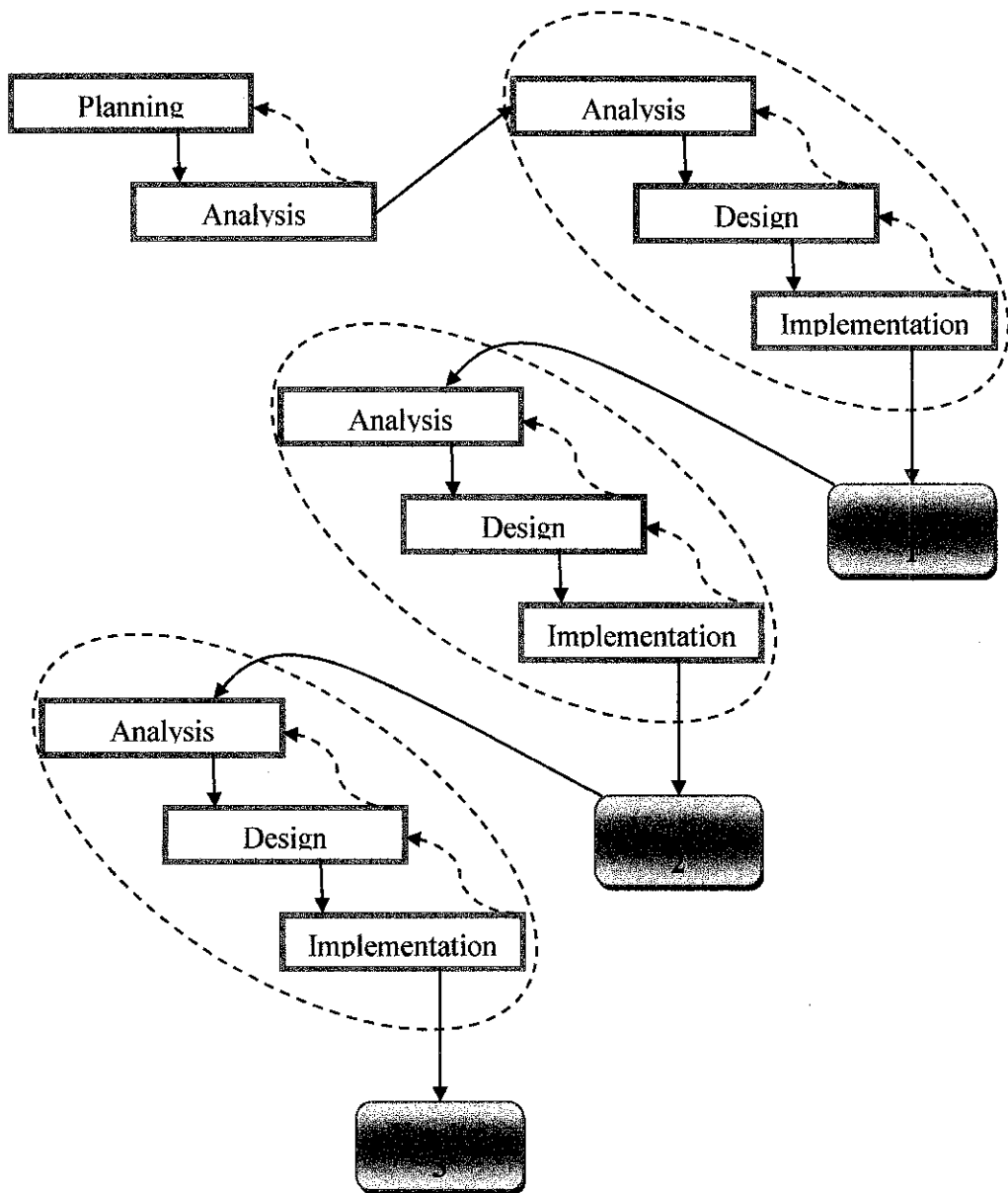


Figure 3: A Phased Development-based Methodology

Referring to **Figure 3**, the most important and fundamental requirements are bundled into the first version of the system. Once version 1 is implemented, work begins on version 2. Additional analysis is performed based on the previously identified requirements and combined with new ideas and issues that arose from the users' experience with version 1. Version 2 then is designed and implemented, and work immediately begins on the next version. This process continues until the system is complete or no longer in use (Alan Dennis, 2005b)

KPI Portal is predicted to have at least 3 versions. Each version will be enhanced with new found requirements and functions. Each version is expected to have:

#### Version 1

1. graphical user interface
2. user and author profile
3. login and logout functions
4. view, add, edit and delete functions (for publication)
5. a database for conference and journal paper
6. search function

#### Version 2

1. file and picture upload function
2. a function to generate reports for publication
3. JavaScript functions when editing or deleting data
4. generate report function
5. printing function
6. KPI marking system

#### Version 3

1. a more user friendly GUI
2. enhance the KPI marking system

### **3.2 KPI Portal: GUI**

This part shall discuss and provide some ideas of the system GUI and its functions for KPI Portal as to get a clearer picture on how the system will look like when it is operating later on.

#### **3.2.1 Main Frame**

Main frame is the main layout that will be used throughout the whole system interfaces. The designed main frame will have similar operations and use similar elements for similar tasks. This is to ensure the consistency of GUI for the system. Main benefit is consistent interfaces are easier to learn and use.

**Figure 4** illustrates the early layout of the main frame. There will be two main buttons which are Home and Logout. Home button shall be linked to the homepage so that the user will easily go back to the homepage when navigating throughout the system. The logout button will end the user session from accessing the system.

#### **3.2.2 Breadcrumb**

Breadcrumb is used as a navigation trail so that it would be much easier for the users to track their location on the system. **Figure 4** shows the location of the breadcrumb inside of the main frame.

#### **3.2.3 Content Area**

Content area is the only part from the main frame that change depends on what page the user navigated or what link they clicked. It is located in the middle of the main frame as shown in **Figure 4**. `iframe` will be used to build this area. `iframe` is a HTML tag that defines an inline frame that contains another document or page.

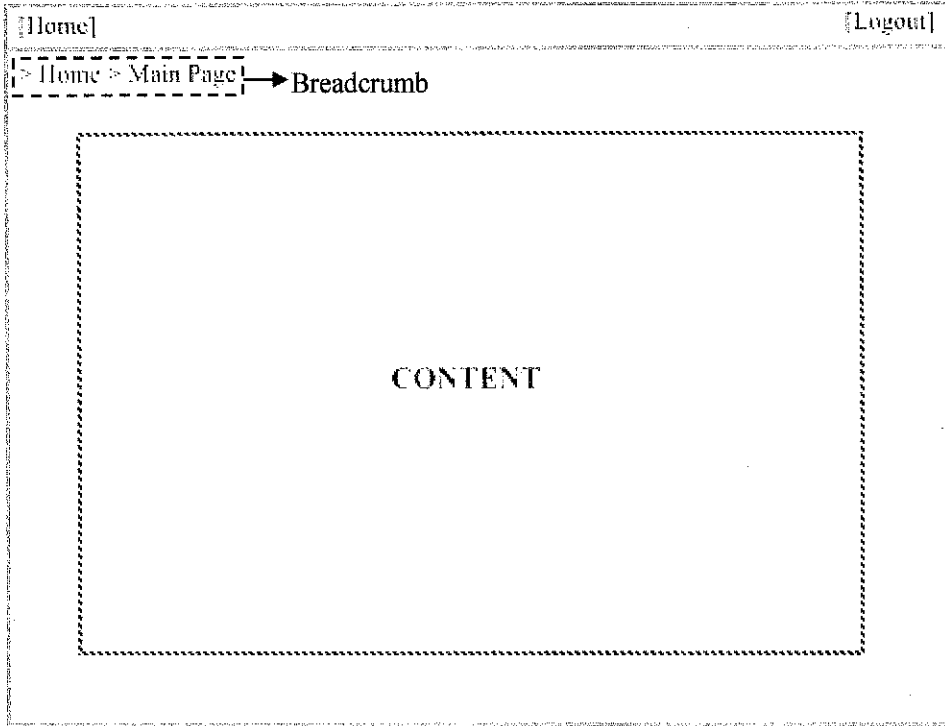


Figure 4: Layout design of the Main Frame

### 3.3 KPI Portal: Overview

Figure 5 below illustrate the flow of the system when a user accessing the system. This figure also describes some of the main functions that the user can use. Basically there are two options for the user which are Publication and Profile that will be discussed into more details in this part.

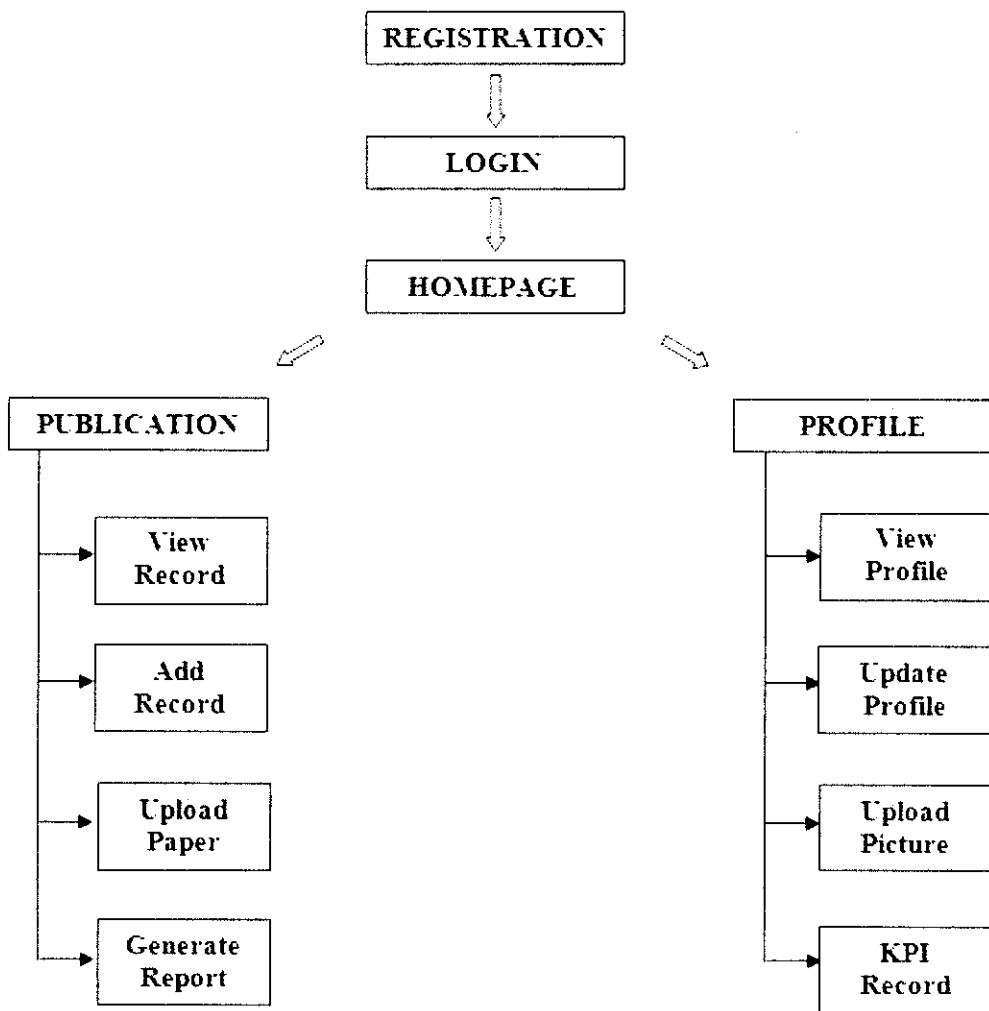


Figure 5: Flow Diagram for KPI Portal

### **3.3.1 Registration**

Before the system can be used, registration is needed as to enter all the required user data into the system database. This step can only be done by the administrators, as they have the privilege for data entry into the system. This is important as to avoid unnecessary registration by irresponsible person that might flood the user database.

Listed below are the identified data which are required for user registration:

1. Full name
2. Staff ID (PK)
3. Grade
4. Designation
5. Status
6. Contact
7. Email address
8. User picture
9. Password

“Staff ID” will be assigned as the Primary Key (PK) for user database because each lecturer owned a unique staff ID. This will ensure that there will be no duplication of user entry later on.

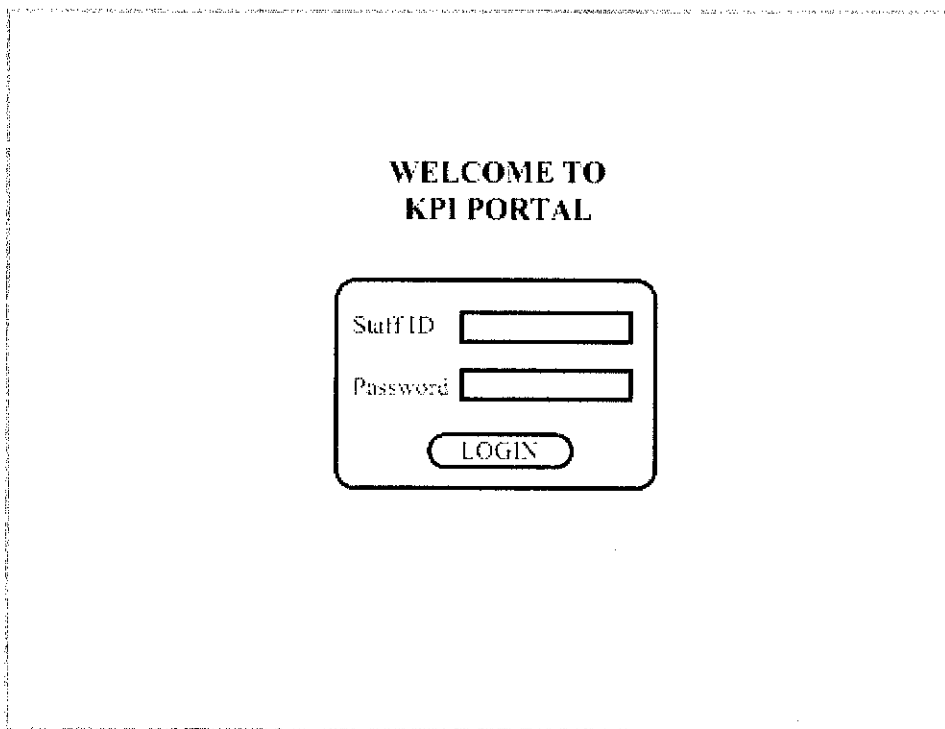
Each registered user will be provided with a default password which will be the same as their IC number, this mean that only the owner of the IC number can login into his or her account. Users can always change their default password after they have login into the system later on.



### 3.3.2 Login Page

After all the identified users are registered to the system, they can start accessing the system. But they need to login first. Login and logout function are very important as to ensure user privacy is at its highest level especially when the system stored important information about the user.

**Figure 6** below illustrates the early layout of the login page. The login form required user's staff ID and their password to access the system. If the staff ID and password did not match any information inside the database, no access will be allowed at all.



WELCOME TO  
KPI PORTAL

Staff ID

Password

LOGIN

Figure 6: Layout design of the login page

### 3.3.3 Homepage

After the user successfully login into the system, they will be redirected to the homepage which acts as the control panel. This control panel is very important as to structure and organize users' data inside the system. From this panel user can access all the functions available provided by the system according to their classes.

**Figure 7** below illustrates the early layout of the homepage. In this page, photo of the user will be displayed with the simplified version of their profile. User can always access their full profile by clicking on the “My Profile” button. As for publication purposes, there will be two buttons available which are “Conference” button and “Journal” button.

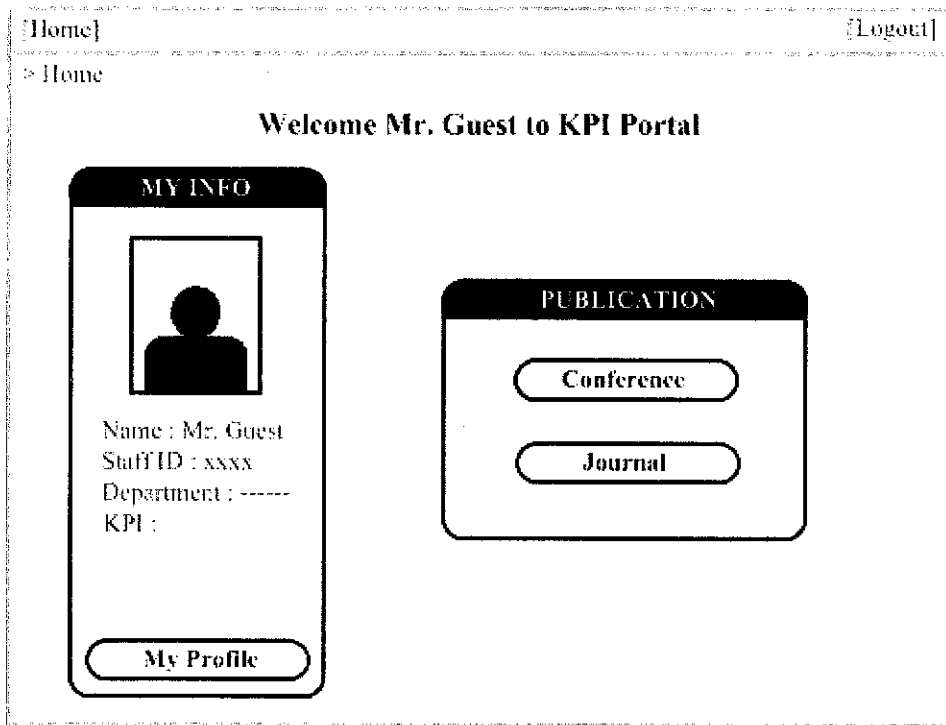


Figure 7: Layout design of the Homepage

### 3.3.4 Publication Page

There will be three types of publication page since there will be three levels of user which are the lecturer, head of department and also the rector.

#### Lecturer Level

Figure 8 below illustrates the early layout design of publication page for lecturer level.

From this page lecturers are able to:

- view their existing records that will be sort by year
- search for their records
- add new records
- upload file (doc and pdf only)

[Home] [Logout]

Home > Publication

**PUBLICATION (2009)**

Archive
<a href="#">2009</a>
<a href="#">2008</a>
<a href="#">2007</a>
<a href="#">2006</a>

Search

Add Record

No	Title
----	-------

Figure 8: Layout design of the Publication page for lecturer

## Department Level

**Figure 9** below illustrates the early layout of the publication page for head of department level.

From this page, the head of department will be able to

- view the performance of each lecturer individually, therefore conclude the performance of the department itself
- view the records uploaded by the lecturers
- search for the available records
- generate a report regarding the performance of the department

The screenshot shows a web interface for the 'Publication' page. At the top, there are links for '[Home]' and '[Logout]'. Below these is a breadcrumb trail: 'Home > Publication'. The main heading is 'PUBLICATION (2009)'. On the left side, there is a 'Records' section with a list of years: 2009, 2008, 2007, and 2006. Below the records list are three buttons: 'Archive', 'Search', and 'Report'. On the right side, there is a table with three columns: 'Lecturer', 'Target', and 'Actual'. The table is currently empty, with a 'Total' row at the bottom.

Lecturer	Target	Actual
Total		

**Figure 9:** Layout design of the Publication page for head of department

## Rector Level

**Figure 10** below illustrates the early layout of the publication page for rector level.

From this page, rector will be able to:

- view the performance of each and every department
- view the overall performance
- view all uploaded records sorted by department

[Home] [Logout]

> Home > Publication

**PUBLICATION (2009)**

**Records**

[2009](#)  
[2008](#)  
[2007](#)  
[2006](#)

Archive  
Search  
Report

Department	Target	Actual
CIE		
CV		
EE		
ME		
PE		
ICT		
BIS		
Total		

Figure 10: Layout design of the Publication page for rector

### 3.3.5 User Profile

By clicking on “My Profile” on the homepage, users will be directed to their respective profile. User’s profile is used to display all of the necessary information regarding the user.

**Figure 10** below illustrates the early layout design of the user profile. Each lecturer and staff will have their own profile or contact information which is important to UTP as a record. Users also can view their KPI records. Other than that, users can edit or update their profile immediately as to avoid from inaccurate profile information later on.

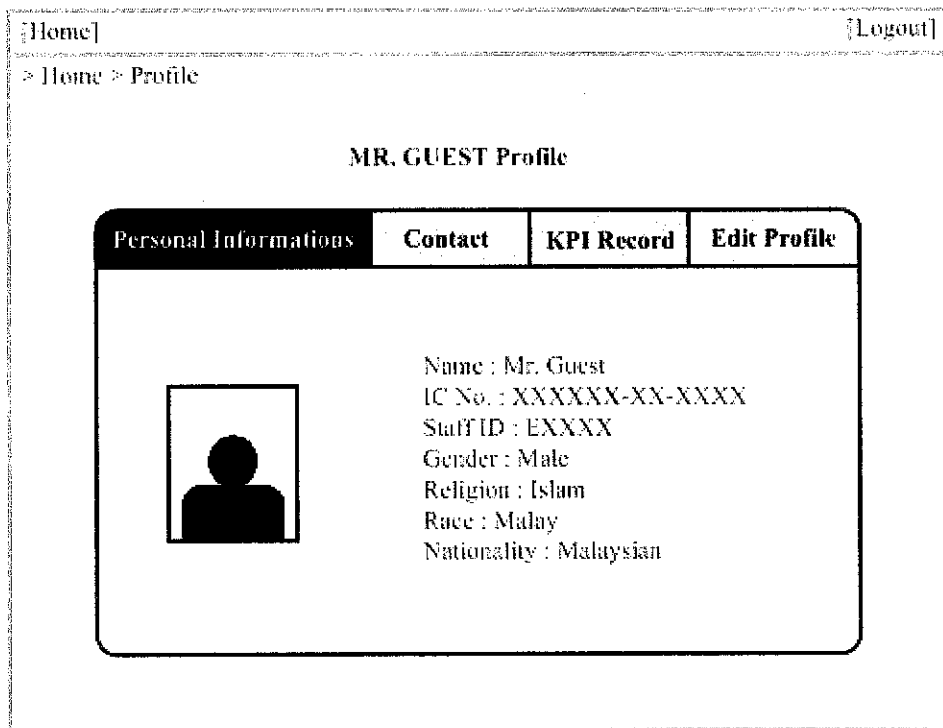


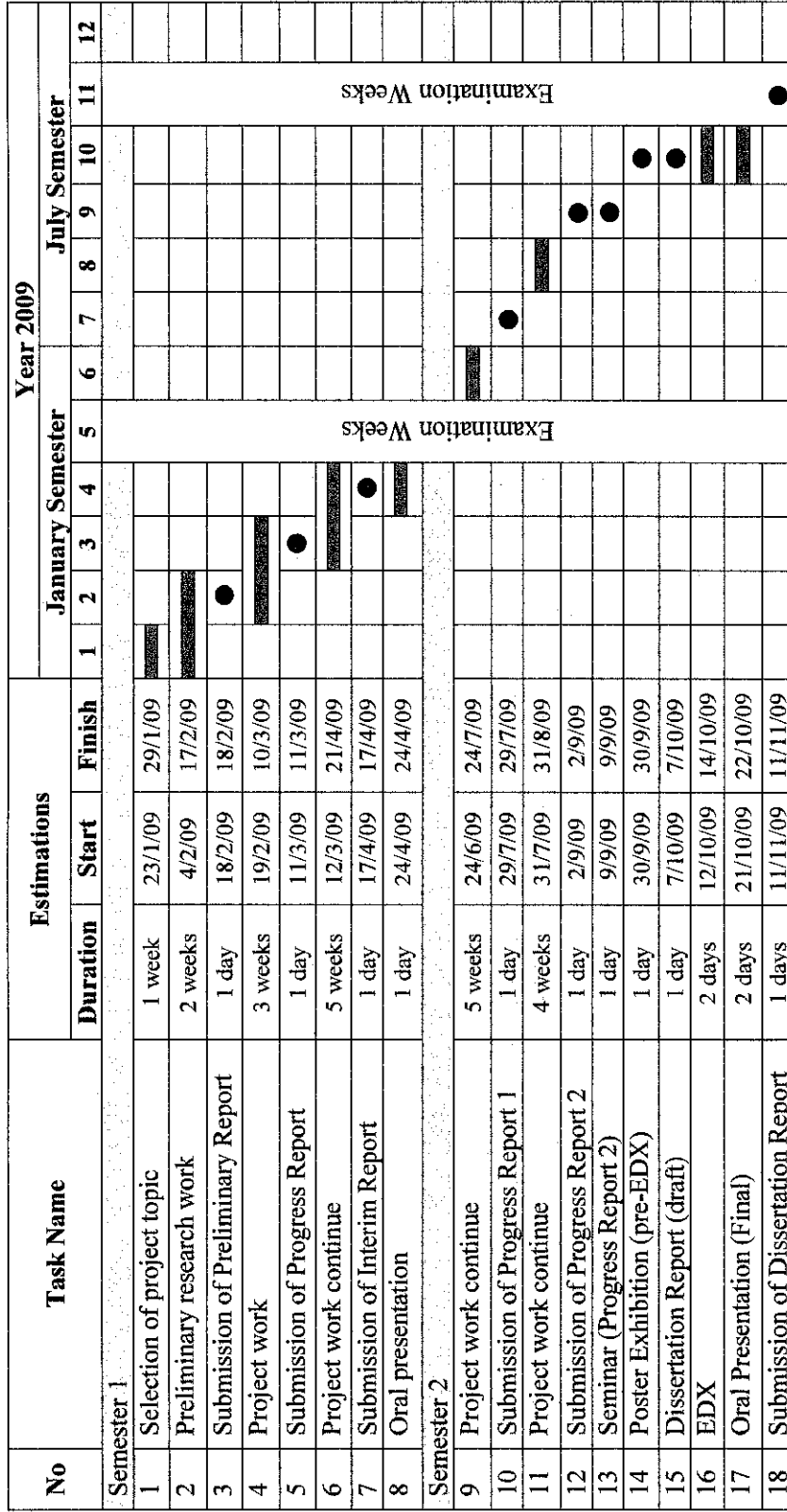
Figure 11: Layout design of the User’s Profile

### **3.4 Equipments Required**

1. Adobe Dreamweaver - to develop the website
2. Adobe Photoshop - to design the website banner and icons
3. XAMPP - to handle the databases
4. Microsoft Office 2007- for documentation purpose

### **3.5 Gantt Chart**

This project is estimated to be completed within two semesters. Referring to the Gantt chart in **Figure 11**, Semester 1 is about doing a lot of research in order to gain deep knowledge on developing an online web system and also on database system. During semester 1, research on KPI system will also take place as to gather and understand all the requirements needed to develop the system itself. While in Semester 2 is more on developing the system itself, this is where the process of designing and programming the system will take place.



● Milestone  
 ■ Process

Figure 12: Gantt Chart



## CHAPTER 4

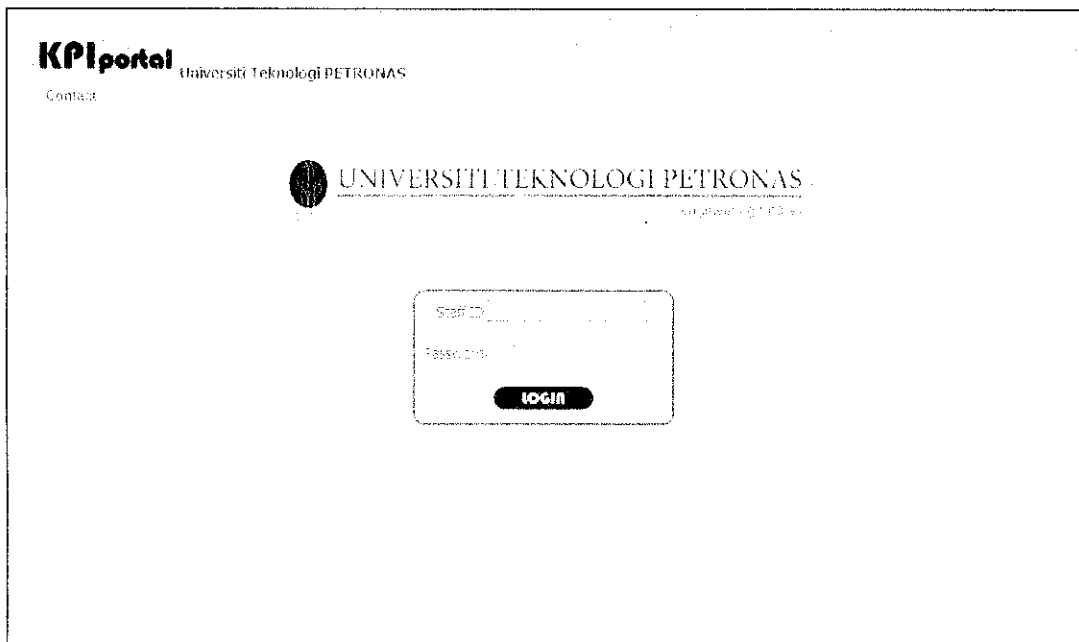
### RESULTS

#### 4.1 LOGIN PAGE

##### 4.1.1 Session

When user login; a session will be created. In PHP, session is a special type of variable whose value is maintained across subsequent pages.

Session helps the system to recognize either the user has login or not. If the user is already login, he or she can continue to use the system. And if not, the user will be automatically redirected to the login page.



The image shows a screenshot of a web portal. In the top left corner, there is a logo for 'KPI portal' with the text 'universiti Teknologi PETRONAS' and 'Contact' below it. In the center, there is a circular logo followed by the text 'UNIVERSITI TEKNOLOGI PETRONAS' and 'Kampus 1, 31150, Malaysia'. Below this, there is a login form with two input fields: 'Staff ID' and 'Password'. A 'LOGIN' button is positioned below the password field.

Figure 13: Login page

To register a session:

```
session_start();  
$_SESSION['username'] = $_POST['username'];  
header('Location:home.php');
```

Session value will be destroyed when the user closes the web browser; the maximum time set on the server for session lifetime is exceeded, by destroying the session or by logging out from the system.

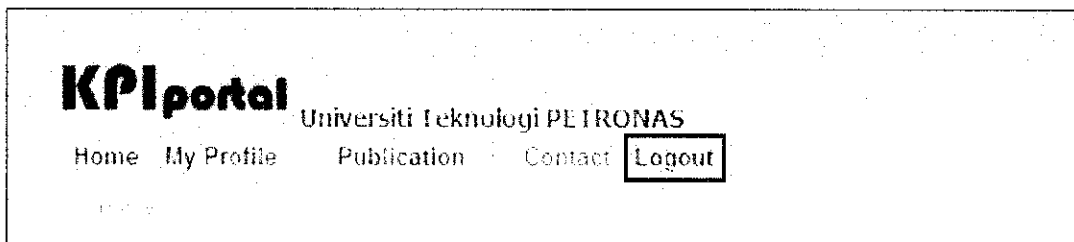


Figure 14: Logout button

To destroy a session:

```
session_start();  
session_destroy();  
header('location:login.php');
```

## 4.2 HOME PAGE

### 4.2.1 Multiple Menu

KPI Portal is designed for multiple type of user which includes lecturer, administrator and also the rector. Therefore the system itself should be able to recognize the type of each user that login into the system and redirect them to their respective pages.

The best way is by setting the type of the user inside the database and let the system recognize the type of user after they successfully logged into the system using the “if-else” conditions.

Different menu will appear for each type of user and the interface will also differ according to their privileges.

For example:

```
If ( $row['type'] == "administrator" )
{
    MENU for administrators
}

else if ( $row['type'] == "lecturer" )
{
    MENU for lecturers
}

else // type = rector
{
    MENU for the rector
}
```

If the login user detected as a lecturer, a simple menu will appear. From this menu, they can view profile, update profile and also view their publication records.

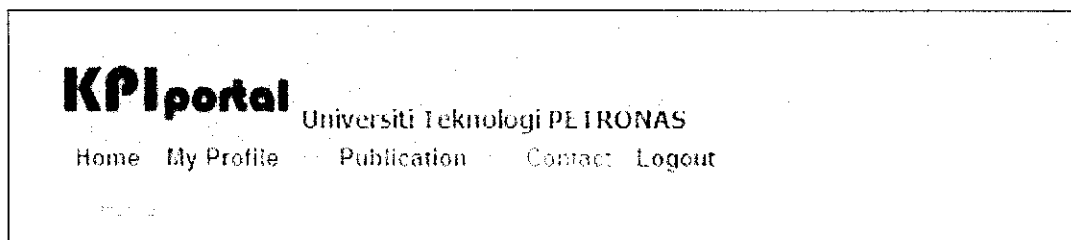


Figure 15: Menu for lecturers

While as the administrator, there are two extra button in their menu where it allow them to view KPI records, set the KPI targets and also to register new users.

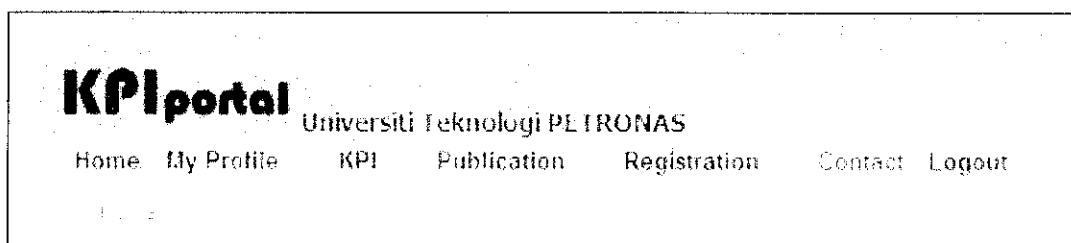


Figure 16: Menu for administrators

## 4.3 PUBLICATION PAGE

### 4.3.1 View Function

The uploaded records can be view in table form. These records are grouped by year. And from the table, the records are sorted alphabetically. By doing so, browsing all of the available records would be much easier for the users.

To view the details of the record, user can simply click on the title of the record that they want to see.

The screenshot shows the KPIportal interface for the University of PETRONAS. The navigation menu includes Home, My Profile, KPI, Publication, Registration, Contact, and Logout. On the left, there are buttons for Back, Archive (with a dropdown for 2009 and 2008), Search, and Add Record. The main content area is titled 'Conference' and displays a table of records for the year 2008, sorted alphabetically. A vertical arrow on the right side of the table indicates the alphabetical sorting order.

No.	Title (2008)
1	A Decision Support System for Performance Appraisal
2	An SCM Framework to Describe CRM
3	Applying UML Grammatical Formalism in the Development of Software Ontologies for Online Transactions
4	Analysis of the Handwriting Recognition
5	Costs and Time Reduction in the Evaluation Planning
6	Developing SCRM Knowledge Development with Open Source System to the Implementation of Business System in Universitas Teknologi PETRONAS
7	Service Management & Learning Collaboration (SMLC) with Portal
8	Signal Noise Removal Using Consistent Algorithm, Proceedings of the 4th
9	Text Summarization System for Oil & Gas Industry

Figure 17: List of the uploaded records

### 4.3.2 Dynamic Buttons

Under “Archive” menu, the buttons to browse all the records are automatically generated from the database. Where it can detect the available years and also the number of records under those particular years.

For example, when we add a new record for year 2010; a new “2010” button will appear automatically with “(1)” besides it to indicate that currently there is only one record for year 2010.

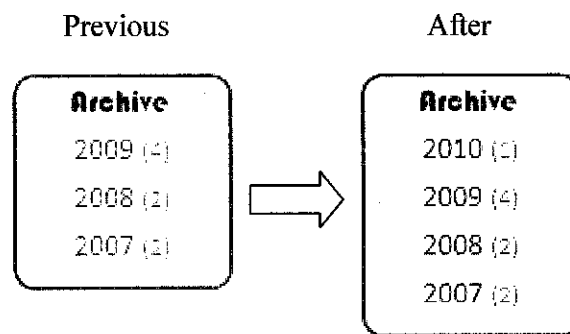


Figure 18: Archive menu to view records

### 4.3.3 Report Function

When monitoring the performance of KPI according to the number of conference paper and journal, a proper report is needed as to list up all of them. To simplify the work, this system can help to generate a report in a table format where the content of the report can be sort by year or by quarters.

CONFERENCE 2008						
No.	Author	Title	Date		Venue	Conference
			Start	End		
1	D.D.Demitri, Idrisda Abdul Aziz, Goh Kim Wei.	A Decision Support System for Performance Appraisal	Apr 2008	4 Apr 2008	Las Vegas, Nevada, USA	5th International Conference on Information Technology
2	Diana Wong, Justin Dinesh Devaraj, Daniel...	School Management & Learning Collaboration (SMLE) Web Portal	13 Apr 2008	15 Apr 2008	Itana Hotel, Kuala Lumpur	ICEPEE 15 – International Conference on Engineering Professional Ethics and Education
3	Etiyans Ichonides, Muhammad E. Gumbal...	Academic Offline Hand-writing Recognition	10 Jun 2008	12 Jun 2008	Holiday Villa Beach and Spa, Lampung, Ketab	Knowledge Management International Conference 2008 (KMIC 2008)
4	D.D.Demitri, P. Parthiban, Goh Kim Wei.	An SOA Framework to Describe CRM	14 Jul 2008	17 Jul 2008	Las Vegas, USA	The International Conference on e-Learning, e-Business, Enterprise Information Systems & e-Government
5	Bakriyah Syarifuddin, Muzahidani Samin, Teguh, Shamsul Aqil.	Applying Logic Grammar Formalism in the Development of English-Indonesian Machine Translation	28 Jul 2008	2 Aug 2008	University of Birmingham, England, UK	5th International Conference on Artificial Intelligence and Symbolic Computation (AISC 2008)
6	V.V.Chen, C.M.Fang, F.P. Yang, Nuanlian Fan.	Text Summarization System for Oil & gas Industry	30 Aug 2008	1 Sep 2008	Alfara Court Hotel	5th International Conference on Data, Information & Knowledge Management (DAIKM)
7	Sajiduzzaman Mahmud, Farzana Karim, Kinnamoni Das, Joysham, Md. Akmal, Jochen Meißel, Sarah.	Integrating SOA4J content development with Open source E-Learning: an Implementation E-Learning System of University of Technology (PENTACON)	20 Oct 2008	21 Oct 2008		Proceeding of 4th International Conference on University Learning and Teaching (ILUT) Organized by APU, UK and University of Hertfordshire, pp 414-420.
8	Arman Abdullah, Hamamurrah Iwan Hamzah.	Signal Noise Removal using Consensus Algorithm, Proceedings of the 4th	1 Nov 2008	12 Nov 2008	Bangi	International Conference on Informative Technology and Multimedia (ICITM) 2008
9	A. Rahman, A. N. Mohamed, E. Subroto.	Classmate Time Reduction in Pre-Expression Planning	3 Dec 2008	5 Dec 2008	West Coast Hotel, Indonesia	5th Asia Pacific Industrial Engineering & Management Systems Conference (APIEMSC 2008)

Figure 19: Report sort by year

No.	Author	Title	Date		Venue	Conference
			Start	End		
January - March						
April - June						
1	D.D.Demitri, Idrisda Abdul Aziz, Goh Kim Wei.	A Decision Support System for Performance Appraisal	Apr 2008	4 Apr 2008	Las Vegas, Nevada, USA	5th International Conference on Information Technology
2	Diana Wong, Justin Dinesh Devaraj, Daniel...	School Management & Learning Collaboration (SMLE) Web Portal	13 Apr 2008	15 Apr 2008	Itana Hotel, Kuala Lumpur	ICEPEE 15 – International Conference on Engineering Professional Ethics and Education
3	Etiyans Ichonides, Muhammad E. Gumbal...	Academic Offline Hand-writing Recognition	10 Jun 2008	12 Jun 2008	Holiday Villa Beach and Spa, Lampung, Ketab	Knowledge Management International Conference 2008 (KMIC 2008)
July - September						
4	D.D.Demitri, P. Parthiban, Goh Kim Wei.	An SOA Framework to Describe CRM	14 Jul 2008	17 Jul 2008	Las Vegas, USA	The International Conference on e-Learning, e-Business, Enterprise Information Systems & e-Government
5	Bakriyah Syarifuddin, Muzahidani Samin, Teguh, Shamsul Aqil.	Applying Logic Grammar Formalism in the Development of English-Indonesian Machine Translation	28 Jul 2008	2 Aug 2008	University of Birmingham, England, UK	5th International Conference on Artificial Intelligence and Symbolic Computation (AISC 2008)
6	V.V.Chen, C.M.Fang, F.P. Yang, Nuanlian Fan.	Text Summarization System for Oil & gas Industry	30 Aug 2008	1 Sep 2008	Alfara Court Hotel	5th International Conference on Data, Information & Knowledge Management (DAIKM)
October - December						
7	Sajiduzzaman Mahmud, Farzana Karim, Kinnamoni Das, Joysham, Md. Akmal, Jochen Meißel, Sarah.	Integrating SOA4J content development with Open source E-Learning: an Implementation E-Learning System of University of Technology (PENTACON)	20 Oct 2008	21 Oct 2008		Proceeding of 4th International Conference on University Learning and Teaching (ILUT) Organized by APU, UK and University of Hertfordshire, pp 414-420.
8	Arman Abdullah, Hamamurrah Iwan Hamzah.	Signal Noise Removal using Consensus Algorithm, Proceedings of the 4th	1 Nov 2008	12 Nov 2008	Bangi	International Conference on Informative Technology and Multimedia (ICITM) 2008
9	A. Rahman, A. N. Mohamed, E. Subroto.	Classmate Time Reduction in Pre-Expression Planning	3 Dec 2008	5 Dec 2008	West Coast Hotel, Indonesia	5th Asia Pacific Industrial Engineering & Management Systems Conference (APIEMSC 2008)

Figure 20: Report sort by quarters

## 4.4 DISPLAY PAGE

Display page is used to show complete information regarding a record such as the title, authors' name, year, etc. From this page if the user login as a lecturer, he or she can only download the file attached with the record and also view the author's profile. While as the administrator, there will be another two extra functions for them which are the update and delete function.

### 4.4.1 Download Function

This is the detail page where all the information regarding a record is displayed. From here, user can download the file that is related to the record. This file can be useful as a reference both to the authors and UTP. Because instead of relying on paper records only, this online file storing allow more comprehensive files back up as a references.

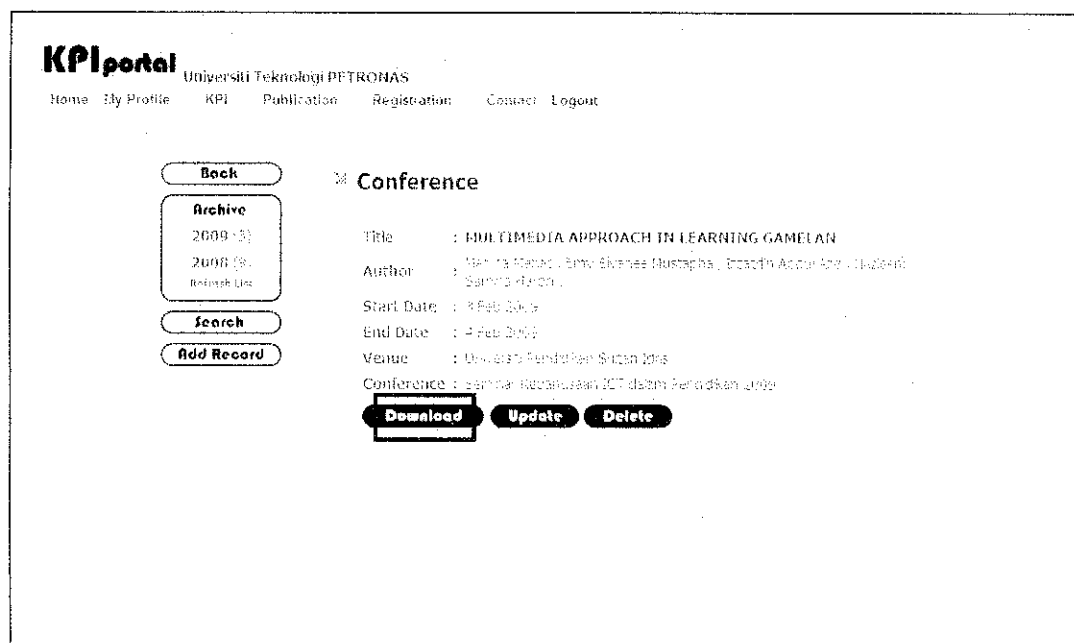


Figure 21: Record details with download button



#### 4.4.2 Update Function

Update function only available for the administrators where they can update any records that are already uploaded into the system. This feature is quite important as to ensure all the records stored into system are up-to-date.

To update a record, administrator can select the “Update” button from the detail page. Basically the update function works the same as the “Add Record” function except that it is used to alter the existed data from the database.

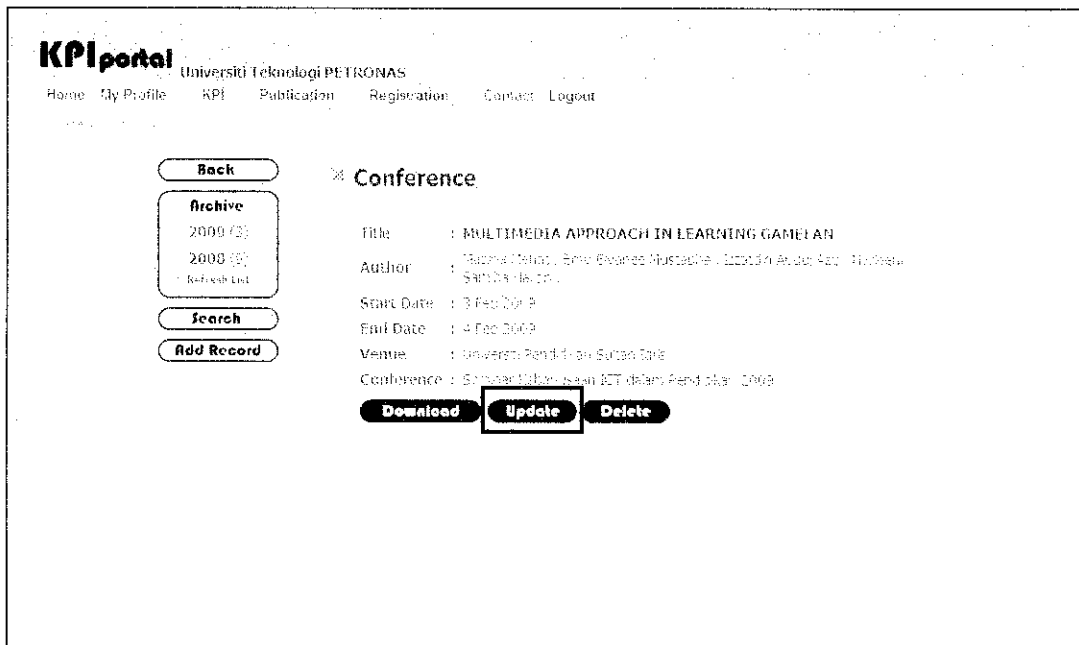


Figure 22: Record details with update function

### 4.4.3 Delete Function

Delete function is also available for the administrators where they can delete any records from any years. By selecting this action, the system will delete all the details of the record from the database and also automatically delete the attached file.

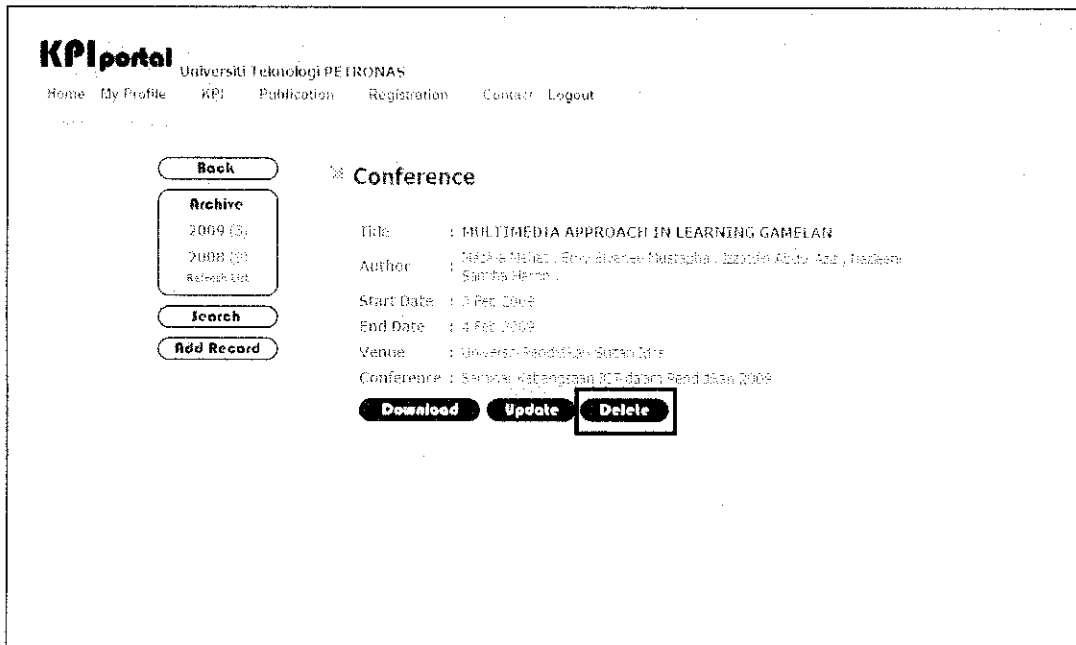


Figure 23: Record details with delete function

To avoid the administrators from accidentally delete unnecessary record, the system will alert the administrator and ask for their confirmation before it can continue with the deletion process.

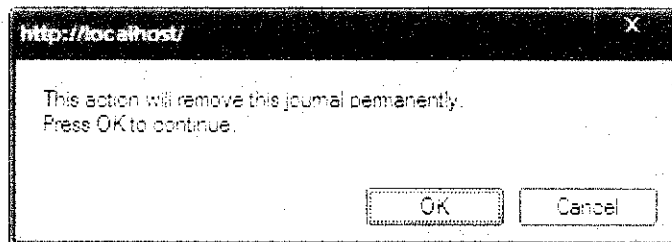


Figure 24: A confirmation dialogue box

If the administrator proceeds with the confirmation, the data related to the record will be deleted from the database. This can be achieved by using the DELETE FROM statement. For example:

```
$query = "DELETE FROM table_name WHERE  
Record_id = some_value";
```

After the system successfully delete the record from the database, the system will continue the deletion process by deleting the file uploaded with the record. This can be achieved by using the UNLINK function. For example:

```
$path = filename;  
unlink($path);
```

#### 4.4.4 Author's Profile

The listed author's name is actually a link which allows the user to view the profile of the author in a small pop-up window.

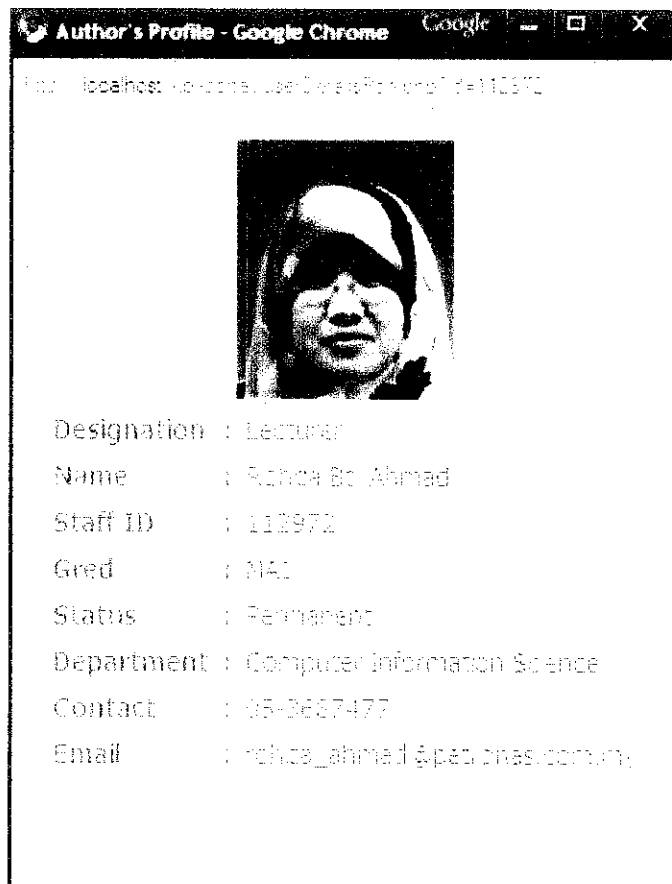


Figure 25: Author's Profile

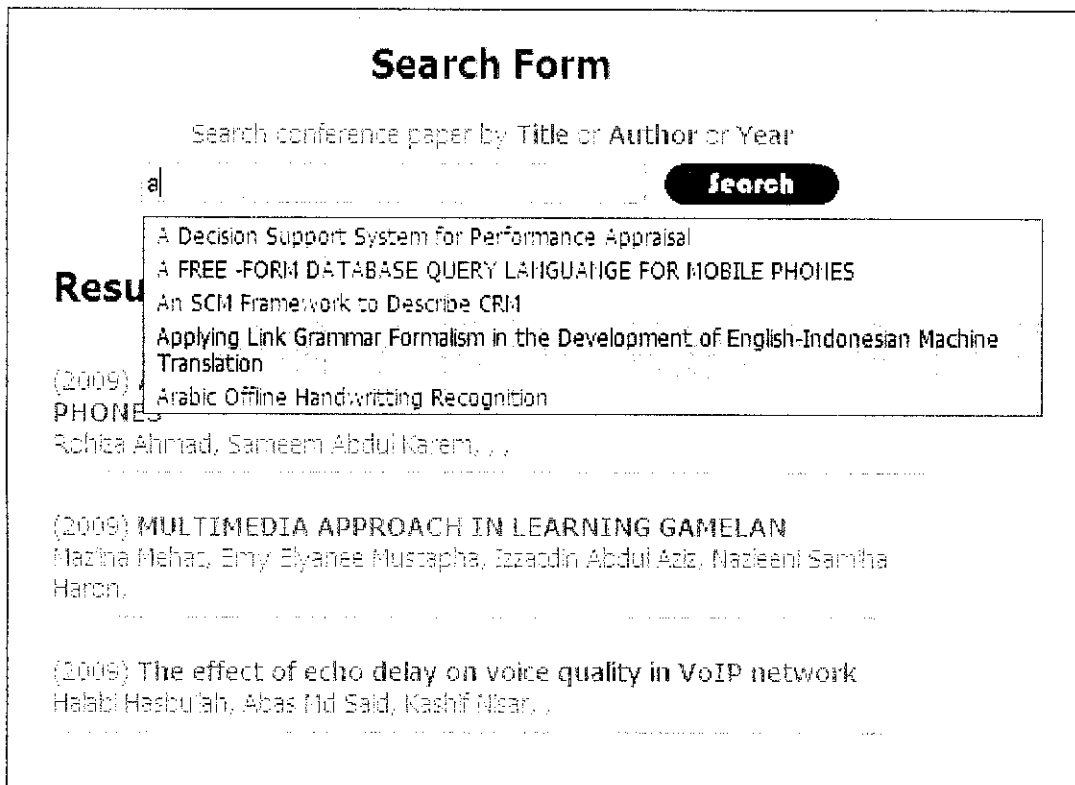
## 4.5 SEARCH PAGE

Search function is one of the needed parts of the system since the system will involves with a large records of database. Searching function would become handy to the users. From the search form, user can start searching any records by entering the title or by the year or by the author name.

### 4.5.1 Ajax Suggestion

To make the search function works effectively, Ajax suggestion is applied to the search function. By doing so, the search function will automatically list all the possible records available in the database when the user starts entering the input.

After the user select any one of the suggestions and click on the search function, the results of the search will be displayed in a table just below the search form. From the results, user can directly view the details of the record by clicking on the title.



The image shows a web interface for a search form. At the top, the title "Search Form" is centered. Below it, a search prompt reads "Search conference paper by Title or Author or Year". A text input field contains the letter "a", and a black "Search" button is positioned to its right. A dropdown menu is open below the input field, displaying a list of search results. The results are organized into sections, each starting with a year in parentheses: "(2009) PHONES" and "(2009) MULTIMEDIA APPROACH IN LEARNING GAMELAN". The first section lists titles such as "A Decision Support System for Performance Appraisal", "A FREE -FORM DATABASE QUERY LANGUAGE FOR MOBILE PHONES", "An SCM Framework to Describe CRM", "Applying Link Grammar Formalism in the Development of English-Indonesian Machine Translation", and "Arabic Offline Handwriting Recognition", followed by the author "Rohica Ahmad, Sameem Abdul Karem, ...". The second section lists the title "MULTIMEDIA APPROACH IN LEARNING GAMELAN" and authors "Nazlina Mehad, Emy Elyanee Mustapha, Izzaddin Abdul Aziz, Nazleeni Samiha Haron". The third section lists the title "The effect of echo delay on voice quality in VoIP network" and authors "Halabi Hasbulah, Abbas Md Said, Kashif Nisar, ...".

Figure 26: Ajax suggestion search function

## 4.6 ADD RECORD

### 4.6.1 Upload Function

Whenever the user adds a new record (conference paper or journal) into the system, they are also required to upload a file that is related with the record. The purpose of this function is to store the full content of the publication online. By doing so, KPI Portal also can be used as an archive for future record and reference.

The screenshot shows a web form titled "Add Form". It is divided into two main sections: "PERSONAL DETAIL" and "CONFERENCE DETAIL".

**PERSONAL DETAIL**

Staff ID: [Text Input]  
Name: [Text Input]

**CONFERENCE DETAIL**

Title: [Text Input]  
Start Date: Day [Dropdown] - Select - [Dropdown] Year [Text Input]  
End Date: Day [Dropdown] - Select - [Dropdown] Year [Text Input]  
Venue: [Text Input]  
Conference: [Text Input]  
File: [Text Input] [Copy]  
[Browse]  
[Upload] doc|docx/pdf file only

[Add Record]

Figure 27: Add record form with upload function

#### 4.6.2 File Restrictions

The upload function can be used to store many types of file. Therefore, a restriction for file type in upload function is needed as to avoid unwanted file type that might bring harms to the system. Currently, KPI Portal only allows uploading two types of file which are PDF and DOC.

To add a file type restriction, this PHP code can be applied to the upload function:

```
if (($_FILES["file"]["type"] == "application/pdf")
|| ($_FILES["file"]["type"] == "application/msword"))
{
    UPLOAD FUNCTIONS
}
```

To add a file size restriction, this PHP code can be applied to the upload function:

```
if ((($_FILES["file"]["type"] == "application/pdf")
|| ($_FILES["file"]["type"] == "application/msword"))
&& ($_FILES["file"]["size"] < 200000))
{
    UPLOAD FUNCTIONS
}
```

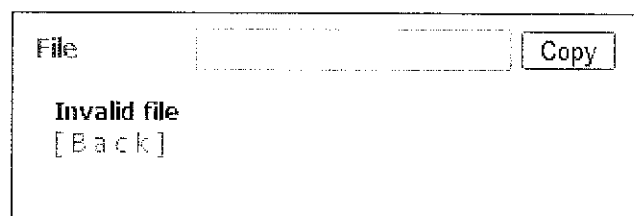


Figure 28: The error when violating the restrictions

## 4.7 KPI PAGE

This is the main purpose of the system, to view and measure KPI performance referring to the number of publication papers and journals. As for now the system only completed at department level, which mean the system can display the KPI status for department only as for now.

### 4.7.1 Setting a Target

Before everything can be measured, the administrator needs to set the targets of their department so that they can see the different between the actual value and target value of the publications as to measure the department performance later on.

Using the form below, the administrator can set the target numbers for both conference paper and journal that must be published by the department for the selected year. Administrator also can set the target number for lecturers according to their gred.

**KPIportal** Universiti Teknologi PETRONAS  
Home My Profile KPI Publication Registration Contact Logout

**Set KPI**

**TARGET YEAR**  
Year

**PUBLICATION**  
Journal  
Conference

**GRED**  
GA5  
GA4  
GA3  
GA2  
GA1

Set Target

Figure 29: Form to set KPI targets



#### 4.7.2 KPI Performance

The head of department can directly view the overall performance of their department from the homepage. This page will automatically display the records for current year so that it would be much easier for them to view their department performance from time to time.

The actual, target and total values of the publication are displayed in figures so that it would be easier to estimate and measure the KPI performance.

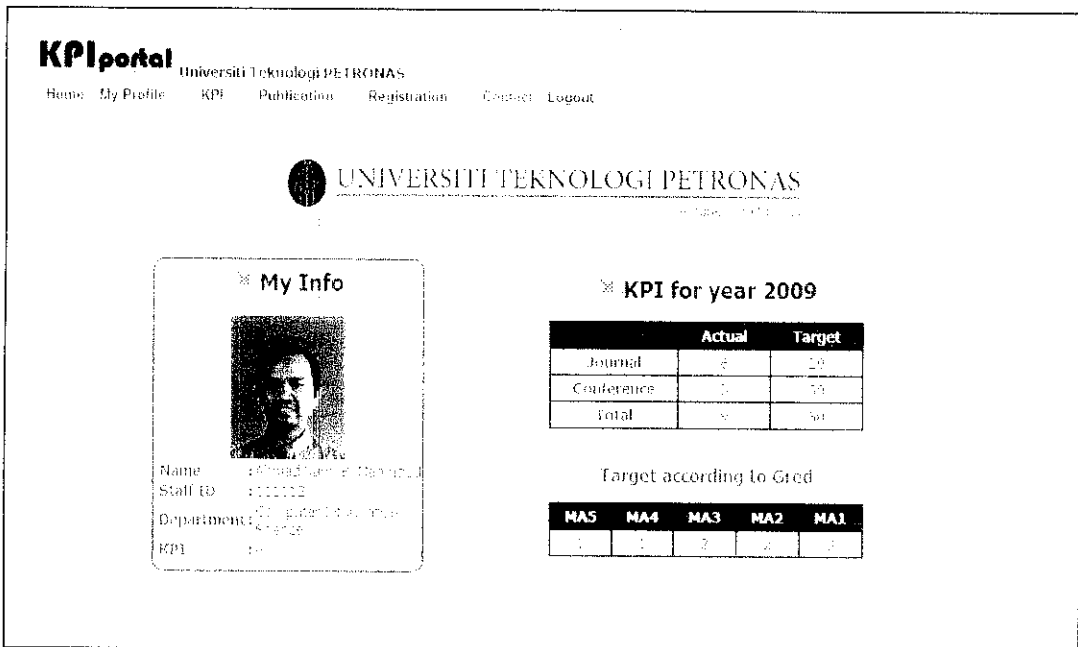


Figure 30: Actual, target and total number of publications

### 4.7.3 Updating a Target

Once the KPI for the targeted year is set, they can always update the target within that particular year. This is just an extra function as to enable the administrator to alter the target when it is needed.

**KPIportal** Universiti Teknologi PETRONAS  
Home My Profile KPI Publication Registration Contact Logout

### 2009 : Update Target

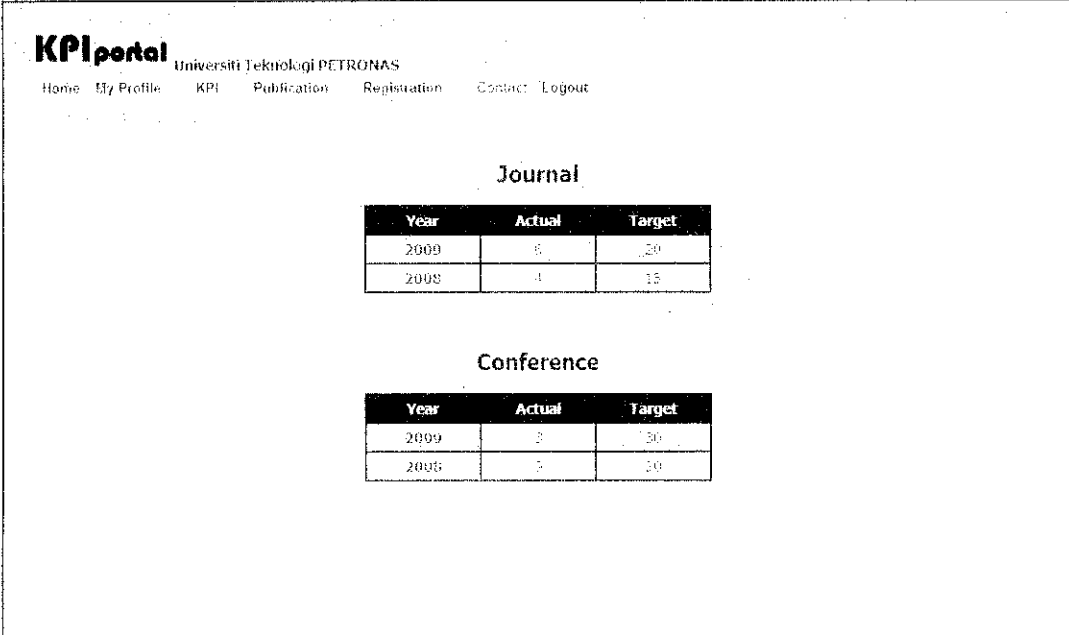
PUBLICATION	
Journal	20
Conference	30

GWI	
GA5	1
MA1	1
MA3	2
MA2	2
MA1	3

Figure 31: Form to update KPI targets

#### 4.7.4 View Previous Records

When new targets are set, the previous targets and records are preserved. This allows the head of department to view and compare the performance of their department with previous records.



The screenshot shows the KPIportal interface for Universiti Teknologi PETRONAS. It features a navigation menu with links for Home, My Profile, KPI, Publication, Registration, Contact, and Logout. The main content area displays two tables: 'Journal' and 'Conference', each with columns for Year, Actual, and Target.

Journal		
Year	Actual	Target
2009	5	20
2008	4	15

Conference		
Year	Actual	Target
2009	2	30
2008	2	20

Figure 32: List of previous KPI records

## **CHAPTER 5**

### **CONCLUSION**

As mentioned, this system should have three levels of interfaces which are Rector Level, Department Level and Lecturer Level. But currently this project completed a working prototype for the Department Level only. The reason for focusing the development on the Department Level is because the Department Level actually covers all the needed functions that are also needed for both Rector Level and Lecturer Level interfaces.

From the results of the development (Department Level), we can see that KPI Portal can be apply for real usage in UTP as centralized online system that would be able to improve current KPI management system thus allow monitoring UTP's performance effectively. Other than that, the archive that stores all the records and contents of the conference papers and journal can be used as a backup or for future references.

Overall, the development of KPI Portal has met the very objectives of the project. But there still a space for improvement as to ensure the final product would bring a perfect output in measuring the performance of UTP.

#### **5.1 Recommendation**

Continue the development for the rector and lecturer level interfaces. As for displaying the KPI performance, rather than displaying in figures form, a JavaScript also can be apply to display it in a form of a graph or progress bar as would be much effective to display it that way.

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9. Wikipedia, 2009c <<http://en.wikipedia.org/wiki/Database>>
10. Wikipedia, 2009d <[http://en.wikipedia.org/wiki/Systems\\_Development\\_Life\\_Cycle](http://en.wikipedia.org/wiki/Systems_Development_Life_Cycle)>