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Management of Academic Information System (AIS) at Higher Education in The City Of Bandung

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Abstract

The purpose of this research is to describe and analyze; 1) the planning and the organizing of academic information system (AIS) at higher education in the city of Bandung; 2) the implementation of AIS at higher education in the city of Bandung; 3) The monitoring and the evaluation of AIS at higher education in the city of Bandung; 4) the quality of information produced by AIS at higher education in the city of Bandung ; 5) the quality of AIS at higher education in the city of Bandung and 6) the effectiveness of Academic Information Systems Management in Bandung. This research is descriptive research that taking place in the city of Bandung with all higher educations in the city of Bandung for the populations. The used selected sample is purposif sampling technique, it is higher educations that organize graduate program and adopt ICT into their academic information system. The samples come from 18 higher educations, 988 persons are lectuters and 1581 persons are students. Data is obtained by using questionnaire and it is processed by using descriptive statistical technique.

The results shows that the effectiveness of the planning and the organizing of academic information systems at higher educations in the city of Bandung has been largely effective. The effectiveness of the implementation of the academic information systems is good enough. The effectiveness of the process of monitoring and evaluation of the academic information system indicates that the number of higher educations that still ineffective in their monitoring and evaluation systems is quite significant. The output of academic information system of all higher educations in the city of Bandung is good. In addition, all higher educations have a good quality information system program.

Keywords: Higher Education, Academic Information System, Information and Communication Technology, Effectiveness

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A. Background

The utilization of information and communication technology (ICT) in education is an absolute necessity that must be undertaken and utilized by higher educations if they want to improve the quality of education. For higher educations, as well as other modern institutional, utilization of information technology is not only serves to help management (supporter), but also serves to improve (enabler) in the decision-making process at various levels of college management (Indrajit and Djokopranoto, 2006). The effective utilization of information and communication technology in the management of education in higher educations will be realized when supported by the development of an effective management information system (Hanna, 2003).

The use of ICT as a supporter or an enabler among higher educations, particularly in the city of Bandung, has already become a must either at higher educations or at some higher educations that have students and a simpler affair. The utilization of ICT for management of institutional power support is an important factor in the effectiveness of service management, and it seems to be a modern institution lifestyle that can be proud of in the community (Allen and Fifield, 1999; O'Brien, 2005; Kartiwa, 2008). There are many problems encountered by many universities in Bandung city related to ICT applications in the management of institution, such as an ineffective system made up, non technical problems that have no connection with the system or brainware problems.

The effectiveness of the implementation of ICT in the management of higher education needs more attention as its central role in the process of managerial decision-making or other decisions (Chamblin and Steger, 2000; Ramsden, 2004). To improve the effectiveness of this implementation which would obviously affect the effectiveness of the achievement of the education institution, the factors that affect the effectiveness of the implementation of ICT in institutional management, particularly in terms of academic administration need to keep be researched. It is intended that the process of academic management in higher educations could more effective and efficient then it would support the achievement of high performance of institutions.

From the entities and the properties, academic information systems refer to a set of systems and activities that are used to organize, to process, and to use information as a source within an organization (Sprague and Carlson, 1982). The output of the information resulted from this system will provide information to the leaders or the decision makers that can be classified in different utilization and different purposes. (Levin, Kirkpatrick, and Rubin, 1982) They are :

a. Academic Information System for the pupose of resulting reports in a various activities such as academic, finance, personel, the distribution of students to all kinds of majors.
b. Academic information system for the purpose of answering the "what if" question. This information system use database to be shared to other users.
c. Academic information system for the purpose of supporting decision making, evaluation, and the development of the system. This system provides information for all kind higher educations.

The purpose of this research is to describe; 1) the planning and the organizing of academic information system (AIS) at higher education in the city of Bandung; 2) the implementation of AIS at higher education in the city of Bandung; 3) The monitoring and the evaluation of SIA at higher education in the city of Bandung; 4) the quality of information produced by AIS at higher education in the city of Bandung ; and 5) the quality of AIS at higher education in the city of Bandung. and 6) how far the effectiveness of Academic Information Systems Management in Bandung.

B. Methodology

By using descriptive research analytical method, the population in this study involved 37 higher educations in the city of Bandung which adopt ICT in their academic and administrative system that runs undergraduate (S1) program. While for the institutional sample, I used proportionate random sampling and it is involved 18 higher educations consisting of 8 universities, 3 institutes, and 7 colleges. For faculty sampel, 988 persons are lectuters and 1581 persons are students. To measure effectiveness on this study, it was used Cobit tool modification for the instruments (IT Government Institut, 2000). The data collecting tool is a good validity and reliability closed-open questioner. Measurement of the samples was done using the formula of Yamane (1967: 258)

The data obtained from the study then analyzed with descriptive analysis. Descriptive analysis seeks to expose data or answers given by students as respondents to the number of questions posed in the form of a questionnaire, so that the results will clarify issues that will be examined.

C. The Result and Discussion

1. Planning dan Organizing of AIS

These sub variables are divided into 5 indicators, they are:

a. the existence of the strategic planning of AIS and how far of the implementation;
b. Socialization and training to the users of AIS;
c. Organizing of AIS and its effectiveness;
d. Human Resources management of AIS (from the recruitment to the dismissal); and
e. The ownership and the effectiveness of the AIS software owned by the colleges.

From the data, it is recocnized that the effectiveness of planning and organizing of higher education academic information systems whether is good or not, where 3 higher educations (16.7%) are considered very high, 12 higher educations (66,7%) are categorized high, the 2 universities (11.1%) are categorized under high, while 1 higher education (5.6%) is considered low.

Table 1. The Effectiveness of Planning and Organizing of AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	3	16,7	16,7	16,7
	High	12	66,6	66,6	83,3
	Average	0	0	0	83,3
	Low	2	11,1	11,1	94,4
	Very Low	1	5,6	5,6	100,0
Total		18	100,0	100,0	

The planning and organization of information systems is one of the processes that should not be ignored in the process of management information systems. The planning of information systems is the most important step in the process of the establishment of information system in institutions. The most important factor is a long time that is required in providing and integrating relevant data into the operations of the institution, the difficulty of finding a competent operator, and the size of funds and managerial resources needed to run it.

In designing information systems, besides the devices that process the data in information systems management that is an important component, designing information system that does not start from a comparative analysis of the availability of the device. Stoller and Van Horn (Certo & amp; Certo, 2006: 543) mention that in designing information systems, it should begin with an analysis of the type of decisions that will be generated in each unit manager. In all higher educations in the city of Bandung, the planning process of information systems is initiated from strategic plan. Almost all of the Colleges consider that the strategic plan of AIS is important as the basis of policy and implementation of the AIS in the institutions. The strategic plan is a reference to the process of developing a blueprint management system as a whole.

The socialization and training of the users of the AIS is also important as a part of the planning process. This is very important in the framework of the preparation and conditioning situation, then culture of AIS could begin to established systematically (Leidner and Kayworth, 2005).

2. The Implementation of AIS

Implementation of AIS dig up how far the academic information systems in the institutions is run, what kind of encountered problems, and how the process of solving them. The Data show that the implementation of the AIS in higher educations has already given you an idea of their effectiveness. There are 9 higher educations (50.0%) that are categorized into very high, 6 higher educations (33.3%) categorized into high, the 2 higher educations (11.1%) categorized into under average, and 1 higher education (5.6%) categorized into low.

Table 2. The Effectiveness of The Implementation of AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	9	50,0	50,0	50,0
	High	6	33,3	33,3	83,3
	Less High	2	11,1	11,1	94,4

	Low	1	5,6	5,6	100,0
Total		18	100,0	100,0	

In its implementation, the academic information system in higher education is faced with many problems. Generally higher educations are able to effectively run the system. Some problems that arise related to the technical implementation of the system can be solved properly. Process that run in solving problems is conducted actively and preventive by the Manager and the full support of the leadership of the campus.

3. Monitoring dan Evaluation

Subvariable of monitoring and evaluation attempts to dig up data about the existence of a unit of work carrying out the duties and functions of the monitoring and evaluation of AIS of Institute. In addition, it is also photographed the process of monitoring and evaluation.

Considering the indicators above, note that the effectiveness of monitoring and evaluation at 13 higher educations (72.2%) is very high, while in 5 higher educations (27.8%) is still low.

Table 3. The Effektiveness of Monitoring dan Evaluation of AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	13	72,2	72,2	72,2
	High	0	0	0	72,2
	Less High	5	27,8	27,8	100,0
	Low	0	0	0	
Total		18	100,0	100,0	

The existence of a special unit that performs the task of monitoring and evaluating system is very important in order to ensure the system is running well. Academic services efforts at both the lecturers and students will be more aware in the presence of this institution. A routine and well-planned monitoring and evaluation activities conducted periodically and thorough is a guarantee that AIS is running effectively.

4. The Quality of Data/Information Resulted by AIS

There are 5 (five) indicators describing quality of data variable/information generated by AIS of higher educations, they are:

a. Effectiveness of information;
b. Confidentiality;
c. Compatibility;
d. Readability; and
e. Reliability.

Referencing to those five indicators, it can be explained that the quality of data/information generated by AIS at 5 higher educations (27.8%) is very high, while in 13 higher educations (72.2%) is high.

Table 4. The Quality of Data/Information Resulted AIS

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	5	27,8	27,8	27,8
	High	13	72,2	72,2	100,0
	Less High	0	0	0	
	Low	0	0	0	

Total		18	100,0	100,0	

5. The Quality of Academic Information System Program

There are four (4) indicators that are unearthed in the respondents related to the quality of academic information systems run, namely:

a. Efficiency;
b. Availability of data/information;
c. Integrity; and
d. Network security/system.

By all four indicators above, it shows that the quality of academic information systems program at 5 higher educations (27.8%) is very high, while in 13 higher educations (72.2%) is high quality

a. Table 5. The Quality of Academic Information System Program

b.

		Frequency	Percent	Valid Percent	Cummulative Percent
Valid	Very High	5	27,8	27,8	27,8
	High	13	72,2	72,2	100,0
	Less High	0	0	0	
	Low	0	0	0	
Total		18	100,0	100,0	

A good quality information assure the confidentiality of information, according to what the user wants, readeable, and reliability are indicator of the quality of the output. Reviewed from these aspects, it appears that information products issued by AIS of higher education has already met these criteria. This is a great asset for institutional decision-making process both routine and generic.

6. The Effectiveness of Academic Information System Management

To see the responses of the respondents as a whole for the effectiveness of the management information system of academic, we must make some category at first. In Table 6 below is a recap table of the evaluation of effectiveness of academic information systems management.

In General, there are different valuation between a group of institutions, lecturers and students, except for the components of the implementation and the monitoring of evaluation of AIS. For implementation of AIS, there is a discrepancy of evaluation between the institution and the group of student-lecturers. Most of froup of institutions evaluates it into very high, while most users (student-lecturers) evaluate it into high. For monitoring evaluation, most students and institution evaluate it into high and less high.

Implementation of the automation of academic information systems in all higher educations has been well planned. Planning process is already listed in the institutional strategic plan. In addition, many people also already have a strategic plan for management information systems in General. Research college sample is already to plan the implementation of academic information systems based on ICT which is part of the institutional management information system in General.

Moreover, the process of organizing has been running well. There is a certain unit that carries out the administration of the academic information systems manually and automatically through ICT. Any organization or institutional dealing with AIS at higher education generally have an adequate organization fittings and running as what specified by institutions.

Table 6. The Recapitulation of The Evaluation of The Effectiveness of Academic Information System Management Based on Organizer, Lecturers and Students

The Component of The Evaluation of	Very	High	Less	Low

The Effectiveness of AIS Management Based on Sample Group	High		High	
a. Planning and Organizing of AIS				
▪ Institution	0,0	81,2	18,8	0,0
▪ Lecturers	2,1	64,5	33,0	0,4
▪ Students	1,9	66,5	29,5	2,0
b. The Implementation of AIS				
▪ Institution	50,0	31,2	18,8	0,0
▪ Lecturers	27,8	50,4	20,8	0,9
▪ Students	15,1	45,0	34,5	5,5
c. Monitoring dan Evaluation of AIS				
▪ Institution	12,5	50,0	37,5	0,0
▪ Lecturers	37,1	45,6	16,5	0,9
▪ Students	0,8	46,7	46,5	0,8
d. The Quality of Information Resulted by AIS				
▪ Institution	0,0	93,8	6,2	0,0
▪ Lecturers	1,9	56,2	40,9	1,0
▪ Students	1,7	64,3	33,7	0,3
e. The Quality of Academic Information System				
▪ Institution	18,8	75,0	6,3	0,0
▪ Lecturers	9,5	65,5	25,0	0,0
▪ Students	8,1	61,0	30,3	0,7
Average	16,26	66,24	17,52	0,0

Regarding the implementation of academic information systems at higher education, half of the respondents expressed that the implementation is very high. The other half spread between high and less high. This just illustrates that generally the process of academic administrative service run by the system has been running, although there are some higher educations that expressed his discontent (18.8% institution stated the implementation is less high).

On the monitoring and evaluation system, it seems that not all institutions do it well. As in the table above, it is mentioned that only half of respondents stated that the intensity of the monitoring and evaluation system is very high. Although there is 12.5% stated it was high, but there are some of them (with significant proportions of 37.5%) stated it was under average.

While for quality of the information, it seems that most of the users of data/information in higher education said that it is high (93,8%), and the rest (6.3%) stated that it was under average.

While on academic information systems quality assessment in general, the reference criteria in assessing the effectiveness of the system is efficiency, availability, integrity, and security of networks/systems. In terms of the efficiency, the effective AIS is a system that is able to optimize performance even excels with fewer resources. The criterion of availability is how far does system capable in providing academic information/data needed by the stakeholders (Dean, Assistant Dean of Academic Affairs, Academic Unit, students, parents of students, or other).

Cohesiveness is a condition in which all devices associated with the system. All process such as the process of data management in all fields and units, organizing each fields and work units that deal with data/information, and resulting integrated product are managed by a certain unit. While network or system security is the ability of the system to protect itself from damage intentionaly or unintentionaly that comes from an internal or external, and being able to predict the demands of progress of software/hardware, and trend of the changes of software and hardware, as well as the policy change of institution.

By this high effectiveness of academic information systems management of higher educations, it could explain that the college already has a separate unit that handles academic administration. There are bureau, department, or certain unit

affiliated in businesses that each of them has a raw data management system for academic students manually or automatically through ICT tools. In addition, academic Information management system has already and are being pioneered in all higher educations for long time. There are some status that can be attached to the higher educations that run information systems management, they are. a) Management of information systems that has already completed; b) transfer processes to the integrated information systems; and c) the automation of information system management that has just begun. Of the three status, there are only 3 higher educations that have a complete academic information systems management in the design of integrated automation information management, while the rest are moving to the stage of an integrated system, and just begun in the process of automation. However, the manual system that has been applied by higher educations, which are not complete yet in doing their automation management information system, has been quite well established and reliable in serving academic affairs. This is one of the important achievements for institutions in maintaining the continuity of the performance that exist at the moment. This is also an asset for the higher educations to continue in improving their performance in the future. Management information systems for effective academic will provide many opportunities for institutionss to allocate more resources to other more important affairs.

By an effective academic information systems management, a higher education has a great opportunity to make the right decisions and to solve the problem efficiently, able to save time, effort, and costs. A routine managerial tasks of the college was to produce information for the decision-making basis that will also be necessary for the planning process, to execute a program or to assess the effectiveness . Davis and Olson (1985) said that most employees on duty producing the information, using documents, writing reports, analyzing data to be used in the process of planing should be supported by an effective management system. Besides it, academic affair is also important. Academic Affairs are the main suppliers of the materials of the college decisions related to academic that is a core business of a college.

Management information systems need to be supported by a context that supports the effectiveness of the management of academic information systems, it is ICT culture. ICT culture gives a spirit for the people and the environment that exist in the institutional system. Belief, values or norms and customs that exist and thrive in the institution will influence people in terms of interactions and patterns of behavior (Lavonte et all, 2005; Moa et all, 2001). Academic Affairs personnels who aware to ICT literacy, aware to the importance of ICT, and are able to use of it, will affect the performance of the academic information system and will certainly have an impact on the performance of higher educations.

Concerning research results, the effectiveness of AIS in supporting performance will decrease its contribution if the facilities and ICT infrastructure means is not in adequate condition. Limitation of ICT infrastructure and facilities at a number of higher educations is examined mainly due to budget constraints in meeting the support required devices. ICT investment in the process of AIS management in cost that much though ICT investment has become a trend in every organization today (Thatcher, and Oliver, 2001). Some universities are still in the early stages of the implementation of ICT.

Other things found in the study that apparently state universities has the highest score compared to a private universities. It indicates that the effectiveness of AIS in state universities is better than that in private universities.

The development MIS in higher education, especially developed in state universities is already in extended level. A developed system is not only function as base of institutional data management institutional, but also is able to make information system management as a tool of management. MIS has been set as back office and the front desk devices that serve institution consumers (civitas academic) and stakeholders effectively. The system can become one of the internal system instruments that able to control and to report the processing and academic administrative services, and even able to give alternative solutions to the problems.

The development of academic information system by a college is one of the answers upon the demands of good and clean institutional management (good governance). Well-organized institutional data, an effective management process, and easy-accessed data will able to show a transparent institutional management process. Besides, interconnectedness and mutual dependence among sub-systems will be more effective if the data traffic exchange of data and information run smoothly. Information or data produced by academic information system is needed to run human resource, financial, fasilities and infrastructure, and performance report of higher education management system. Academic performance data is an input in decision making process in institutions. For example, merit system development that developed by institution use academic performance data produced by AIS as its reference.

In management information system, there is an academic information system developed by state universities that has been much provide facilities in determining institution strategic decisions. Clear description related to situation, condition and prediction of institution produced by a system could be mile stone in setting vision at the future and reference in making a strategy to achieve the vision. Moreover, the spirit of information transparency is also a base to develop this information system. As a public institution, higher educations must open theirself at the works or anything that need to be known by public as one of their responsibilities to the public. Fair access institution to the public has many advantages. People would be

able to understand all problems faced by the institutions. In addition, the developed management information system will provide a significant contribution in good image of the institution.

In general, why state universities in Indonesia are more advanced compared to private universities? In terms of the ease of establishment, the government provides much accesses to public to participate in education particularly to higher educations, yet they can fulfill the terms. It can be conclude that most private universities just manage their money from the students, because there is a little money come from the external institution or donations mechanism, and consequently, the development of private universities strongly influenced by the amount of their student and the age of institutions and the management capability. Most private universities is still struggling with classical problems, how to get students as many as they can, compete fiercely with other colleges which is now competing to get a maximal students due to the legal entity policy.

In terms of financing, although higher education must independent in self support needs, direct and an indirect government subsidy are still large disbursed to state universities. It indicates that state universities could be unimpeded get indorsement funds to finance programmes compared to private universities.

Moreover, to compete with private universities in obtaining funds from the government, the availability of resources physicaly or human, state university is clearly better. Good relationship of state university and the decision makers is also one non technical factor that make easier for state university to obtain fund from the third parties including from the government. As a result, it is proven that only 44% of 84 higher educations in Bandung that has achieved ICT-based AIS. It means that is around 56 % colleges that have not use ICT as technology-based AIS management. The low utilization of technology-based AIS as the result of the great amount of investment cost. For tool procurement, tool maintenance, providing human resources, education, system updates, and the security system which need a great amount of cost. It would be a reason for some colleges to not use ICT as one of enablers in managing AIS.

The great support of fund for state university will make them easier to provide facilities and infrastructure. Thus, this explains why AIS culture and the quality of human resource in state university are better than that in private university. Besides, the capability of state university to employ their qualified human resources can also be considered high. It because the status of civil servant of their employees who run AIS is still an attraction thing for potential job seekers. A good career prospec and the better future make them safer, and automatically it will support working climate.

D. CONCLUSION AND RECOMENDATION

The effectiveness of academic information system planning and organizing in most colleges in Bandung is effective. Regarding the effectiveness of the implementation of academic information system, most of them is in good condition. However, this is different with the effectiveness of monitoring and evaluating process of their academic information system. The number of college that was ineffectual in its monitoring and evaluating system is still significant.

Regarding the output of academic information system, all colleges in Bandung are capable of producing output. Reviewed from academic information system program, all colleges have a good quality information system program. Of all data above, in general the quality of academic information system management, all colleges in Bandung is high.

For further study, it is recomended research the mature ICT of higher education. Hopefully this research will be able to answer or explain the capability of information systems to support the vision and mission of institutions. Moreover, to explain the capability of the developed system can support to improve the quality of performance of institutions.

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