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The Development of Research Management Information System Based on Web at Universitas Negeri Makassar

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Abstract. Long-term goal of this research is the development of a Research Management Information System at the Universitas Negeri Makassar that can be accessed by various parties related to research anytime and anywhere without any time and location limitation so that the disclosure of research management information can be done from the level of the study program to university level. Specific targets achieved from the development of this system is the creation of an information disclosure management situation both in terms of proposal entry, selection and review of proposals as well as progress reports and logbooks obtainment in reports of transparent and appropriate budget usage that is useful for the leadership of the University in taking policy related to the next research. To achieve these objectives, the information system development process will use the Plomp Development Model (1997) consisting of a preliminary investigation phase; design phase; phase realization/construction; test phase, evaluation and revision; and implementation. The development of this information system using PHP programming language based on CodeIgniter Framework with MySQL database.

Keywords: Information System, Research Institute, Universitas Negeri Makassar, PHP, CodeIgniter

1. Introduction

The rapid development and advancement in technology requires one to follow those developments and progress. This development has been widely used by many parties. These developments and advancements also provide great opportunities for the efficient and accurate management and utilization of information. Well-implemented technology will reduce the paths of the process stages of the work process, which was originally done manually, will be replaced by the system. The use of such technology is the basis for the implementation of management information system (MIS) [1]–[3] Management information system can using to improve the efficiency performance [4], [5] and user satisfaction of an organization [6].

In this management information system, the report that is initially hardcopy-based is replaced by softcopy-based reporting. Hardcopy-based reporting is intended to avoid and detect plagiarism about



reporting and the existence of softcopy-based archives. This softcopy collection will be very useful for future users, so it is necessary to get the softcopy collected to be properly documented.

Research Institute is an institution or working unit that functions to manage research data of the lecturers as an effort to career development and improvement of the quality of the lecturer. At this time, the management of research data of the lecturers still uses Microsoft Excel application. The management of such research data can also result in errors either intentional or unintentional. And not only that, integrity and data security cannot be guaranteed. So the Research Institute is deemed necessary to plan an information system that is useful for documenting internal research on their respective campus. Information system in question is a website-based research information management system.

In addition to the process of research documentation, management information system can also be used as decision makers for the leader in an organization. A computer-based MIS can provide information (as a material in decision making) that is qualified and valuable, that is relevant information to the company/organization, which is accurate and of course punctual information or not stale or expired. With the existence of computer-based MIS, storing archives or documents performed by computerized managers are more effective and efficient than ever before which used manual storage. With the existence of computer-based MIS, the storage can be processed quickly, and searching does not take long time, but it can be treated digitally [7].

One of the strategic plans of Universitas Negeri Makassar in the field of tridharma higher education, especially in its development in terms of research i.e. improving the research administration services through ICT-based system administration services. This plan is then translated into indicators of the main work namely the Lecturer in the use of ICT in the implementation of the Tridharma and planned to achieve targets in 2017 that is 70% and in 2018 at 80% and the implementation of e-administration in each unit is targeted to reach 85% in 2017 and 90% in 2019. One of the strategic plans of UNM Research Institute on the topic of technology, information, and communication is ICT-based institutional administration. In connection with the above-mentioned strategic plan, in order to achieve them maximally, so it is necessary to have the design of a study about the development of Web-Based Research Information System in the Universitas Negeri Makassar, which can improve the quality, monitoring and evaluation related to the management of research in the Universitas Negeri Makassar.

2. Method

The model used in this study is a Research and Development (R & D) model approach [8]. According to Sugiyono [9], R & D research method is a research method used to obtain a particular product and for the product that can be used properly it is necessary to test the effectiveness of the product. The development of this information system follows the development phases developed by Plomp [8][10] or known as the Plomp model. This research was conducted at the Research Institute of the Universitas Negeri Makassar with UNM Campus address at Gunungsari Baru, Jalan A.P. Pettarani, Makassar city.

3. Result and Discussion

In this section we will discuss the results of this study. The design of information system of this research is divided into 2 parts, namely the development of display and database development. Display and database design is very important in an information system, because these two parts are a core part of an information system [11].

3.1. The Display of Research Information System

In this login section, the lecturer uses the username and password in the Academic Information System (SIA) of Universitas Negeri Makassar. If there are users who do not have

username and login password in SIA, then username and password can be created by research institute operator (figure. 1).



Universitas Negeri Makassar

Selamat Datang di eLit UNM

eLit (Sistem Informasi Penelitian) merupakan layanan yang menangani Pengelolaan Data Penelitian secara online Universitas Negeri Makassar.

INFORMASI

LOGIN

Silahkan isi username dan password Anda!

Username :

Password :

Login

KETERANGAN :

1. Perhatikan penulisan huruf besar atau kecil pada **username** dan **password** Anda.
2. **AKTIVASI USER**, silakan ke Fakultas masing-masing.
3. **GANTI PASSWORD**, silakan klik untuk mengganti password user.

Figure 1 The Login Display of Research Information System

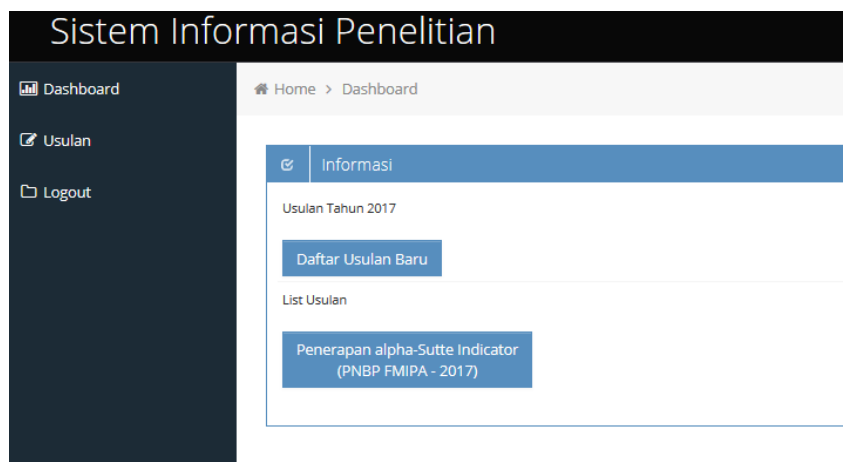


Figure 2 The Display of the Home page after logging in eLit

After the researchers logged, they will display the list of proposals that have been proposed by the researchers, and the researchers also can see whether there are any researches that have been opened.

The screenshot shows a web interface for a research information system. The main title is 'Sistem Informasi Penelitian'. On the left is a dark sidebar with 'Dashboard', 'Usulan', and 'Logout' options. The top navigation bar shows 'Home > Usulan Baru'. The main content area is titled 'Formulir Isian Data Penelitian' and contains several input fields: 'NIDN' with the value '0916048801', 'NAMA' with 'Ansari Saleh Ahmar', a dropdown for 'Skema Penelitian' showing 'Skema Penelitian', and text areas for 'Judul*', 'Abstrak*', and 'Keyword*'. At the bottom is a dropdown for 'Rumpun Ilmu*' showing 'Rumpun Ilmu' and a blue 'DAFTAR' button.

Figure 3 The Display of Initial Research Proposal

The initial stages undertaken by researchers in proposing research is to fill the research scheme and meta-data from research that is (title, abstract, research keywords, and science research families).

The screenshot shows a web interface for a research information system. The main title is 'Sistem Informasi Penelitian'. On the left is a dark sidebar with 'Dashboard', 'Usulan', and 'Logout' options. The top navigation bar shows 'Home > Dashboard'. The main content area is titled 'Data Penelitian - Penerapan alpha-Sutte Indicator (2017)' and contains a list of blue buttons: 'Identitas Usulan', 'Identitas dan Uraian Umum', 'Daftar Personil', 'Biaya', 'Cetak Pengesahan', and 'Upload Proposal'.

Figure 4 The Display of the Research Proposal

After the researcher conducts the initial submission of the research, the next step is to fill in the data: (a) the identity and common description, (b) the data of the research personnel, (c) the research costs, (d) print the validation sheet, and (e) upload the proposal in order to be scored. The view of this development can be seen in figure 5-8.

Sistem Informasi Penelitian

Home > Usulan Baru

Formulir Isian Data Penelitian

NIDN: 0916048801

NAMA: Ansari Saleh Ahmar

Objek Penelitian*: Objek

Lokasi Penelitian*: Lokasi

Instansi yang terlibat*: Instansi

Temuan yang ditargetkan*: Temuan

Kontribusi mendasar pada suatu bidang ilmu*: Kontribusi

Jurnal ilmiah yang akan menjadi sasaran*: Jurnal

Figure 5 The Data Completion Display of Research General description

Sistem Informasi Penelitian

Ansari Saleh Ahmar (0916048801)

Home > Usulan Baru

Data Anggota Penelitian

No.	Nama	Status	Edit
1	Ansari Saleh Ahmar	Ketua	Hapus
2	Ujicoba	Anggota 1	Hapus
3	Abdul Rahman	Anggota 2	Hapus

Tambah Anggota Penelitian

NIDN:

Figure 6 The Display of the addition of Research Member

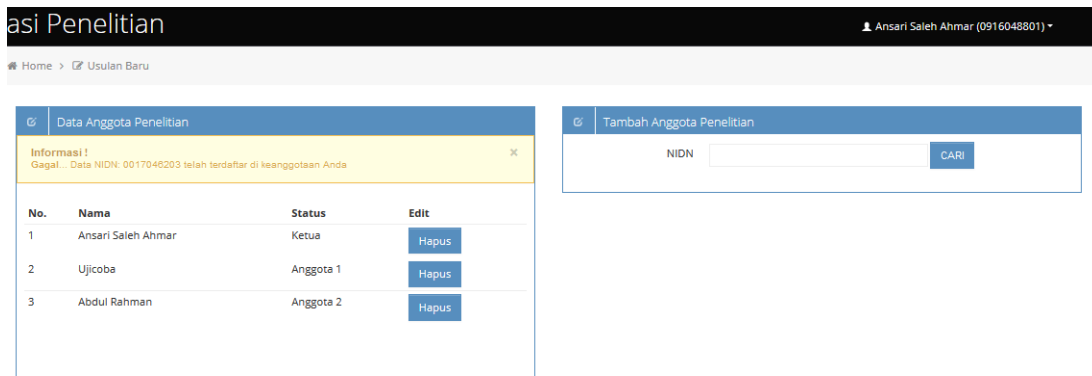


Figure 7 Member Data Display is already listed in the Research



Figure 8 The Display of The Research Costs Completion

3.2. Database Designing of Management Information System

3.2.1. Table of t_login dan mst_dosen

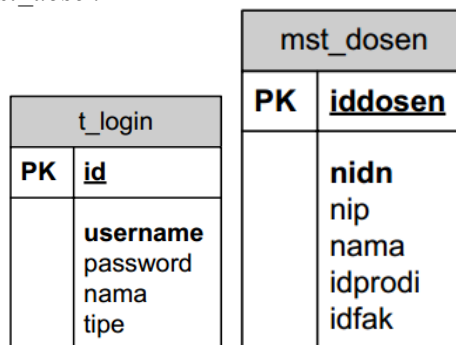


Figure 9 Tabel of t_login and mst_dosen

3.2.2. Table of *mst_tahun*

mst_tahun	
PK	<u>idtahun</u>
	tahun status

Figure 10 Tabel of *mst_tahun*

3.2.3. Table of *mst_skema*

mst_skema	
PK	<u>idskema</u>
	skema status idfakskim

Figure 11 Tabel of *mst_skema*

3.2.4. Table of *mst_capaian*

mst_capaian	
PK	<u>idcapaian</u>
	kategori wajib

Figure 12 Tabel of *mst_capaian*

3.2.5. Table of *t_identitas_usulan* dan *t_uraianumum*

t_identitas_usulan		t_uraianumum	
PK	<u>idusul</u>	PK	<u>idusulan</u>
	iddosen judul abstrak lama key idrupun idtahun idskema keterangan		objek lokasi instansi temuan kontribusi jurnal idusul

Figure 13 Tabel of *t_identitas_usulan* and *t_uraianumum*

3.2.6. Table of *t_personil* dan *t_pengesahan*

t_personil		t_pengesahan	
PK	<u>idpersonil</u>	PK	<u>idpengesahan</u>
	idusul iddosen urutpersonil		idtahun idfak iddosen1 iddosen2

Figure 14 Tabel of *t_personil* and *t_pengesahan*

3.2.7. Table of *data_usulan*

data_usulan	
PK	<u>id</u>
	idusul identitas uraian personil biaya upload cetak

Figure 15 Tabel of *data_usulan*

4. Conclusion

The conclusion can be drawn from the system to be built in this research that is (1) this system will provide information to the general public about the research developed at Universitas Negeri Makassar; (2) this system can help the decision makers to issue policy about research in Universitas Negeri Makassar.

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