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Audit it Process "Me-01" on Academic Information Systems Using Cobit 4.1 (Case Study on Some Vocational Higher Education)

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ABSTRACT

Academic Information Systems (AIS) today have become an important instrument for improving organizational performance, including higher education organizations. In Vocational Universities, where the density of theoretical and practical lectures is so high, the role of AIS becomes more crucial. However, AIS, which is driven by Information Technology, is often evaluated irregularly and with inappropriate means, methods or approaches as the level of technological complexity increases. The leadership's role in this case is more ad-hoc, meaning that if there is a problem then focus on solving it seriously. Even though Information Technology Governance (IT Governance) is a necessity for me-scale organizations, it also has immature management and governance processes. On the other hand, the majority of universities today are very dependent for their performance on the existence of technology and information systems. Here then, Monitoring and Evaluation of Academic Information Systems (AIS) carried out using a traditional-conventional approach no longer provides maximum results. COBIT then became the framework of choice in many industries, including universities. COBIT is starting to be widely used to manage (managerial) and at the same time measure (audit) the performance of Information Technology, including Information Systems. COBIT creates a work reference (Framework) through High-Level Control Objectives and Detailed Level Control Objectives for each IT Process, including IT Process ME-01. This research is aimed at measuring the maturity level of AIS management governance from the IT Process ME-01 aspect, the result of which is that the Maturity Level of the AIS Evaluation process is still at level-2, which means that there is already an organizational structure that handles it, but the monitoring and evaluation process has not yet been implemented. referring to IT Process Me-01 COBIT. However, on the other hand, the desire to improve and improve AIS performance appears to be very high, namely 3.8, which means Defined. Awareness of the importance of Information Technology in the process of implementing the Tri Dharma of Higher Education and maintaining the quality of AIS is recognized as the key to success in managing higher education today. Only the majority of leaders at various levels do not understand how to implement COBIT

INTRODUCTION

Background

Today's *Academic Information Systems (AIS)* are no longer a complement to higher education organizations, but are an enabler for the realization of maximum organizational performance. Therefore, the management approach to managing information technology (in this case: AIS), must be changed. It is no longer focused on aspects of preventing technical obstacles and is internal in scope as a function of the Information Systems section/department, but becomes external and strategic in nature. The change towards the IT Governance paradigm which demands awareness and commitment from all leaders and users at various levels, is the initial requirement for the formation of an Academic Information System which acts as an organizational enabler.

Maximizing *AIS* performance requires new and continuous structures, processes and controls. Nowadays, this can be done through control of (what in the COBIT framework) is called "IT Process". There are dozens of IT Processes that must be followed/executed by organizations in order to achieve an adequate IT Governance Maturity Level. One of them is IT Process ME-01, which is specifically used to control and measure the performance of "Monitoring and Evaluation" activities for SIAk. To what extent have higher education organizations carried out audit activities on SIAk based on the ME-01 IT Process Framework?

This research measures the extent to which IT Process ME-01 is used in Monitoring and Evaluation activities regarding SIAk. The results of this research obtained data in the form of Values and Maturity Levels from the ME-01 IT Process, which were then used as a reference to determine whether the Monitoring and Evaluation carried out so far has been running correctly, and no longer contains uncontrolled IT risks? It is hoped that the information resulting from this research will describe in more detail, objectively and comprehensively the maturity status of IT Process Me-01 Governance which determines the quality of the evaluation carried out

so far. So it can be a reference for changes and development of the "current (as-is)" maturity status and a reference for improvements in the future (to-be).

1. Problem Formulation

Based on this background and phenomenon, the formulation of this research problem was determined as follows:

1. To what extent is the level of awareness (awareness) of higher education leaders in the city of Bandung sampled at various levels regarding the risks (IT Risk) inherent in Evaluation and Monitoring activities for SIAk if referring to IT Process ME-01 (Monitoring and Evaluation) contained in the "Monitoring" Domain of the COBIT Framework?
2. How big is the Value and Maturity Level of Governance for IT Process ME-01 activities? And what does that mean?
3. What is the impact on the quality of information produced by the Academic Information System (SIAk), which is now an enabler for higher education?

2. Restricting the Problem

- This research is limited, namely only auditing IT Governance IT Processes related to "Monitor and Evaluaton" (ME) activities on Academic Information Systems (*AIS*)
- The data processed is data in the form of perceptions/opinions obtained through questionnaires and interviews with users and leaders at various levels of sample universities in Bandung City, to assess their ability to create a balance between IT Risk and IT Control of the Academic Information System (*AIS*) that is run and managed.

3. Research Objectives

This research is to answer the problem (problem formulation) above which has recently become a common problem for Higher Education Institutions in managing Academic Information Systems (*AIS*). Through audit process data, including the audit methods/systematics used, it is hoped that more objective, precise and comprehensive

information will be obtained that identifies problems in the management of the Academic Information System.

This research also aims to introduce IT Process ME-01 and qualitative measurement methods which are widely used in various Information Systems Audit research, along with its derivative audit sub-objects.

4. Benefits of Research

In summary, the benefits of this research can be stated as follows:

1. Introducing the importance of IT Governance to various levels of higher education leadership, especially in vocational higher education who were respondents in this research.
2. Introducing the COBIT IT Framework as the most dominant best practice reference to date in identifying and measuring the Value and Maturity Level of Information System Governance comprehensively, including SIAK.
3. Introducing a simple scoring method for measuring the performance value, level and maturity level of the COBIT IT Process, especially in IT Governance Audit activities.

The output of this research is also useful for the following stakeholders in higher education:

1. For Higher Education Top Management such as Directors, Chancellors, Deans, the results of this research can provide information regarding the importance of building awareness of the importance of continuous "Monitoring and Evaluation" to balance the negative influence of IT Risk and measuring the effectiveness of IT Control from the named Audit object : Academic Information System (*AIS*).
2. This research also provides information about how mature *AIS* Governance is currently, and what level of maturity the majority of higher education leaders (stakeholders) want for SIAK.
3. For IT Management (IT Function) in Higher Education (whatever the name), which functions to specifically and technically

handle this Academic Information System. So this research is useful for providing identification map information for critical points that must be handled more comprehensively (preventively) in order to improve *AIS* performance.

4. For Internal Auditors, especially from the Internal Control System (SPI) unit in Higher Education who are assigned to audit this *AIS*. So it is hoped that this research can provide insight into one of the methodologies used to conduct IT Governance Audits, especially for SIAK. Is it in accordance with COBIT Best Practice?

Review of Theory

1. The Importance of Information Systems Audit

Ron Weber (1999) defines Information Systems Audit as a process of collecting and evaluating data (evidence) to determine whether an information system has used existing IT Resources (IT Assets) efficiently, and maintained an integrated database so that an organization's goals can be achieved efficiently. effective (in producing appropriate information for users).

The scope of the Audit can be determined separately before the Audit activity is carried out (Scope Audit). Based on the systems perspective (System Approach), generally the audit object in an organization consists of various sub-systems, one of which is the Academic Information System (*AIS*). *AIS* is part of the Information System of an Organization, which is an audit object or entity that has its own characteristics, whose performance needs to be measured uniquely and separately. Because sub-objects will influence the performance of other objects (sub-sub-information systems) within the organization, even across organizations.

A good Information System Manager (IT Governance) must be able to see and anticipate various problems with the elements and sub-elements of an information system, because of their strong interconnectedness. Weaknesses in other sectors (sub-systems) can be caused by elements/objects or sub-objects (which are not clearly visible at first).

a. COBIT Concept

COBIT is an instrument and framework for establishing IT Governance so that an organization can reach a high level of Information Systems Governance maturity. Apart from being a reference for building and managing IT Governance, COBIT is also used by Auditors as a reference standard for conducting Audit activities on Information Systems. If AIS managers/leaders use the COBIT framework which guides them in managing the Academic Information System. So for Auditors, the Framework is used as an agreed reference standard to be achieved in measuring the implementation of AIS by the Auditee (Manager). Of course, the SIAK audit object can be assessed from various IT processes related to the SIAK. However, this research only focuses on one IT Process, namely ME-01.

IT Process ME-01 has detailed objectives that must be achieved as closely as possible to measure performance achievements. The statement or statements made stating this are called Control Objectives. This Control Objective is divided into

two levels, namely High-Level Control Objective and Detailed Level Control Objective. High-Level Control Object (HLCO) is a statement that must be achieved by every IT PROCESS. Meanwhile, DCO is a sentence which is a description of HLCO, which consists of several statement sentences for each HLCO (each IT process). So, each Detailed level control objective consists of three to twenty Control Statements (Statements) for each IT process.

In this research, only IT Process ME-01 in the "Monitoring and Evaluation" Domain was used as focus. How far is it used when universities evaluate Academic Information Systems (AIS).

Each IT Process is then measured using the Qualitative Method to find out the value and maturity level of the IT Process through interviews and filling out questionnaires. The measurement results are then expressed in quantitative form (numbers) through a conversion process using the scoring method. All the results from the DCO from IT Process ME-01 are then accumulated into an IT Maturity Level.

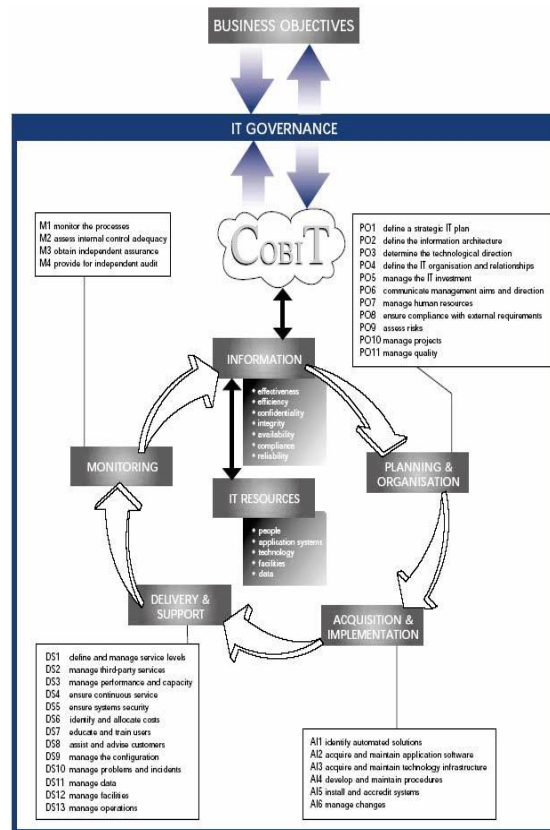


Figure 1. COBIT Domain and Detailed-Control Objective

METHODS

This research uses a qualitative research method, where the data is in the form of respondents' opinions/opinions which are then converted (processed) into quantitative data using the Scoring Method which refers to the principles and weighting of Maturity Levels from the COBIT IT Framework. Meanwhile, the type of research used is descriptive research collected based on what currently exists, using a case study research approach.

Analysis of the collected and validated data is then calculated (processed) for the Value and Maturity Level using the Two Level Scoring Method. The results of this calculation then produce the Value and Maturity Level (IT Maturity) of each IT Process being measured. The data from this calculation is used to map the current IT Maturity Level (as is) as an aggregation result of the overall Governance of Vocational Higher Education in Bandung. Information in the form of expected Maturity Level numbers (to-be) is also aggregated which is the target and direction for future improvement.

RESULTS AND DISCUSSION

Dari hasil penelitian diperoleh gambaran, bahwa Values and Maturity Levels of IT Process ME-01 implementation for Siak are as follows:

a. If we look at the performance of DCO ME-01, the IT Control implemented is at the Medium level (52% of respondents think so). This means that various IT risks related to the implementation of evaluation monitoring (including corrections due to errors and so on) on the quality and effectiveness of the work of the Academic Information System have been carried out WELL. A performance value of 1.8 on a scale of 3 indicates that IT Risk from IT Monitoring activities has been well managed. However, as many as 35% of respondents still think that there are several indicators that indicate IT Monitoring performance in certain matters is at a LOW level. This means that the IT Risk related to ME-01 still has the potential for serious problems that could disrupt IT Monitoring performance.

Among them, has IT Monitoring been carried out using standards and work methods that are detected on time and reported immediately? Have various metrics and measurement indicators been used for the effectiveness of the implementation of IT Monitoring itself? These are things that still need to be improved by higher education management, because 35% think these things are still obstacles to the implementation of IT Monitoring.

Governance is basically how management creates a balance between IT Risk and IT Control so that the extent to which the IT Process based on ME-01 has been implemented effectively is determined by the Value and Maturity Level of the process. A Maturity Value of 1.7 indicates that not many evaluation and assessment activities have been carried out to improve the operational effectiveness of the Academic Information System. The IT Monitoring activities carried out also use methods and mechanisms that are not yet good. This was then responded to quite strongly by respondents so that there could be improvement and development of this activity process to a value of 3.8 (Defined). This means that according to the IT leadership, the ME01 process needs to be improved by creating a control mechanism for AIS based on standard and documented standards. The competency of individuals carrying out IT Monitoring activities also needs to be improved through relevant training and socialization to increase participation from departments/prodi and units (business owners). The ME01 IT Process Maturity Level or CLASS is the lowest, namely 1.0, which indicates that effective IT Monitoring activities are almost never carried out and have not provided quality improvements/solutions to the performance of the Academic Information System.

In general, Vocational Universities still separate SIAk and the strategic goals of the organization in their own channels (technically). However, it appears that there is a strong enough commitment and desire from higher education leaders to change this paradigm so that they can use IT (including SIAk) as an enabler for achieving strategic goals of higher education in today's era of online-based e-learning systems.

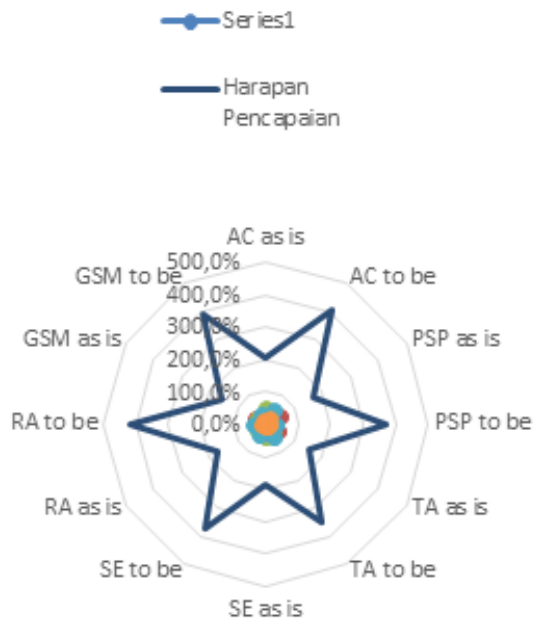


Figure 2. “Level Kematangan IT Process ME01”

Table 1. “Values and Maturity Levels of ME-01”

No	Atribut	Aspek	Status	Distribusi JAWABAN						Nilai	To be	Level
				a	b	c	d	e	f			
1	AC	as is		6,7%	13,3%	53,3%	20,0%	6,7%	0,0%	2,1	3,8	2,0
		to be		0,0%	6,7%	0,0%	20,0%	53,3%	20,0%	4,1		
2	PSP	as is		6,7%	46,7%	13,3%	13,3%	13,3%	0,0%	1,7	3,2	1,0
		to be		0,0%	6,7%	6,7%	33,3%	33,3%	13,3%	3,7		
3	TA	as is		6,7%	40,0%	26,7%	20,0%	0,0%	0,0%	1,5	3,4	1,0
		to be		0,0%	0,0%	20,0%	26,7%	46,7%	6,7%	3,5		
4	SE	as is		0,0%	20,0%	40,0%	20,0%	6,7%	0,0%	1,9	2,9	1,0
		to be		0,0%	0,0%	20,0%	20,0%	40,0%	6,7%	3,7		
5	RA	as is		6,7%	26,7%	33,3%	26,7%	0,0%	0,0%	1,7	3,3	1,0
		to be		0,0%	6,7%	6,7%	26,7%	40,0%	13,3%	4,2		
6	GSM	as is		6,7%	40,0%	33,3%	6,7%	6,7%	0,0%	1,5	3,1	1,0
		to be		0,0%	6,7%	20,0%	20,0%	33,3%	13,3%	3,9		
			Rata-rata as is:	5,6%	31,1%	33,3%	17,8%	5,6%	0,0%	1,7		1,2
			Rata-rata to be:	0,0%	4,4%	12,2%	24,4%	41,1%	12,2%		3,3	

CONCLUSION
Conclusion

One of the strategic facilities of higher education that needs to be managed with a high level of governance maturity is the Academic Information System (AIS). The effectiveness of AIS is not only determined by the application software used but also various other elements that make up SIak such as the Database Management System (Manage Data), the Information Technology Development Plan which is

the roadmap for long-term AIS development, hardware, end-user (user) competence. , Work Process Measurement of the effectiveness of AIS which must be carried out continuously (continuing improvement), IT Monitoring Methods and including various forms of Application Control. The extent and maturity level of all these elements will determine the overall maturity of a university's academic information system as an enabler.

From the research results, overall, based on the four IT processes that were audited and measured, it can be concluded that the Maturity Level of Vocational Higher Education Governance regarding Academic Information Systems is at level 2, namely Repeatable. A condition where Vocational Higher Education already has Governance for the Academic Information System (AIS) but has not been managed based on standard management methods, systems and procedures. Governance of SIAk is handed over almost entirely to a special section that handles (IT Function) technically, such as the PSI, SIM, BAAK, Computer UPT and various other names whose functions are almost the same.

In general, Vocational Universities still separate SIAk and the organization's strategic goals on their own lines. However, there appears to be a strong enough commitment and desire to change this paradigm so that AIS can be used as an enabler.

Suggestions

This research can be expanded nationally, not just the few universities presented as samples this time. So it is hoped that it can provide a broader and more comprehensive picture regarding Academic Information System Governance issues, especially regarding the audit methods carried out by each.

Another limitation of this research is that it is necessary to expand the measured IT Process related to Academic Information Systems (AIS). However, SIAk as an Information Technology-based information system, its performance is also influenced by the IT Infrastructure in the Higher Education, IT Culture and so on, including the Management Style of IT Governance Decision Makers.

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