

Maturity Level Enterprise Academic Information System Based on Cobit

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Abstract. The success rate of the implementation of information systems applied to the public and private universities are necessary to determine the extent of the maturity level of the college information system management, allowing Management of the College knows what deficiencies are and in what direction the information system should be developed and managed. To find out what action to do for higher education advances need to evaluate maturity level, one of the frameworks used for evaluation is COBIT. This research uses the COBIT framework with the domain deliver and Support (DS) and Monitor and Evaluation (ME) to evaluate the maturity level of the college information system. The result of this research is the level of maturity of the college Informasai system is on good but there are some parts that need improvement, the improvement focused on the documentation of each service process on the academic information system and Oversight or control of system security as well as intense training and socialization.

1. Introduction

Implement information technology today has spread to all areas including in public and private colleges because information technology combines all processes from procurement, processing up to the dissemination of Information.[1] Implementation of the information system needed framework as a reference from planning to evaluation so that the implementation of the informations system can be in accordance with good governance objectives. Governance is an executive and board responsibility that involves leadership, organizational structure, and processes in ensuring that IT becomes a supporter and part of the realization of the strategy and achievement of organizational objectives[2].

(Benaroch, Chernobai&Goldstein, 2012), (Ward and Peppard, 2002), (Pollack, 2009), (Wardani, S and Puspitasari, M. 2014), Start if the information technology is said to be good and aligned between businesses with technology when managed well.[3][4][5][6].

Universities in Indonesia have already implemented an academic information system. The academic system is used to facilitate administrative and academic activities in universities, examples of universities ' administrative and academic activities include new student Admissions (PMB), Study plan cards (KRS), Processing, the management of data Lecturers & students. So that the academic system in the college can be beneficial to support the analysis of data used determines or decision making universities.

An important Factor that supports the utilization of information technology in universities is IT Governance.. To realize an IT Governance in a good university need to be done control or audit information systems. Information systems on the college authors are audited by using the COBIT 4.1 framework with Delivery and Support (DS)



and Monitoring and Evaluate (ME) domains. The focus taken by the authors for the Delivery-Support (DS) domain is on the service process and the operation of the college academic system so that the service and operation process runs effectively and efficiently, being for the domain Monitoring-Evaluation (ME) focuses on the supervision and evaluation of the academic system of the college to measure the maturity level of the college academic System management of appropriate or not with the aim of the school of Focus taken by Author for Delivery-Support domain (DS) is in the process of service and operation of the college academic system so that the service and operation process runs effectively and efficiently, is for domain Monitoring-Evaluation (ME). Measuring the College's academic information system is conducted to evaluate the maturity level of the appropriate college academic system management process or not with the purpose of the college. [7].

2. Research Method

Research conducted is a descriptive research, where the results of research conducted by the authors are presented in the form of descriptions, both qualitative and quantitative descriptions. Research conducted using college case studies in Indonesia. Measuring the maturity level of the academic information system in Indonesia aims to make the service process in the College academic Information system in accordance with the framework of COBIT version 4.1, using primary and secondary data. Use of primary data acquired authors by conducting interviews with the management team, IT Manager and the system operator either directly or with a questionnaire, the author also conducts surveys and observations on the implemented academic system of information. For seconds the data authors earn from various sources such as reports and publications that are relevant to the research the authors do. Measurements in this study used 2 domains namely Delivery-Support (DS), and Monitoring-Evaluation (ME) domains. The measurement of each domain uses the COBIT Framework version 4.1 statement as below:

Table 1. Sub-domain on COBIT 4.1

Domain	Sub-domain	Jumlah Pertanyaan
<i>Delivery-Support (DS)</i>	DS1	31
	DS2	33
	DS3	33
	DS4	40
	DS5	49
	DS6	31
	DS7	34
	DS8	32
	DS9	25
	DS10	28
	DS11	32
	DS12	33
	DS13	38
<i>Monitoring-Evaluation (ME)</i>	ME1	33
	ME2	32
	ME3	26
	ME4	44
Total		

Then each sub-domain will be the assessment of IT Maturity Model, this assessment determines the level of maturity (maturity level) of each selected process is implemented through the questionnaire then grouped at maturity level such as Below table:

Table 2. Index Maturity[8]

<i>Index Maturity</i>	<i>Description</i>
0.00 – 0.50	Non-existent
0.51 – 1.50	Initial/ Ad Hoc
1.51 – 2.50	Repeatable but Intuitive
2.51 – 3.50	Define Process
3.51 – 4.50	Manage and Measureable
4.51 – 5.00	Optimized

Once known the level of maturity then determine the position of the company. The position that occurs in the current company (As-is) and the desired position (To-be) that will be the reference to the IT governance model to be developed. Analysis gaps. This process is for determining the IT processes with COBIT 4.1 what is required to improve IT management. Make an action proposal improvements to the of IT governance. This process to make management guidelines refers to COBIT 4. 1

3. Result and Analysis

The analysis of the data in this study is divided into 2 (two), namely analysis of the maturity level of the current, the expected maturity analysis.

1. The Current level of maturity analysis (as is)

Based on data questionnaire results are conducted analysis to assess the current level of maturity (as-is) for the DS and ME processes. At the current level of maturity analysis (as-is), assessment of each activity. As for the result of the maturity questionnaire, there will be 6 options for the answer with a value of 0 – 5. The maturity attribute level is gained from the calculation of the total answer option of the questionnaire with the formula and the weighted answer options as follows:

$$\text{Attribute Maturity Index} = \frac{\sum(\text{Total Answers} + \text{weights})}{\text{Amount of respondents}}$$

Determination of the level of maturity gained from the dissemination of the questionnaire with a the reponden of 125 people. Recapitulation of the questionnaire as follows:

Table 3. Questionnaire Recapitulation

Domain	Process	Total
DS1	Define and Manage Service Level	120
DS2	Manage Third-Party Services	448
DS3	Manage Performance and Capacity	601
DS4	Ensure Continuous Service	254
DS5	Ensure System Security	128
DS6	Identify and Allocate Costs	321
DS7	Educate and Train Users	388
DS8	Assist and Advice Customers	446
DS9	Manage the Configuration	134
DS10	Manage Problems and Incidents	207
DS11	Manage Data	198
DS12	Manage Facilities	182
DS13	Manage Operations	240
ME1	Monitoring and Evaluate IT Performance	161
ME2	Manage Third-Party Services	367
ME3	Ensure regulatory Compliance	298
ME4	Provide IT Governance	373

On the delivery and support the domain there are 13 processes, with 3 processes at the level of maturity 4 (managed and measurable), 6 processes are at the level of maturity 3 (defined process) and 4 other processes with Maturity Level 2 (Repeatable boots Biofermentation. In the Monitoring and Evaluate domain There are 4 processes with 3 processes being at the Maturity Level 3 (defined process) and 1 other process has a maturity level of 2 (Repeatable but Intuitive), as shown in table 4 and Figure 1.

Table 4. *Current maturity*

Domain	Index	Level
DS1	3.52	4
DS2	2.58	3
DS3	2.67	3
DS4	3.19	3
DS5	2.57	3
DS6	3.53	4
DS7	1.98	2
DS8	2.22	2
DS9	3.55	4
DS10	2.33	2
DS11	3.25	3
DS12	2.15	2
DS13	2.91	3
ME1	3.02	3
ME2	3.18	3
ME3	2.45	2
ME4	3.14	3

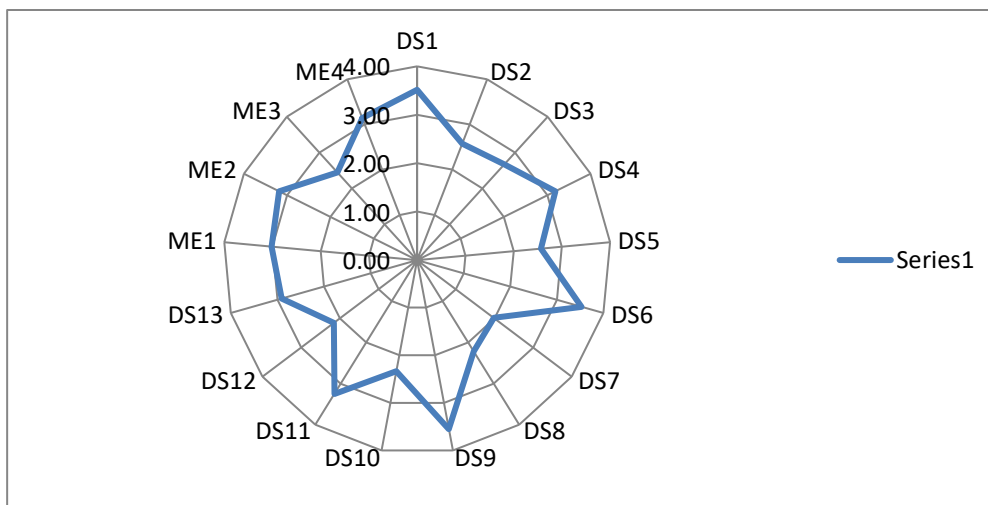


Figure 1. *Current maturity*

Based on the results of table 4 and picture 1 in the general the implementation of academic information system in universities both in the domain deliver and support and monitoring evaluate is at level 3 (defined process). This means that activities or standards related to the implementation of academic information systems in universities are in accordance with the standards, documented and have been communicated with the training, but for the implementation of documentation is still limited by formality and the procedure is not clear and perfect, so it is still possible to the occurrence of malpractice.

2. Level of hope assessment (to-be)

The expected level of assessment (to-be) provides a reference to the development of IT governance in college. Development of college academic information system is expected to refer to the College statute of Vision and mission, college objectives. The level of maturity expected by the college can be seen in table 5 and Figure 2.

Table 5. GAP Maturity Level

Domain	Maturity level		
	As is	To be	Gap
DS1	3.52	5	1.48
DS2	2.58	3	0.42
DS3	2.67	3	0.33
DS4	3.19	4	0.81
DS5	2.57	3	0.43
DS6	3.53	5	1.47
DS7	1.98	3	1.02
DS8	2.22	3	0.78
DS9	3.55	5	1.45
DS10	2.33	3	0.67
DS11	3.25	4	0.75
DS12	2.15	3	0.85
DS13	2.91	4	1.09
ME1	3.02	5	1.98
ME2	3.18	4	0.82
ME3	2.45	3	0.55
ME4	3.14	4	0.86

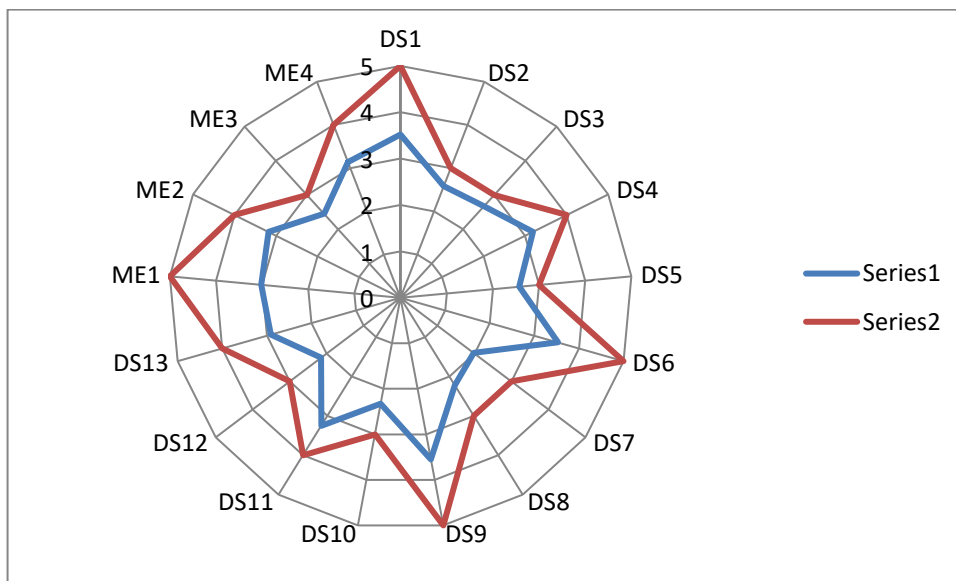


Figure 2. GAP Maturity Level

Based on table 5 and Figure 2 then the recommendation for the College's academic information system is intensive IT management to the use of college academic information system. Related management must have a commitment to the level of security by documenting each service activity in accordance with the COBIT standards

to allow the information system on the college to implement the academic information system of IT management Good governance.

4. Conclusion

The level maturity level for academic information systems in colleges uses the COBIT Framework 4.1, using domains DS (Delivery and Support) and ME (Monitoring and Evaluation) with the following conclusions:

1. The level of maturity of the college's academic information system is at level 3 (defined process), thereby means that the activities or standards relating to the implementation of the academic information system in college have fulfilled Standards, documentation has been conducted but still not in accordance with the procedure and is not formal, while for the improvement of competence has been conducted with the training, so the possibility of misuse or The irregularities still exist.
2. The improvement that needs to be done is in the formal documentation process and made the procedure of documenting its documentation for each service process on the academic information system. And need to be done supervision or control over each service process by increasing the level of system security

References

- [1] Lucy A 1993 An Introduction to Computer- Based Library System *3rd ed.*; Chichester: John Wiley & Sons p 3
- [2] ITGI 2007 ver.4.1: Framework, Control Objectives, Management Guidelines, Maturity Models. Rolling meadow
- [3] Benaroch, M., Chernobai & Goldstein J 2012 An Internal Control Perspective on the market value consequences of IT operational risk events *Int. J. Account. Inf. Syst.* **13(4)**, 357
- [4] Ward J and Peppard J 2002 *Success Factors in Strategic Information Systems*
- [5] Pollack. 2009 Linking the Hierarchical Service Quality Model to Customer Satisfaction and Loyalty *J. Serv. Mark.* **23(1)**: 42–50
- [6] Wardani, S and Puspitasari M 2014 Audit Tata Kelola Teknologi Informasi Menggunakan Framework Cobit Dengan Model Maturity Level (Studi Kasus Fakultas ABC) *Jurnal.Teknologi* **07** 38–46
- [7] Gustiarni, I., and Putra, S. A. M Pengembangan Aplikasi e-university : Sistem Infromasi Pengelolaan Audit Teknologi Informasi Berbasis Risiko Menggunakan Framework COBIT Versi 4.1
- [8] Krisanthi G.A.T., Sukarsa I.M., Bayupati I.P.A. 2014 Governance Audit Of Application Procurement Using COBIT Framework *J. Theor. Appl. Inf. Technol.*

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