

DEVELOPMENT OF MANAGEMENT INFORMATION SYSTEM IN MASTER STUDY PROGRAM ON EDUCATION MANAGEMENT GRADUATE PROGRAM OF JAKARTA STATE UNIVERSITY

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Abstract

This research aims to find out descriptively about: the needs of management information systems in the Master Program of Education Management Graduate School, State University of Jakarta (UNJ), planning of management information system model that needed, the development of management information system model, and testing of management information system model. The method used is research and development. Data collected by observation, interview, documentation study, and audio-visual material. The research findings inform that in the Master program study of Education Management, data management and information currently been carried out using information systems as processing and storage of data and information. Needs that exist in the course include the need for tools, software, and human resources. Needs in the form of equipment such as computers, networks, and other support tools have been prepared. Software requirements include information system software. While human resources need such as the provision of administrative and IT staff that competent for the job. Planning includes the design objectives, aspects of education management, procedures, and design models. The design model consists of design of data flowchart and structure menu that illustrates the systems and sub-systems of the information system that designed. Development of the model is done by developing a few things like the development of graphic design, engineering source code, local webserver installation, and design layout. Development is based on the needs analysis and planning. Tests carried out in three stages. The first phase was conducted to test the way of supporting components on the local computer system. The second phase was conducted to test the way of the system designed after being embedded on a local webserver. The third phase is done to test the way of the overall information system.

Keywords: *Management Information System Development, Program Studies Education Management*

During this time, data management in the Master program study of Education Management have an impact on the effectiveness and efficiency of services and work study programs. In answering the needs and problems, institutionally development model of education management information systems

need to be aligned with the strategic plan established by the State University of Jakarta as the authority of the Graduate Program. Development of education management information system model should be in line with the strategic issues set out in the Strategic Plan UNJ in year 2006-2017. Some of the aligned strategic issues are: (1) Utilization of ICT, which is set out in the strategic issues of curriculum development, (2) organizational governance, which is set out in the strategic issues of bureaucratic reforms, (3) and application development integrated SIM, which is also contained in the strategic issues reform of the bureaucracy. Then in the strategic plan outlined some of the focus of development, including the improvement of governance at sub-focus of information system development based on knowledge management.

Management information system that is able to process the data into a web-based information for decision-making is an information system that is needed at this time. As mentioned by Daniel J. Power in a research journal entitled "Understanding Data-Driven Decision Support System" *Information Systems Management*. (2008, Vol. 25 Issue 2: 149-154), describes "small and medium-sized enterprises can also benefit from the data-driven DSS, but the data store is unlikely to be a large-scale data warehouse. A database accessible on a web server may provide the appropriate enabling technology".

Richard L. Daft (2011: 204) defines the management information systems as "a computer-based system that provides information and support for effective managerial decision making". There are three aspects related to the education management information system, which is a computer-based system, support information, and managerial decision making effectively and efficiently. SIM specifically support strategic decision-making on the management of mid-level and top level. Everyone in the organization is connected in a network which allow the data flow can be more accurately match with the characteristics of the job, and then provide input for organizational decision making. Ralph Stair and George Reynolds (2010: 22) defines SIM as follows "a management information system (MIS) is an organized collection of people, procedures, software, databases, and devices that provide routine information to managers and decision makers". Stair and Reynolds tend to define more extensively SIM that include aspects of the procedure, software, databases, and the devices in order to provide regular information for managers and decision makers.

Rainer and Cegielski (2011: 65) define an information system "a process that collect, process, stores, analyzes, and disseminates information for specific purposes; ISS are more computerized ". SIM is seen as the process of collection, storage, analysis, and dissemination of information for a particular purpose. However, remains the same as other concepts that has been put forward by some experts, information systems used are always based computer. Additionally, Effy Oz (2009: 13) describes the management information system "an information system (IS) consists all the components that work together to process the data and

produce information". SIM is a unified component that work together to process and produce information. Thus the management information system is a computer-based system, consisting of the databases, software, procedures, human as well as other devices that are used to generate information for decision support effectively and efficiently. In addition, the information generated can be utilized not only by the internal organization, but also to be useful to stakeholders and customers of the organization. For the internal organization, the resulting information can provide support for the decision making process.

Based on the facts obtained, the focus of research aimed at: 1) Analysis of the needs of management information systems in the study program; 2) Planning models; 3) Development of a model; and 4) testing of the developed model.

RESEARCH METHODS

This study uses a Research and Development to develop a model of education management information system in the Master Program of Education Management PPs UNJ. The approach used is a qualitative approach. Utilization of R & D in education could be the development of text books, movies, software, methods, and programs. However, adjusting to the realm of education management, the conducted development is based on the development of methods of data management and educational information via a web-based software design.

RESULTS AND DISCUSSION

Requirement Analysis

Management information system that is able to process the data into a web-based information for decision-making is an information system that is needed today. As mentioned by Daniel J. Power in a journal titled "Understanding Data-Driven Decision Support System" (2008, Vol. 25, Issue 2: .149-154) "small and medium-sized enterprises can also benefit from data-driven DSS, but the data store is unlikely to be a large-scale data warehouse. A database accessible on a web server may provide the Appropriate enabling technology ". With the web-based facilities, information systems can be accessed anytime and anywhere. It is the one who can answer the challenges of human mobility today, especially for decision makers who are relatively busy with activity.

Management aspects of education that needs to be developed with the technology of SIM include: service student (activities and services complaints of student affairs in the service of academic and guidance), academic (curriculum, learning model development / lectures, information about academic progress / assessment, counseling / consulting), the development of the journal scientific, research, service to the community, and administrative support that becomes the authority the study program.

SIM model development in the study program certainly be in line with the Strategic Plan UNJ and PPs since performed at the level of the study program is

basically a complete management support to the achievement of the objectives of PPs and Universities namely Tri Dharma College.

Referring to the results of the data analysis needs of researchers get on stage A as mentioned above, the aspects that researchers plan to be developed can be determined: 1) Management data and information of study program profile; 2) Data management and student information; 3) Data management and information of research and community service; 4) Data management and information of reference books; 5) Data management and information of journals; 6) Data management and academic information; and 7) Data management and information of alumni. This condition is accordance with Statement of Coronel (2011: 7) who explained, "the database is a shared, integrated computer structure that stores a collection of: (a) end users of data, that is raw fact, of interest to the end user. (b) metadata, or the data about the data, through the which the end-user of data integrated and managed ". Referring to the concept of the database according to Coronel, data storage performed by study program needs to have a shared and integrated functions.

3.1. SIM Model Design

SIM models are designed to be developed in advance with the plan as follows:

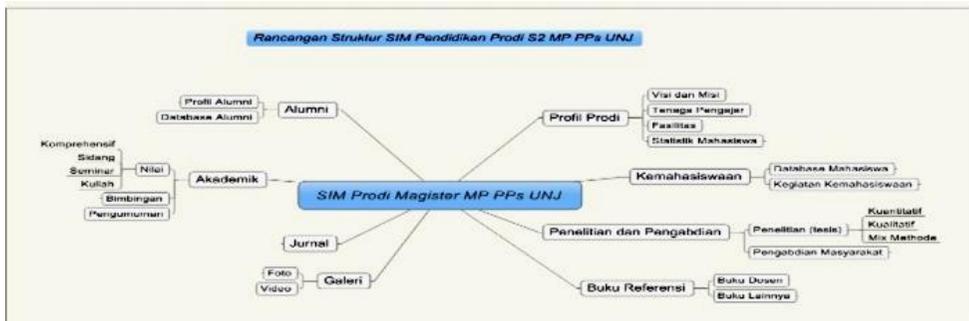


Fig. 1. Structure Design SIM model that will be developed

After designing the structure of the system as shown above, then next is to design a data flow diagram (data flowchart). One of the flowchart of data (data flow diagrams) for academic management can be described as follows:



Fig. 2. Data flowchart Academic Management in the SIM Master Program MP PPs UNJ

The arrows → illustrate direction input. Symbols  illustrate the source or supplier data. Symbols  illustrate the results of the information obtained from the processing of data. And symbols  illustrate the decisions taken for the support of information provided. Overview of SIM designed in Prodi MP in line with the opinion of Ralph Stair and George Reynolds (2010: 22), "a management information system (MIS) is an organized collection of people, procedures, software, databases, and devices that provide routine information to managers and decision makers". Thus, can be stated SIM Prodi require elements of procedures, software, databases, and devices.

Access system is designed using two mechanisms, namely public and private. Public access rights are more limited than the right of private access. Public access rights can be owned by any user of the system that are not registered, while the private access are privileges owned by registered members (students, staff, and lecturers). Private access has full permissions, while the public access could not access the content with a red color. For more details, can be seen in the following figure:

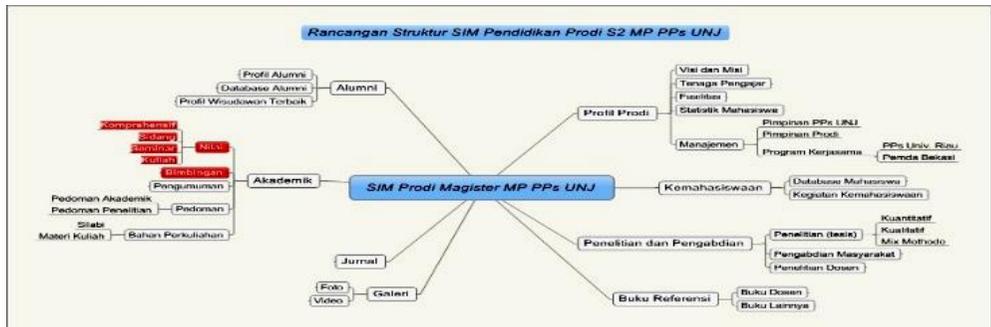


Fig. 3. Right of Public Access to the System

Referring to the statement of Rainer and Cegielski (2011: 12), "a web-based platform that has recently emerged spans the world and is best represented by the Internet and the functionality of the World Wide Web. The platform enables individuals to connect, compute, Communicate, collaborate, and Compete everywhere and anywhere, anytime and all the time; to access limitless amounts of information, services, and entertainment; to exchange knowledge; and to produce and sell goods and services. It operates without regard to geography, lime, distance, or even language barriers. "The benefits obtained from the use of web-based information system are allowing individuals to connect, communicate, collaboration, and access information without being limited by distance. [6]

3.2. Layout Design Development

Paul Harris and Gavin Ambrose (2011: 8) describes the layout as follows: "layout is the arrangement of the elements of a design in a relation to the space that occupy and in accordance with an overall aesthetic scheme". Layout is the arrangement of the parts of elements of a design that fills the display space so that looks aesthetically pleasing to look at. Layout determines the beauty of the appearance of a design created. The beauty of the display gives a positive value for a good impression perceived by those who see. The following draft design layout, each of those positions are numbered to be easily identified. For more details of the draft can be explained as follows: [5]

1. Position 1: the position of the main menu. The main menu is a navigation assistance to determine the entire content of the website. It can simply be analogized with the contents of the main menu.
2. Position 2: This position is used to place the logo of the study program.
3. Position 3: This position is used to put the search module. Users can use this facility to search for desired content.
4. Position 4: This position is used to design the slideshow on the front page of the website.
5. Position 5: This position is used to display a thumbnail and navigation of slideshow content.
6. Position 6: This position is used to display a running text in the form of content up to date information. If the user clicking on the text, then the complete contents of the information will be opened.
7. Position 7: This position is used for photos slideshow of lecturers education management master study program PPs UNJ. If the user clicking on it will display the lecturer profile.
8. Position 8: This position is used to display content on the latest academic information. If the user clicking on the titles, then it will show information referred to.
9. Position 9: This position is used to display information about journals owned by Prodi. If the user clicking on the titles, it will show information relevant journals. Visitors must be registered to be able to see more detail the contents of the journal.
10. Position 10: This position is used to display the online support services for students. Students can communicate with the administrative staff through Yahoo Messenger chat. If the user clicking on the "I'm online" then he can directly communicate with the administrative staff. However, if it appears "not online", the possibility of staff is being offline.
11. Position 11: This position is used to display the data of research (thesis) randomly. Three thesis title in the database are displayed randomly on the home

page of the website. Visitors must be registered to be able to see more details data of this thesis.

12. Position 12: This position is used to display the running text journal data.
13. Position 13: This position is used to display the polls facilities. Students or visitors can follow and see the results of the poll.
14. Position 14: This position is used to display data about the number of visitors to the site since the early online until the last condition.
15. Position 15: This position is used to display the latest data members. Visitors must be registered to be able to see in more detail.
16. Position 16: This position is used to display the profile alumni. The administrator of this site can determine the alumni profile to be displayed on the home page of the site.
17. Position 17: This position is used to display data on Prodi address.

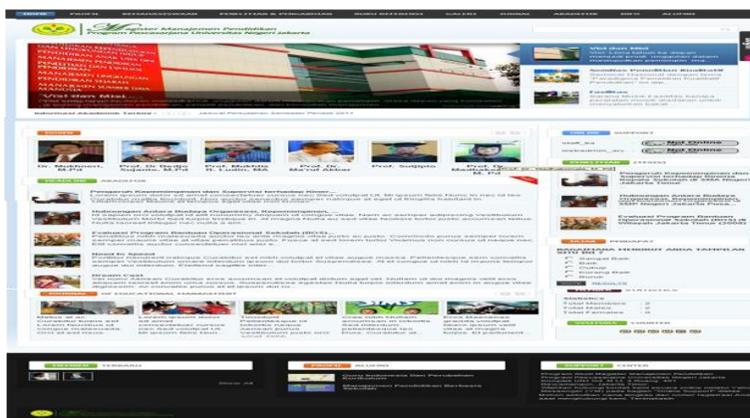


Fig. 4. Results of Development of layout designs

In the development of SIM Prodi, researchers used open source software. Open source software is free software that can be used and developed according to the needs of users. Heather J. Meeker (2008: 24) explains, "Open Source. This term is used to describe both hereditary and permissive licensing paradigm. It is in ubiquitous use ". In addition to free, open source software also has broad support across the world because of the number of users are numerous and dispersed in different countries.

Source code consisting of Joomla! Framework, T3 framework, and JavaScript utilized and developed by the researchers to establish education management information system used by Prodi. The above software is based on open source software. The development includes several aspects as follows: 1) Database application of students and alumni, 2) Database application of thesis guidance, 3) Database application of research (thesis), 4) Database application of journals.

3.3. Graphic Design Development

In the development of SIM Prodi, then later made the selection of graphic design in the form of basic colors, logos, and other graphics components such as label modules. The selected base color is light blue (sky blue) with a hint of blue, red, orange, light green and dark gray. But the accent colors only have a very small portion. The first graphic designed is the logo that will occupy the front pages in the header of the designed system. The logo was designed as follows:



Fig. 5. Prodi Site Logo

Logo deliberately kept simple, but gives an overview of the organization clearly. With the dominance of dark green and yellow, according to the primary color components logo Jakarta State University. UNJ logo located on the left and the text name of the course is located on the right. Paul Harris and Gavin Ambrose (2009: 12) explains, “*graphic design is a creative visual arts discipline that encompasses many areas. It may include art direction, typography, page layout, information technology, and other creative aspect*”. Graphic design can be a symbol of a product or organization. In simple terms can be seen in the logo of a company or a product. The logo is symbolically shows the character and characteristics of a product or the company itself. The next graphic design is the label name of each module. The colors used are orange, blue, and green. The picture appears as follows:



Fig. 6. Graphic Design each module

And the last design that will be the dominant is the picture slideshow at the top of the front page of the site. It will beautify the home page of a website designed. The concept of this slideshow was made to move automatically alternate view. The picture appears as follows:



Fig. 7. Graphic Design Slideshow on Home

3.4. Testing Results

Testing Phase 1: In this stage, the installation of the necessary components for running the system on a local computer (laptop) and then test whether these components can run well or not. Researchers conducted a webserver application installation on the laptop to make the construction site Prodi SIM locally before then up to online. Webserver application that researchers use is xampplite version 1.7.3 for Windows Operating System. Researchers chose xampplite because the application is relatively more simple and complete than other similar software. The main facilities utilized from xampplite are Apache and MySql features. Apache used to run PHP scripts and MySQL is used as database.

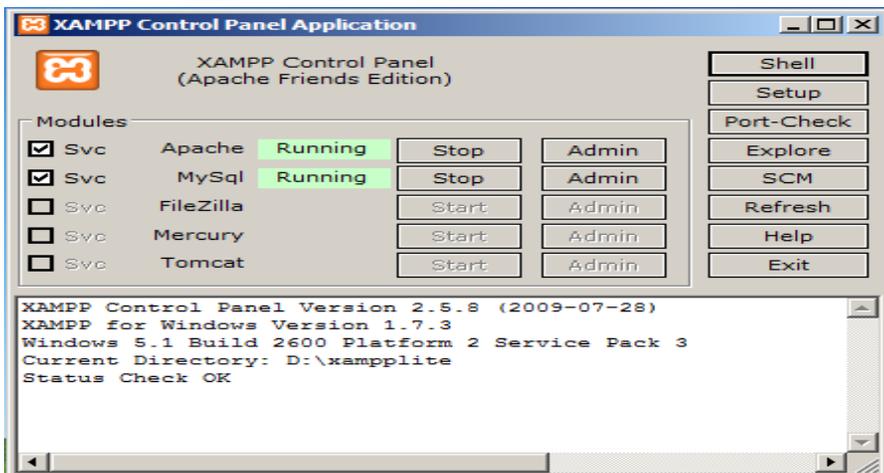


Fig. 8. Xampplite on local host on D:\xampplite

System running smoothly, only a few revisions to be done. Revision undertaken at this stage is a modified php.ini code to disable the option display error.

Testing Phase 2: This testing phase is a testing process on a model system that has been developed in three stages (development of models designed SIM). The blueprint design models then will be tested collaborated with supporting components of the system that has been installed on the computer (xampplite webserver). System running smoothly, just needs a little revision to be done. Revision undertaken at this stage is to disable the cache function on the system to get the deployment view more real-time.

Testing Phase 3: This testing phase is the stage of final testing phase of this study. The leader of study program (the chairman and secretary) do a substantive perform testing. Leaders as a major stakeholder of this study provide an opinion as input of the final revision. However, researchers can determine the suggestions whether might be done or not be done in accordance with the concepts of SIM which discussed in previous sections of literature review and methodology. Study programs provide input as follows: 1) The vision and mission are made by pointer; 2) list grades of students to comprehensive stages; 3) Create a new sub, research lecturers, in the sub-systems research; 4) Create historical seminars and siding; 5) Create a variable percentage of the study; 6) Create a sub guidance in academic sub-system (academic guidance and guidelines for research); 7) Create a new sub in the academic syllabus of lectures; 8) Create a new sub in the academic, lecturing materials (downloadable); 9) Make a list of books used in the lecture; 10) The personal structure of the director, assistant director, Program study, cooperation program managers and other PPs); 11) Add a professional organization (eg ISMaPI).

Revisions were made in accordance with the input Prodi Leaders and serve as the final revision system development which resulted in the following changes:

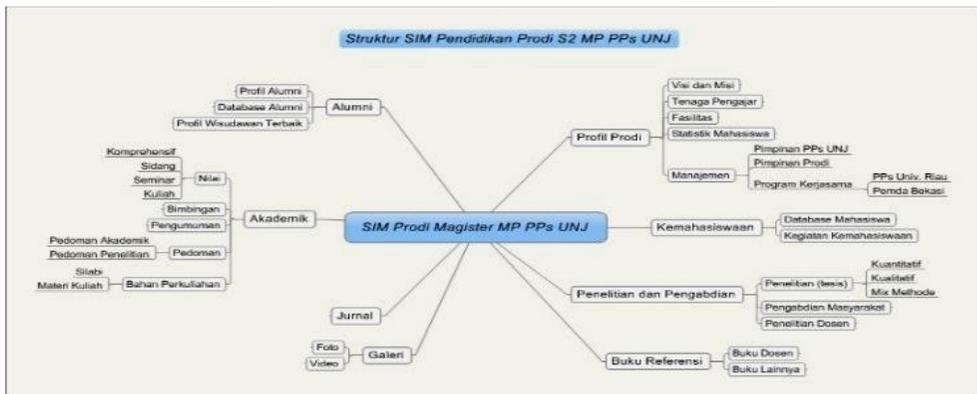


Fig. 9. Revised accordance Input Testing Phase 3

CONCLUSIONS

1) The need for the study program include the need for tools, software, and human resources. Needs in the form of equipment such as computers, networks, and other support tools. Software requirements include information system software itself. Whereas HR needs such as the provision of administrative and IT staff are competent for the job; 2) Planning includes the design objectives, aspects of education management, procedures, and design models. The design model consists of design and structure of data flowchart which describes menu systems and sub-systems of the information system designed; 3) Development of the model is conducted by developing a few things like the development of graphic design, engineering source code, local webserver installation, and design layout. The development is based on a needs analysis and planning; 4) Testing was conducted in three phases. The first phase was conducted to test the running of supporting components on the local computer system. The second phase was conducted to test the running system was designed after being embedded on the local webserver. The third phase was conducted to test the running of the overall information system. This stage of testing performed by the study program.

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