

## Management of Academic Information System in Higher Education

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### ABSTRACT

Information is very important for everyone and groups in the organization because it has an orientation to provide conveniences and benefits to users. In utilizing information, the existence of an Information System (SI) will be more systematic for certain interests. The purpose of this research is to describe in-depth and understand matters related to the management of academic information systems; namely, planning, organizing, implementing, supervising, and evaluating. This research uses a qualitative research approach with a multiple-case design. This research was conducted at Universitas Lambung Mangkurat (ULM), Banjarmasin, and Universitas Islam Negeri (UIN) Pangeran Antasari, Banjarmasin. The data collection techniques used in this research are interview techniques, observation, and documentation studies. The research results found; (1) Planning by updating the information systems and improving the quality of information will be more efficient for the satisfaction of information users and meet the needs of information recipients. (2) Distribution of tasks with coordinative communication and meet the needs will produce productive services and create convenience in delivering information for users and recipients of the information. (3) Implementation of services with electronic system updates will increase the effectiveness of the information quality. Also, doing socialization will support the increase in the information acquisition for information recipients. (4) Supervision of the updating of information systems will effectively improve the service quality for the information users. Evaluation of the information systems will be able to influence the quality of information use.

*Keywords:* Academic information systems, management, universities

### Introduction

Information is important data, a strategic thing, and gives a piece of useful information to each individual. In daily life, one needs to have information to act and develop, because it can be used as a tool to support activities or activities of various agendas with a high level of efficiency, effectiveness, and productivity (Adha et al., 2020). Broadly speaking, useful

information is important for everyone as well as groups in the organization, because it has an orientation to provide conveniences and benefits for users. Therefore, for the information generated to be useful, at least the quality of information should contain three things; namely accurate, current, and relevant (Darmawan & Fauzi, 2013; Shaqiri, 2014). In

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utilizing information, the existence of an Information System (SI) will become more systematic for specific interests. For example, SI can be used as a supporting management process that is the informational role, which means that a managerial applicable spokesperson, usually, in the organization where information is received from various parties, both from internal and external through a variety of information handling facilities, one of which is the technological devices.

Technology is an undeniable part of the support for obtaining information, and in this digital era its role is no longer strange, its scope is broad and closely related in disseminating information (Ghavifekr et al., 2014; Lindqvist & Pettersson, 2019). Information Technology (IT) is a technology used to process data, including processing, obtaining, compiling, storing, and manipulating data in various ways to produce the quality of information (Sutabri, 2014). Its function can be utilized as much as possible, because it has the potential to capture information more efficiently, with greater coverage, and can be stored for a long period (Ring et al., 2013). IT can also be interpreted as a technology that serves to store information through devices engineered by humans (Musti, 2019).

Technology becomes part of the system to be equally engaged in information; if the device of the technology is damaged then the system can also be damaged. The existence of technology has now undergone a drastic change, its use is not only placed as an auxiliary device for organizational activities but also has become an organizational strategy to achieve the objectives (Martins et al., 2019). Its utilization is also in implementing the system into a necessity, not just prestige or lifestyle in an organization, but for the advancement of the organization, it should need to have the ability to run and manage technology in SI (Reynolds & Mckimm, 2020). Information systems can be consist of a combination of people, hardware, software, communication networks, and data resources that collect, change, and disseminate information within an organization (O'Brien & Marakas, 2011).

In connection with the current context of technology utilization in the implementation of IS can certainly be said to be very appropriate (Sultoni et al., 2020; Wallner & Wagner, 2016). The effectiveness of its use needs to get more attention, given its fairly central role in education (Solitander et al., 2012). In practice, it can almost be found in educational organizations, IS with a variety of good forms that are very simple even up to a very high level of complexity. Wherever possible the advantages of technology in this day and age, can also be utilized for the development of education (Juharyanto et al., 2020; Tarhini, Tarhini, & Tarhini, 2019). Such as IS for learning media, system unity in a field, and other matters related to educational information services. Especially the procurement of information about an agency or system from an agency, because the advantages of SI can make most people more instant and effective in finding information and accessing data in a short time (Ariyanti et al., 2020; Latif & Pratama, 2015). There are three things to note in producing well-integrated information in the organization; namely (McLeod & Schell, 2007; O'Brien & Marakas, 2011). First, SI is defined clearly and in detail concerning what types of information colleges need. Second, the existence of information technology and software; applications, operating systems, databases, and others, should be available. Third, the existence of IS management specifically by certain fields following the interests of services in universities.

Obtaining information with the system will certainly have an impact on the performance which further affects the evaluation and input for the universities concerned (Adha, Mustiningsih, & Maisyaroh, 2018). The information obtained can also be used to develop alternative SI models that can provide support to every service process both in the internal environment and related to stakeholders. This is considered important to synchronize the dynamics of information user needs and the dynamics of system development for various services. Therefore, the consequences of this give birth to the need for SI

management in universities that can synergize all existing resources, to increase the degree of unification at the internal level of universities to optimize the utilization of resources. Such as human resources, hardware, software, data resources, and network (Adha et al., 2020; El-Ebiary et al., 2017).

A university as a very large system has many sub-systems so that each forms a pattern of working relationships that realize a centralized system that works harmoniously, supports each other, and is related to each other (Bubel, Turek, & Cichon, 2015). The form of SI in universities is expected to be one of the solutions that can help solve management problems in external fields such as accountability and public image of universities and internal fields can be in the form of strengthening the governance of universities, services in the academic field and others (Olesen, Hasle, & Sørensen, 2016; Prokopiadou, 2012). The conclusion is that if an institution provides information about its institution, it will further open the reader's insight to the institution because, in this digital era, it will be easily distributed information and its functions need to be utilized as much as possible.

A new paradigm of college management emerged along with the birth of *Peraturan Pemerintah nomor 61 Tahun 1999 tentang Otonomi Perguruan Tinggi*, has spawned various shifts in the college's internal management system. The regulation was born out of a desire to improve the implementation of the decentralized system of universities and in educational services. Educational institutions are activities that serve consumers, in the form of students, students, and also the general public, which in essence aims to provide services (Alma, 2003).

In this case, the ministry of universities in the form of providing services to students. Similarly, in line with the increasingly rapid demands and desires of the community towards the process of organizing learning in universities to be more effective and efficient, the control to meet these demands gradually has begun to organize SI networks.

Nowadays, the condition of universities is faced with increasingly tight competition both at national and international levels, so to survive superior and continue to progress and develop needs to have a strategy to survive. One of the operational strategies can be done optimally, for example in the academic field there are arrangements for lecture schedules for students, study process, exam schedule, academic guidance, and so on. In each of these internal activities, universities can also utilize SI as a factor in the process of success and progress of universities with various things that can be done, such as the existence of an Academic Information System (AIS) that regulates the strategy in question (Bright & Asare, 2019); (Crick et al., 2017). So that it will create an ease for universities to produce information and facilitate all activities related to the processing of academic data.

The existence of two universities in Banjarmasin, namely Universitas Lambung Mangkurat (ULM) Banjarmasin and Universitas Islam Negeri (UIN) Antasari Banjarmasin are two universities that are held by the government mean a position as a PTN. In the Kalimantan region, these are the oldest universities in Kalimantan. The dispute between the public and religious colleges is between the public and religious colleges. In addition to being the oldest PTN for Kalimantan Region, UIN Antasari is one of the 17 UIN in Indonesia, while ULM is the only leading institution because it has been accredited A, so both have developed to date have many resources that are also competent.

In connection with the excellence of the two universities, as well as a large organization that serves many people ranging from students, lecturers, alumni, and the community should both universities have adequate facilities and personnel in carrying out academic information system management (Dormann, Hinz, & Wittmann, 2019; Indrayani, 2013). Based on the explanation above, it is an interesting thing to be reviewed related to Academic Information System Management in universities. The goal is to

describe in-depth and understand matters related to planning, organizing, implementation, supervision, and evaluation.

### **Material and Methods**

This research uses a descriptive qualitative approach with multiple-case design, as this research aims to describe in-depth and understand matters related to the management of academic information systems in Universitas Lambung Mangkurat (ULM), Banjarmasin, and Universitas Islam Negeri (UIN) Pangeran Antasari, Banjarmasin. Data collection techniques in this research using interview techniques, observation, and documentation studies, with key informants Vice Rector I for academic affairs of Lambung Mangkurat University and UIN Pangeran Antasari Banjarmasin, Indonesia. Data analysis and research through three stages; namely data reduction, data presentation, and conclusion drawing (Gunawan, 2013; Miles, Huberman, & Saldana, 2014). Data validity checking activities are conducted by researchers to validate whether the data is accurate. Checking the validity of data in this study using credibility test, because this type is following the context of research to be more certain of the correctness of the data, there needs to be triangulation. Triangulation that will be used is the source and technique that is comparing the correctness of certain information from informants and checking the results of interviews with observations or documentation.

### **Results and Discussion**

#### ***Academic information system planning***

The planning process in the internal academic field, the agreement from the meeting results in collaboration with the Technical Implementation Unit for Information and Communication Technology Development (UPT PTIK) after which the Head of Academic Affairs reports and coordinates with the Vice-Rector I as the leader who is responsible in the academic field. The content of the planning is related to the planning of updating the system at Simari (Integrated Information System

of Lambung Mangkurat University), an example of updating is the verification of bio-data for graduation applicants. Planning by updating the information system will be more efficient for the satisfaction of information users. This agrees with Supriyanto and Jin (2006) that information system user satisfaction can be measured using six variables; namely completeness of functions/features, stability/reliability, ease of use, innovation, security, and flexibility. Besides, Gupta (2007) also stated that to determine the effectiveness of information systems, what can be used as a measure is user satisfaction.

Research by Perdanawati, Rasmini, and Wirama (2014) entitled "The Influence of Elements of User Satisfaction on Work Efficiency and Effectiveness of Users of Institutional Accounting System Applications in Higher Education Work Units in Bali Province" states that the results show that the elements of user satisfaction affect the efficiency and work effectiveness of users of agency accounting system applications. This is based on and refers to the planning of updating the information system, so it efficiently and effectively satisfies users. From the opinion of Lee and Kim (1992), it shows that the information system user satisfaction factor is highly dependent on the user's technical ability, acceptance of the information system by the user, and the usefulness of the information system itself. This statement confirms the existence of an information system update plan that will effectively provide satisfaction for information users. According to Istianingsih (2007), evidence shows that system quality, information quality, and service quality have a significant positive effect on user satisfaction of information systems.

Planning to update information systems is included in the theory of measuring the success of information systems. According to DeLone and McLean (2003), they reflect the dependence of six measures of information system success. The sixth element or factor or component or measurement of this model are; Quality Systems (system quality), Quality Information (information quality), usage

(use), User Satisfaction (user satisfaction), Impact of Individual (individual impact), and Impact Organization (organization impact). Added by DeLone and McLean, the quality of the system is a characteristic of the desired quality of the information system and the desired quality information product characteristics information.

Activities originating and related to the rules of the chancellor, the process is from the leadership to the Vice-Chancellor I in the academic field to be followed up, from the Vice-Chancellor I summoning and giving directions to the Head of Bureau, Head of Section, and Head of Subdivision. The content of the plan relates to the work from home policy because it adapts to emergencies. In this case, it includes referring to learning activities on campus which means learning or lectures take place from their respective places, more specifically about online lectures through e-learning contained in Simari. Planning with an increase in the quality of information will be more efficiently meet the needs of information recipients and it is the second proposition. According to Jogiyanto (2005), a researcher in information suggests that the indicators used to measure the quality of information, among another accuracy, output timeliness of output, and the relevance of the output. In this case, the academic team disseminates new student admissions as a form of improving the quality of information because it is accurate, timely, and relevant as needed so that it meets the needs of information users.

This second proposition is also supported by research by Angkoso (2019). with the title "Factors Affecting the Quality of Information Services in Academic Fields to Students." The results showed that accuracy, timeliness, completeness, and format had a significant effect on the quality of academic information services with a contribution of 38.5%.

The most dominant factor affecting the quality of academic information services is the accuracy factor. So, from this research, it can be concluded that the purpose of improving the quality of information is to meet service needs such as for students. The quality of

information shows the quality of the product produced by the information system (Mason & William, 1978).

According to Wahyuni (2011) that the quality of information is proven to affect the intensity of use. Based on user perceptions, the higher the quality of information generated from the system, the greater the intensity of use. This is consistent with the research findings that the quality of the information produced will meet the needs of information users. In connection with the discussion of information users referring to students. According to Handayani and Ratminto (2003) said that to achieve a high level of satisfaction, it is necessary to have an understanding of what consumers want, by developing the commitment of everyone in the institution to meet consumer needs, by applying the concept and prioritizing student satisfaction as the main customer and provide the best service. This is also supported by the opinion of Sugito (2020), customer satisfaction is a condition where the wishes, expectations, and needs of customers are fulfilled. If the services provided can meet the wishes, expectations, and needs of customers, it is considered that the service is satisfactory. Of all these opinions, it refers to the efficiency of meeting the needs of information users so that when they are met, it will give them satisfaction.

### ***Organizing Academic Information Systems***

The academic section is a part that is part of the auspices of the BAK (Academic and Student Affairs Section) for ULM or MIKWA (Academic and Student Affairs Section) and is also included in the main elements of service and implementation of an educational institution. In the academic field, in organizing ways by coordinating with each other from subordinates to the leader and vice versa. The proposition is the division of tasks with coordinative communication, will produce productive services for users of information is the third proposition. This is very much in line with the theory of production management according to Handoko (1999), which are various management efforts that

optimally use all resources (factors of production); labor, machinery, equipment, raw materials, and so on, in the process of transforming raw materials and labor into various products or services.

According to Usman (1998) coordination is an effort to integrate, harmonize and harmonize various interests and related activities so that each member of the organization has the same time, movement, and steps in achieving common goals effectively and efficiently. Several factors that need to be considered in conveying information; namely a) Clarity, b) Consequences and balance, c) Ability and implementation, d) Uniformity in terms, definitions, and relevant codes, and e) Smooth distribution by setting up channels will be passed in the communication process. There are two kinds of communication models, one of which is coordinative communication namely communication that functions to unite the parts of the organizational sub-system; including in the formulation of goals, coordination of activities, and activities.

The central academic division carries out the monitoring process with the academic section of each faculty, then coordinates with the information system unit regarding the desired system and application according to the need for service purposes. Distribution of tasks according to needs, will create convenience in delivering information to recipients of the information. This proposition is in line with the opinion of Mangkunegara (2015) regarding human resource management as the management and utilization of existing resources in individuals. For the management of resources to be more organized, each person in the sub-division is assigned an assignment, for example at the University of Lambung Mangkurat there are Academic Data Analysis, Academic Information Analyst, and Academic Administration empowered according to the abilities of each individual. Collaboration with each other, coordination between leaders, heads of sections, heads of subsections, and staffs in the same line of work for academic services.

Presented by Jahari and Sutikno (2008), the goal of human resource management,

which is one of the main reasons the founding of the organization, is to achieve the goal. Efforts to achieve these goals are carried out through the implementation of various tasks. The various kinds of tasks are of course different, and these tasks must be carried out effectively and efficiently to help the organization achieve its goals. To be effective and efficient, these tasks must be carried out by the right person or executor, who can match the workload to be carried out, so that the executors would have high motivation to carry them out. Apart from being influenced by conformity with ability, it must also be following the rewards received, and there is no serious obstacle in the implementation of work and others. The research findings are; as everything that is carried out involves all human resources and works according to their level and domain so that they can coordinate with each other, develop, and achieve the goals of each field.

### ***Implementation of Academic Information System***

Implementation of services by updating the system electronically will increase the effectiveness of information quality is the fifth proposition. The service in question is the application of an integrated Lambung Mangkurat University information system and academic information system. Both of these services are part of the academic information system in each university by utilizing technology, so that it has been evolved from manual to electronic until now. For example, Simari, which is the main system at Lambung Mangkurat University, is currently called single sign-on service, which means that in one username and password, when connected there will be many applications related to the interests of academic services even non-academic and the available features can be used by every resource in college. Meanwhile, Siakad at the State Islamic University (UIN) of Antasari is increasingly experiencing new features or services in the application, the latest update is the feature, which is host to host useful for the academic section knowing that if a student has paid a single tuition fee it will

be seen from the student's Siakad so that the status will also change to active. Four elements encourage or influence organizational development; namely people, technology, tasks, and structure. According to Jogiyanto (2005), broadly, technology can also be described as the application of knowledge to carry out work. The technology used in the information technology systems is computer technology.

For an agency, providing information has an important function for the community. In admitting new students, a state university held outreach by inviting representatives of agencies and schools in South Kalimantan to come to the campus or by visiting certain schools, such as *pesantren*. The goal is to collaborate, direct, and guide students who intend and are interested in continuing their studies and can remind them of the predetermined schedule. The implementation of socialization will support the increase in information acquisition for information recipients. If the socialization is done well, it will increase the chances of individuals getting an effective career. Subakti (2010) suggests that in terms of delivery of messages, socialization is divided into two. First, education is a dialogue process between the message giver and receiver. This process can channel the information to the public regarding the introduction, values, and norms of the institution. This socialization also affects the psychology of the recipients of the information in terms of conveying values and norms that are conveyed well and ideally by the parties concerned, to generate public interest.

Research conducted by Jannah (2018) entitled "The Role of Socialization in Efforts to Increase Community Interest Using Sharia Cooperatives (Research on Mitra Niaga Sharia Cooperatives)." The results showed that the role of socialization carried out by the Mitra Niaga Islamic Cooperative is very important for cooperative business activities as well as for increasing public interest in using Sharia Cooperatives accompanied by excellent strategies to attract community interest. In connection with socialization, a study was also carried out by Abdullah and Nasionalita

(2018) entitled "The Effect of Socialization on Student Knowledge Regarding Hoaxes (Study in the Information Dissemination Program through Jukrak Media at SMKN 1 Pangandaran)." The research has the result that socialization has an effect of 49.7% on the knowledge of students at SMKN 1 Pangandaran.

#### ***Academic Information System Supervision and Evaluation***

Supervision is coordination carried out in every work activity. Supervision by adjusting each data starting from the university level to the study program is equalized with the data at the Directorate General of Higher Education, is maximized so that it is equal and synchronous until there is no possibility of differences in the data only. Supervision of information system updates, which will effectively improve the quality of service for users of information, is a proposition in this study. Based on the results of Muhammad Nurul Hadi's thesis (2016) entitled "The Influence of Internal Control on Service Quality of the Bandung City Transportation Service," it shows that there is an effect of internal control on service quality and there is also a strong influence. Another study by Kusumah and Nurdiaman (2013) entitled "The Effect of Supervision on Quality of Inpatient Services at Regional General Hospital (RSUD), Dr. Slamet Garut Regency." the results of hypothesis testing indicate that there is an influence between the quality control of inpatient services at the Regional General Hospital (RSUD) Dr. Slamet, Garut Regency. According to Atik and Ratminto (2005), the measure of the success of service is determined by the level of satisfaction of service recipients.

Evaluation is related to the information systems, such as repairs, data, and updating applications. Updating of information systems or data related to the DIKTI is also carried out according to the level, from the university to the level of the study program to be reported to the Directorate of Higher Education Evaluation of information systems, will be able to influence the quality of the use of

information is the last proposition. Darmawan's thesis (2010) entitled "The Effect of System Importance, System Quality and Information Quality on Usability and User Satisfaction in the Development of Regional Financial Management Information Systems in Sragen Regency" shows that it provides support for DeLone and McLean's success model in the use of information systems on three things; namely system quality, system importance, and system usability. These three things make a big contribution in explaining the satisfaction of users of information systems. Another study by Priyanga, Herlambang, and Wardani (2018) entitled "Evaluation of Quality Usability, Quality of Information, and Quality of Service Interactions on the Education Office Website Using the Webqual Method and Importance Performance Analysis (Case Study: District Education Office Website Pasuruan)" shows that the descriptive statistics of the three variables fall into the high category. The result of the value is usability variable gap -0.35, information quality is -0.32, and service interaction quality is -0.36. Based on this result, the website has not met the ideal quality that the user wants. From the results of this study, the point that fits the proposition is the effect of evaluation on information systems, in this case, it relates to the efficiency of services information system in the academic field. Evaluation is carried out as an effort to fix and assess the results of strategy formulation and implementation.

### **Conclusion and Recommendation**

Based on the results of the research in the field, the following conclusions were formulated; Academic Information System Planning; namely a. Planning by updating the information system will be more efficient for the satisfaction of information users. Because user satisfaction of information systems can be measured using six variables; namely completeness of functions/features, stability/reliability, ease of use, innovation, security, and flexibility. The effectiveness of information systems that can be used as a measure is user

satisfaction; b. Planning to improve the quality of information will be more efficient in meeting the information needs of the recipients. Because the indicators used to measure the quality of information, among other accuracies, output timeliness of output, and the relevance of the output. Also, the quality of the information will affect the intensity of use, and the accuracy, timeliness, completeness, and format will have a significant effect on the quality of information services.

Organizing Academic Information Systems; namely a. The division of tasks with coordinative communication will produce productive services for users of information because coordination is an effort to integrate various interests and related activities so that each member of the organization has the same time, motion, and steps in achieving common goals effectively and efficiently; b. The division of tasks according to needs will create ease in delivering information to the recipients of the information. As human resource management is the management and utilization of existing resources in individuals and one of the main reasons for the establishment of the organization is to achieve goals.

Implementation of Academic Information Systems; namely a. The implementation of services with electronic system updates will increase the effectiveness of information quality because four elements encourage or influence organizational development; namely people, technology, tasks, and structure and technology also mean the application of knowledge to carry out work; b. Implementation of socialization will support the increase in information acquisition for information recipients. Because of socialization is done well, the opportunity for each individual to obtain information will be effective. Other than that, socialization can channel information to the public about the introduction, values, and norms of the institution.

Supervision and Evaluation of Academic Information Systems; namely a. Supervision of information system updates will effectively improve the quality of service for users of information because there is a strong influence of internal control on service quality.

Also, the measure of the success of service delivery is determined by the level of satisfaction of the service recipient; b. Evaluation of information systems will be able to influence the quality of information use because it provides support in the use of information systems in three ways; namely system quality, system importance, and system usability.

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