

Designing Information Technology Governance in the Data Management Process Using Cobit Framework V 4.1 At the Pamulang University IT Center

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Abstract

This paper explores the implementation of Information Technology (IT) governance in the data management process using the Control Objectives for Information and Related Technologies (COBIT) framework version 4.1 at the IT Center of Pamulang University. The study begins by providing an overview of the COBIT framework and its relevance to IT governance in educational settings. It then delves into the specific application of COBIT V 4.1 in the context of data management processes at Pamulang University IT Center. This includes the identification of key control objectives and control practices within the COBIT framework that are applicable to data management, such as data governance, data quality management, data security, and data lifecycle management. Furthermore, the paper discusses the methodology used for implementing COBIT V 4.1 in the data management process, including the steps involved in assessing current practices, identifying areas for improvement, and designing governance structures and processes. It highlights the importance of collaboration between IT professionals, data stewards, and organizational leadership in ensuring the successful implementation of IT governance practices. The findings of the study reveal the benefits of adopting COBIT V 4.1 in the data management process at Pamulang University IT Center, including improved data quality, enhanced data security, and increased accountability and transparency in data handling practices.

Keywords: IT governance, COBIT, management awareness, maturity level.

INTRODUCTION

Good data management requires good governance that will guarantee transparency, accountability, efficiency and effectiveness. Current usage information and communication technology (ICT) in the Data and Information Center the Ministry of Trade has increased and has become a necessity which cannot be separated from the mechanism of good governance. Information architecture planning that includes structured information (databases, data exchange) and unstructured information (images, videos, files) must be implemented carefully. Therefore, the requirements for increasing control over information is a guarantee of the technology's value managed information (IT). IT value is a key element of business

administration supporting the running of business processes in the implementation of IT governance. Achieving value in IT requires a framework who can control the governance of the organization.

Pamulang University Data and Information Center as a higher education institution has a complex scope and potential dependence on IT relatively high, so this will provide a demand for a mechanism IT Governance that complies with standards. The absence of clear IT Governance will be resulting in problems within the IT sphere, such as the emergence of gaps between planning and requirements, inappropriate use of IT resources, and the gap between human resources and management responsibilities IT. From the potential problems that arise, it will correlate to potential losses arising from the absence of a relevant IT Governance foundation. Appropriate IT Governance mechanisms will all boil down to achieving business goals. Several well-known IT Governance models used based on competence. COBIT (Control Objectives for Information and Related Technology) is a standard IT Governance model that has been gain widespread recognition. COBIT was developed with pay attention to the interconnectedness of business goals without forgetting to focus on IT. COBIT intended for wider management use, in addition to serving as a standard IT Governance is also a tool for management in formulating strategic policies. Next, COBIT is used as a framework work in this research, because the object of IT Governance in this case is the Data Center and Pamulang University Information has complexity in its business area, so requires conformity between the business process control model and the model control over IT processes. Another thing that is the basis of use COBIT is a necessary tool that controls information and risks IT in the form of structured management in relevant domains with the Pamulang University Data and Information Center.

Definition of IT Governance taken from the IT Governance Institute as following: "The responsibility of the executive and board of directors, and consists of leadership, organizational structure and processes that ensure IT the company supports and extends the organization's objectives and strategies." Apart from the definition above, there are other definitions, including: following: Organizational capacity to control formulation and implementation information technology strategy and directs it to the interests of achievement information competitiveness (The Ministry Of Trade And Industry: 1999) Information technology governance is an assessment of organizational capacity by board of directors, executive management, information technology management for controlling the formulation and implementation of internal information technology strategies to support his business. The above theories about information technology governance are partly driven by external regulations. In addition, the number of companies is increasing companies can answer that a well-defined structure can contributes to cost efficiency and overall performance at information technology. One of the keys focuses of information technology governance according to Grembergen is to align information technology with business goals. It can be said that information technology governance is a combination of governance companies with information technology management.

METHOD

The method that will be used is a combination of qualitative methods and quantitative methods (mixed methods). There are also strategies that are used: sequential strategy with quantitative first.

Top priority is given to quantitative data and these two methods are integrated during the interpretation phase. This strategy is possible without perspective specific theoretical. The uses of Sequential Explanatory design are using the results of qualitative studies to help

explain and interpret existing findings in quantitative studies. This matter especially useful when study results are unexpected emerge from quantitative studies. In this case, collecting qualitative data can used to further test the unexpected results details. It is hoped that by using this method, research steps will be carried out will be easy to implement. This is because the steps are clear and the stages are separate. However, usage the steps above have consequences, namely that they require time long, especially in data collection.

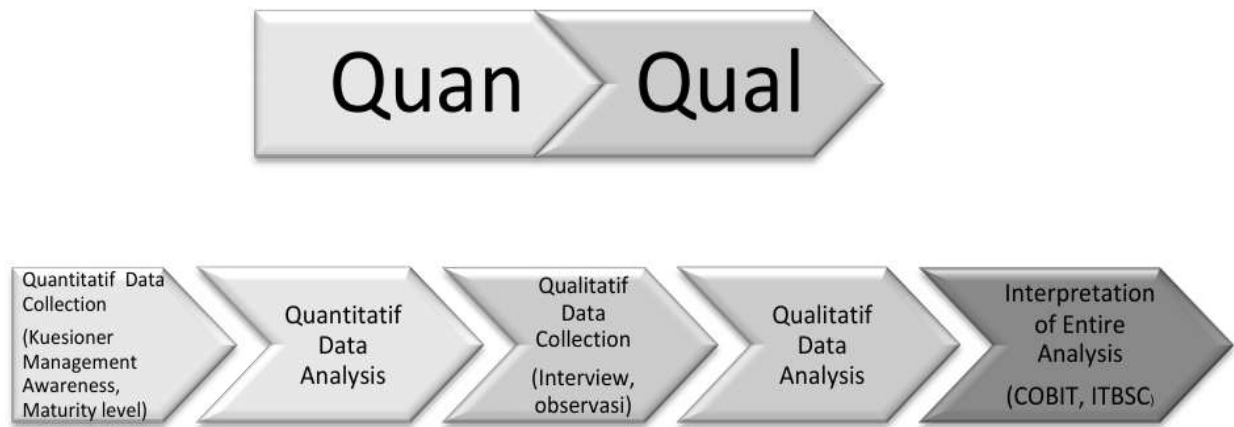


Figure 1. Sequential Explanatory Design

RESULT AND DISCUSSION

IT Governance survey and analysis this section will describe the process stages carried out to determine the condition of IT governance in the trade data and information center. The process stages carried out include creation of survey questionnaires, carrying out surveys and analysis of survey results. In this research, a survey using the questionnaire method was developed in 2 (two) stages, which include Management Awareness Questionnaire and Maturity Level Questionnaire.

Management Awareness Questionnaire

This questionnaire was developed to identify several threats and weaknesses to the existence of data as a valuable asset for the company. These threats and weaknesses are potential risks that may occur to data management process and could have a negative impact on the Pamulang University environment. There are also more specific objectives for developing this questionnaire survey is to be able to fulfill the following things: 1) Provide adequate justification in determining the scope of research carried out in the data management process; 2) Increase awareness among echelons I, II and III of the potential risks and implications that will occur if the data management process is not carried out effectively; 3) Understand indications of control weaknesses and various internal threats; 4) Data management process within the Ministry of Trade and impact; 5) Identify the corrective steps needed and 6) Development of solutions related to discovered control weaknesses.

The question objects in this questionnaire are in principle designed in accordance with current conditions and the expectations desired by respondents in the Central environment Data and Information, so that it can accommodate level of fulfillment of all detailed control objectives (DCO) and achievement of several performance indicators (KPI) and goal achievement (KGI).

DCO can be seen as an effective control to achieve the goals defined in COBIT. There is

also the existence (level of fulfillment) that is directly related to efforts to control potential weaknesses triggering threats that have a serious impact on achieving the Center's goals Data and Information. With these considerations, the object of the DCO question is emphasized for further analysis. There is also a DCO in the process on COBIT 4.1 which is referred to as the object of questions in this questionnaire, includes Business Requirements for Data Management - Concerning clear arrangements in defining flow mechanisms data starting from input, process and output; Storage Settings - Concerns the implementation of procedures used to regulate data storage problems in such a way that data can be easily accessed and use, considering aspects of ease of data retrieval, cost effectiveness and meeting integrity and security needs; Media Library - Concerns the implementation of procedures for carrying out media inventory data storage that can ensure its use and integrity, as well as carry out regular checks and follow up if this occurs nonconformity. Removal - Concerns implementing procedures to prevent access to sensitive data agencies on media that have carried out the deletion stage, deletion or transfer (transfer) for other use. As well as Ensure that data that has been deleted is marked and cannot be deleted the data is obtained again; Backup and Restore - Regarding the implementation of procedures for backing up and restoring data, according to business needs, and testing of the media is carried out data backup and restoration process. Security Requirements for Data Management - Concerns arrangements for identifying and implementing needs Data security includes stages of receipt, processing, physical storage and output of sensitive data, and includes physical records, transmissions data and data stored offsite.

Filling out the questionnaire is carried out independently (self-assessment), based on knowledge, awareness and opinions of respondents, concerns the extent of the level of fulfillment, performance and achievement have been done. Implementation of Questionnaire Surveys Research survey activities are carried out mainly using questionnaire methods, either Management awareness questionnaire and Maturity model questionnaire have been provided developed among respondents. With consideration to be able to complete questionnaire survey results so that analysis can be carried out more thoroughly comprehensive, then several other survey methods are also implicit done. Some survey methods as a complement include activities observation, interviews and review of documents related to process. Respondent identification is carried out by referring to the Responsible diagram, Accountable, Consulted and/or Informed (RACI) as defined exists COBIT 4.1.

Activities	Function										
	CEO	CFO	Business Executive	CIO	Business Process Owner	Head Operation	Chief Architect	Head Development	Head IT Administrator	PMO	Compliance, Audit Risk and Security
Translate data storage and retention requirements into procedures				A	I	C	R				C
Define, maintain and implement procedures to manage the media library				A		R	C	C	I		C
Define, maintain and implement procedures to secure disposal of media and equipment				A	C	R			I		C
Backup data according to scheme				A		R					
Define, maintain and implement procedures for data restoration				A	C	R	C	C			I

Figure 2. RACI Diagram

By taking a respondent identification approach that refers to RACI diagram, the respondent's identification is directed at roles which is directly related and representative to the data management process. So that it is hoped that the answers to this questionnaire will have adequate validity and it is hoped that it can represent the actual situation in the field.

Table 1. Recapitulation Of Management Awareness Questionnaire Respondents' Answers

No	Question Object	Answer Distribution		
		L%	M%	H%
1	Business needs for data management	46.9	28.1	25.0
2	Storage Settings	43.8	31.3	25.0
3	Media Library	50.0	46.9	3.1
4	Data deletion	53.1	40.6	6.3
5	Backup and restore	62.5	31.3	6.3
6	Data management security needs	56.3	35.5	6.3
7	Testing of backup media	56.3	31.3	12.5
8	Speed of restoration process	50.0	37.5	12.5
9	Success of the restoration process	50.0	34.4	15.6
10	Security of sensitive data after disposal	56.3	31.3	12.5
11	Storage capacity incident handling	43.8	50.0	6.3
12	System reliability due to recovery process	46.9	46.9	6.3
13	User satisfaction with data availability	56.3	37.5	6.3
14	Compliance with legal/regulatory aspects	59.4	37.5	3.1
	TOTAL	52.2	37.3	10.5

From the recapitulation table of the results of the management awareness questionnaire above, you can a trend has been drawn that reflects the facts on the ground, namely that: Most respondents, 52.2% of respondents expressed the opinion that awareness of the level of performance in the data management process is still low, so it still really needs to be improved. As many as 37.3% of respondents expressed their opinion that performance data management process is moderate as many as 10.5% of respondents stated that current data management practices this has been going well.

To be able to clearly describe the results of studies on process performance DS11, especially regarding the fulfillment of the criteria in this process that are stated in DCO, mapping of the answers to the questionnaire above is carried out with performance values that quantitatively reflect the level of performance as in the table below.

Table 2. Detailed Control Objective (DCO) Performance Level

No	Detailed Control Objectives	Performance Value
1	Business requirements for data management	1.78
2	Storage Settings	1.81
3	Media Library	1.53
4	Data deletion	1.44
5	Backup and restore	1.50
6	Data management security requirements	1.60
Average		1.60

Based on table 2 above, it can be concluded that the level of DCO compliance in the data processing process is at a value performance is less than average, so it really needs to be improved to average performance value 1.60%. These results are supported by the results of this questionnaire as a whole, such as in the table above and depicted in the radar diagram below.

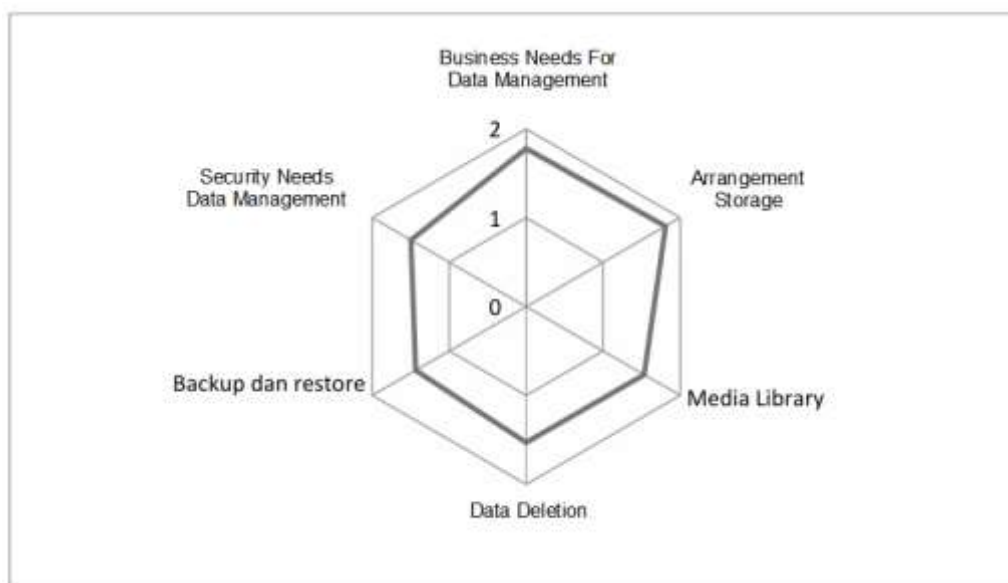


Figure 3. Representation Of the Level of Fulfillment of Detailed Control Objectives in Data Management Process in The Data and Information Center

Assuming that each attribute has a contribution value or equal weighting of DS11 process maturity level, then for Both statuses (as is and to be) can provide detailed maturity levels seen in the following table:

Table 3. Values And Maturity Levels Of Process Maturity Level Questionnaire Results

No	Attribute	Maturity Value		Maturity Value	
		as is	to be	as is	to be
1	AC	2,63	4,31	3	4
2	PPP	2,22	4,38	2	4
3	TA	2,56	4,28	3	4
4	SE	2,44	4,41	2	4
5	RA	2,53	4,38	3	4
6	GSM	2,59	4,38	3	4
Average		2,49	4,35	2	4

By referring to table 3 above, information can be obtained that current maturity level (as is) of the overall process is at level 2 or intuitively repetitive (repeatable), expected maturity level (to be) in the process, overall is at level 4 or managed (Managed). These two maturity conditions are for each maturity attribute represented in the following image:

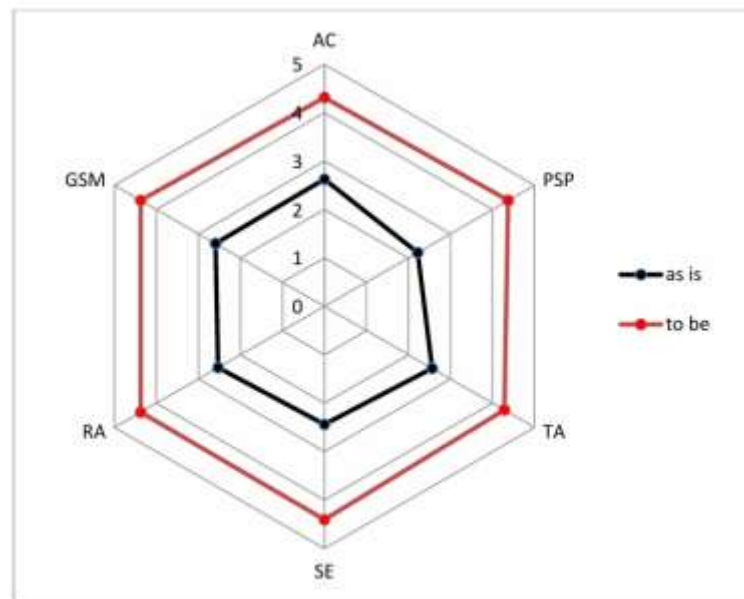


Figure 4. Representation Of Maturity Values in Process for Status Current (as is) And Future (to be) Maturity

CONCLUSION

The conclusions that can be drawn from carrying out this research are as follows procedures that do not currently exist need to be redefined or created return if data management procedures do not yet exist. In working on this thesis, prioritize the potential areas that are needed managed lies in the attributes of Procedure, Plan and Policy and Skill and Expertise. The resulting IT governance is in the form of guidelines and procedures related to backing up and restoring data.

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