IT Governance Self Assessment in Higher Education Based on COBIT Case Study: University of Mercu Buana

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Abstract—As the IT operation in the other Enterprise, the implementation of IT in Higher Education has to be directed and aligned with organizational strategy and program. The strategic alignment is one of five IT Governance focus areas. This paper presents the results, discussions and recommendations of IT Governance in Higher Education self assessment which is performed by COBIT 4.1 framework. The assessment is performed to IT Governance implementation in Mercu Buana University as a case study. The study result shows that the implementation of IT Governance in the university is still in the first stage of its development. Based on these results and some evidences collected, the study proposes some improvements such: it is needed to provide IT master plan, data and process custodian settlements must be performed, and the setup of such organizational structure which has capabilities enough to coordinate and deal with process / data owner and key user to drive University's IT Governance.

Index Terms—IT governance, COBIT, IT governance self-assessment, University of Mercu Buana (UMB)

I. INTRODUCTION

Currently almost no organizations that do not use IT to support their business processes, as well as universities. For universities, IT has become a critical aspect in supporting higher education in the process of education, research, administration, and community services [1]. As the increasing of the important IT role in supporting activities and service processes at the University, the implementation and operation of IT resources should be directed in line with the direction and strategy of the university. Thus, IT Governance should be in line with the University Governance. In this condition, the role of IT Governance is to guide and control the direction and operations of IT in university. One of the definitions of IT Governance is a framework that supports the management of all information resources (human resources, costs, infrastructure) in order to achieve corporate objectives effectively and efficiently. Two major concerns of ITG are: how IT can provide sufficient value to the business and how the risks that exist and arise from the existence of IT can be managed [2].

IT Governance as a guidance and direction tools of IT resource management at this stage has reached the level of maturity. Various organizations and institutions have developed several IT Governance frameworks as can be referred to [2]. Some of those frameworks are: COSO, ITIL, PMBok, CMM, ISO 27001 and Six Sigma. Among of those frameworks used as guidance in process directing and controlling, COBIT is the most suitable to be applied in an organizational IT process direction and controlling [3].

This paper presents the study result of IT Government self assessment in Private Higher Education Institution. The case study was taken from the University of Mercu Buana, a private University situated in Jakarta, Indonesia. The self assessment is performed based on and using of the COBIT 4.1 IT Governance Self Assessment guidance which is provided by ISACA [4]. The main objective of this research is to find out where the level of university IT is and then to perform the action plan recommendation based on problem solving priority and the resource availability.

The rest of this paper is organized as follows: Section II will describe a related study regarding to IT Governance, COBIT 4.1 framework, and brief of the University of Mercu Buana as well; the methods and tools of assessment process present in the Section III which mainly will contain COBIT 4.1 Self Assessment Guidance; in the Section IV, it will be elaborated result of each stage in the assessment; and the last section present conclusion of this study and also the action plan recommended.

II. RELATED STUDY

A. IT Governance (ITG)

ITG allows an organization to fully exploit the benefits of the existence of the information held, and with the maximization of benefit, capitalize on opportunities, gain advantage in competition. ITG is a structure of relationships and processes that are used to direct and control an organization to achieve goals that are set, giving more value and keep the balance between risks and returns of IT and processes related to IT. There are five aspects to which the management concern in directing and controlling their IT: strategic alignment,

value delivery, risk management, resources management and performance management [2].

B. ITG Frameworks

Exposure definition of IT G will not be able to assist the understanding of the reality, since ITG by definition is only a concept. Some IT professionals and government institutions establish a framework ITG. Some of them are:

1) COBIT® (Control objectives for information and related technology).

COBIT® provided by the IT Governance Institute (ITGI) to support the implementation of ITG by providing a framework to ensure that: inlining and synergizing of IT with business organizations, IT drives the business and maximize the benefits, IT resources are used within the framework of responsibilities, and IT risk related can be managed adequately. In COBIT ® available tools for-asses and measure the performance of 34 IT processes within an organization [2].

2) ITIL^{TM} (Information technology infrastructure library).

ITIL framework is prepared by the Office of Government Commerce (OGC) UK in collaboration with the IT Service Management Forum. ITIL is an IT framework that provides guidance on how to achieve success in the operational management of IT services (IT Services Management). ITIL consists of a collection of guides 8: Service Delivery, Service Support, Planning to Implement Service Management, ICT Infrastructure Management, Software Asset Management, Business Perspective, Security Management and Application Management [5].

3) ISO / IEC 27001 (ISO 27001),

This framework contains a set of best practice standards guide for organizations to implement and maintain an information security program. ISO 27001 originally published by the British Government (UK) as British Standard 7799 (BS 7799)[2].

4) ISO/IEC 38500:2008

The ITG framework that adapts AS8015-2005 standard. Its framework can be applied to a wide range of organization type from any corporation to government bodies. The framework assists any parties whose their position is in high management level to understand, and fulfill any regulatory, ethical and law compliment requirement in using of IT resources through organization easily [2].

C. COBIT® Framework

The framework based on generic IT Activities. Summarized from [6], COBIT categorizes IT activities in a generic process model within four domains. These domains are Plan and Organize (PO), Acquire and Implement (AI), Deliver and Support (DS), and Monitor and Evaluate (ME). The domains map of IT traditional responsibility areas of plan, build, run and monitor. There are 34 generics activities across those four domains. The PO domain consists 10 activities numbered from PO1 to PO10, AI domain consists 7 activities ranging from AI1 to AI7, DS domain consists of 13 activities identified by DS1 to DS13 and ME domain consist of 4 activities identified by ME1 to ME4.

The interrelation between those 4 domains are illustrated as Fig. 1 which described as:

- *Plan and Organize (PO)*—Provides direction to solution delivery (AI) and service delivery (DS)
- *Acquire and Implement (AI)*—Provides the solutions and passes them to be turned into services
- *Deliver and Support (DS)*—Receives the solutions and makes them usable for end users
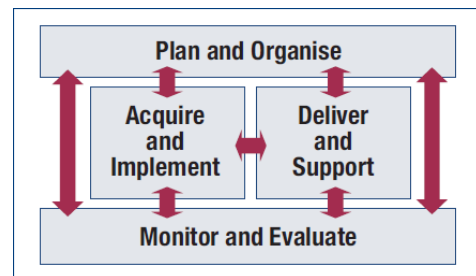- *Monitor and Evaluate (ME)*—Monitors all processes to ensure that the direction provided is followed

Figure 1.   The four interrelated COBIT domains [6].

D. University of Mercu Buana

University of Mercu Buana (www.mercubuana.ac.id) is a private own university situated in Jakarta, Indonesia. The university serves six faculties which consist of one degree, 16 bachelor degrees, 6 postgraduate degrees, and one special program. Education processes serves more than 18 thousand students from all degree, and all of those educational services are served by around one thousand lectures and around 500 education staff.

The main IT processes are used to serve the core university activities in education and researches. The other process support various general purposes such: finance, human resources, and communication – collaboration as well. In serving of all of IT services, the management, operation, and support are handled by two subdivisions. The first subdivision is the center of information system development whose main responsibility is to develop and operational support of system application, and the second one is the center of network and internet infrastructure whose the main responsibilities are any support related to network infrastructure, hardware and internet connection.

III.   METHODS & TOOLS

This study uses a study case method to perform the IT Governance Maturity Self Assessment in higher education organization. The tools which are used is the modification of COBIT Self Assessment template downloaded from ISACA site (www.isaca.org) through the membership menu area by membership account. Brief of those guidance and template are described in this section.

A. COBIT Self Assessment Guidance

Two main thing must be understood regarding to COBIT Self Assessment is the measurement frameworks and the self assessment process [4]. The COBIT measurement framework consists of process capability level, process attributes, assessment indicators, rating scale, and determining of capability level. Global of the self assessment process includes five steps: decide the scope of self assessment, determine selected process which its level is a level 1 capabilities, of the achieved level 1 processes determine whether capability levels 2 to 5 for the Selected Processes are being achieved, record and summarize the capability levels, and develop an improvement plan of action.

The self assessment scope is determined by to perform the mapping of business goals to ITG goals and ITG Goals to COBIT domain processes. The business goals are parameterized by four balance score card indicator perspectives : finance, customers, internal process and learning. For all those perspectives, there are 17 business goals that can be mapped on to one of the four perspective. Each of these business goals can be mapped to one or more ITG goals which it consists of 27 goals. And finally each of ITG goals is mapped to one or more COBIT activities domain process that contains 34 activities totally. The Fig. 2 below illustrates the mapping in assessment scope phase.
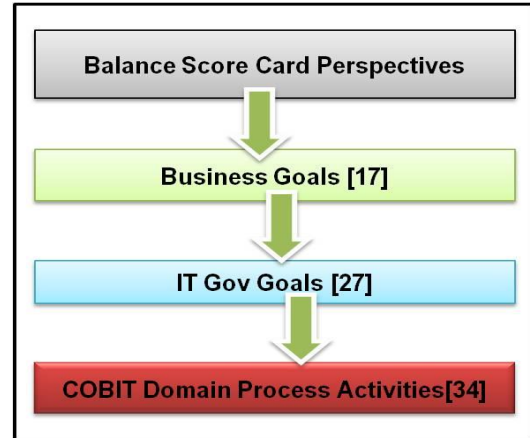

Figure 2. The assessment scope stepping.

In certain of the ITG self assessment process there is no need to assess all those business goals or all IT Goals. The scope of self assessment depends on a certain priority or company need [6]. So, based on the scope of business goals there are not all of COBIT 34 activities domain processes will be assessed.

Capability Level

The final result of ITG assessment is the capability level which is adapted from the software capability maturity model. COBIT defines 6 capability levels to each IT related process. Those levels are labeled from 0 (incomplete) to 5 (optimizing) as shown in Table I [4].

TABLE I. PROCESS CAPABILITY LEVEL.

Process Level	Capability
0 (Incomplete)	The process is not implemented or fails to achieve its process purpose. At this level, there is little or no evidence of any systematic achievement of the process purpose.
1 (Performed)	The implemented process achieves its process purpose.
2 (Managed)	The performed process is now implemented in a managed fashion (planned, monitored and adjusted) and its work products are appropriately established, controlled and maintained.
3 (Established)	The managed process is now implemented using a defined process that is capable of achieving its process outcomes.
4 (Predictable)	The established process now operates within defined limits to achieve its process outcomes.
5 (Optimizing)	The predictable process is continuously improved to meet relevant current and projected business goals.

B. Tools

In this study we use a COBIT Self assessment template provided by ISACA that can be downloaded from its site (www.isaca.org). These materials are an xls format complete tool that provides a template for all steps in self ITG self assessment processes.

IV. RESULTS & DISCUSSIONS

A. Self Assessment Scope

As in the current time the main function of IT division at board point of view is just to give a maximum support for academic operations, the scope of this assessment is concern to customers, internal process and a little bit of learning while the financial perspective is left. The Table II below describes the scope of the assessment base on interview results with all parties includes board and IT persons.

TABLE II.   ASSESSMENT SCOPING.

Balanced Scorecard	Business Goal	IT Goal (ITG)	COBIT Process
Financial			
Customer			
	4. Improve customer orientation and service.		
		ITG 3 Ensure satisfaction of end users with service offerings and service levels.	
			PO8 Manage quality.
			AI4 Enable operation and use.
			DS1 Define and manage service levels.
			DS2 Manage third-party services.
			DS7 Educate and train users.
			DS8 Manage service desk and incidents.
			DS10 Manage problems.
			DS13 Manage operations.
		ITG 23 Make sure that IT services are available as required.	
			DS3 Manage performance and capacity.
			DS4 Ensure continuous service.
			DS8 Manage service desk and incidents.
			DS13 Manage operations.
	5. Offer competitive products and services.		
		ITG 24 Improve IT's cost-efficiency and its contribution to business profitability.	
			PO5 Manage the IT investment.
			DS6 Identify and allocate costs.
	6. Establish service continuity and availability.		
		ITG 23 Make sure that IT services are available as required.	
			DS3 Manage performance and capacity.
			DS4 Ensure continuous service.
			DS8 Manage service desk and incidents.
			DS13 Manage operations.
Internal			
	13. Provide compliance with internal policies.		
		ITG 2 Respond to governance requirements in line with board direction.	
			PO1 Define a strategic IT plan.
			PO4 Define the IT processes, organization and relationships.
			PO10 Manage projects.
			ME1 Monitor and evaluate IT performance.
			ME4 Provide IT governance.
			PO6 Communicate management aims and direction.
			AI4 Enable operation and use.
			AI7 Install and accredit solutions and changes.
			DS7 Educate and train users.
			DS8 Manage service desk and incidents.
	14. Manage business change.		
		ITG11 Ensure seamless integration of applications into business processes	
			PO2 Define the information architecture.
			AI4 Enable operation and use.
			AI7 Install and accredit solutions and changes.
Learning			
	16. Manage product and business innovation.		
		ITG 25 Deliver projects on time and on budget, meeting quality standards.	
			PO8 Manage quality.
			PO10 Manage projects.

B. Processes Capability Level

The processes capability level assessment was performed by some methods include : interview, process checking, document checking, and support log checking as well.   Some parties whom these interviews are performed to are the users, IT staff, and management.

We also collect and check documents as assessment evidence. Those documents include: standard operation document, technical system   development document, activities log book, help desk log book, user manual, procurement document, etc. The process execution which is done by the application are checked in this study are: academic activities and enrollment activities.

After summarization and aggregation of all evidence collected, we present the result of process capability level as the Fig. 3 below. The Mercu Buana University IT is still in the starting phase of its development. This condition is described by the achievement of process capability ranging from 1 to 2. Compared with the target which was determined in Of 19 processes assessed, there is only one process that its capability is on target.
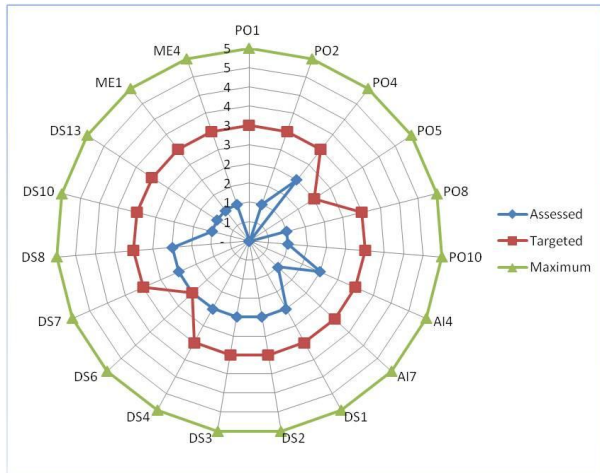

Figure 3. The radar diagram of processes capability level self assessment result.

V. CONCLUSION & RECOMMENDATION

The IT G assessment in this study shows some results regarding on internal IT operational objectives and process capability level. From board point of view as commonly applied in the higher educational institution, the main objective of IT operation is to support internal process and customer needs. The capability level of University Mercubuana IT processes is in the first stage of its development. It is shown by the maximum level of its achievement is 2.

Based on the assessment results we recommend some actions to improve the University IT Government stage. Some of those priority recommendations are:

- To perform the University IT Masterplan. This is very important in IT Governance since the IT Masterplen will guide and direct the planning and implementation of IT/IS to align with University strategy and direction.
- Some evidence shows that there is some data redundancy, such student or lecturer data. This is caused by the unclear of whose the data custodian is. The second recommendation is to determine the data custodian clearly.
- The third recommendation is to review or assess more detail regarding to the IT organization structure. In the current organization structure, there are two separate divisions which the consideration of organization setting up is its infrastructures managed rather than its function

performed.   The new IT organization structure must have enough capabilities to coordinate and deal with the processes or data owner and the key users.

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