Audit of Certification System Governance Using COBIT 5

Ni Luh Adriani [1], I Made Surya Sukma Mahardika [2], Ni Wayan Sri Aryani [3]

[1][2] Department of Electrical and Computer Engineering, Post Graduate Program, Udayana University,
[3] Department of Electrical and Computer Engineering, Udayana University
Email: adrifairy93@gmail.com

Abstract Efficient and effective IT resource management is needed to create solutions and minimize the risk of implementing Information Technology (IT) in organizations. The COBIT 5 framework helps in the information technology audit process because it covers all elements of the information technology used. Training Institute X is an institution to obtain certification from Tourism courses/training. Currently Training Institute X is developing information technology utilization in improving the quality of business processes in IT systems according to the vision, mission and purposes of the Training Institute X set. The need for an audit is because in its implementation there is still the use of information technology that has not been properly managed and alignment in the information technology process and business processes that have not yet been evaluated. In this paper the method to be used is COBIT 5 by using 3 domains that have been mapped according to the company's objectives, namely EDM, DSS and APO. Capability level measurement results in each domain of IT governance audit use COBIT 5 on the EDM and APO domains on level 2 (Managed process) and DSS on level 1 (Performed process).

***Keywords*— COBIT 5, Capability Level**

I. INTRODUCTION

Organizations both institutions, governments and private companies have made the most of information technology. The development of information technology can be seen from the use of various kinds of applications and management models for IT. IT transformation changes work patterns in companies from manual systems to computerization so that data storage becomes efficient, information is up to date, and fast in presenting information [1]. Information technology in its placement is very important for companies or institutions to support the achievement of the company's strategic plan to achieve the goals of the company or institution's vision, mission and objectives [2] and IT involvement in addition to bringing changes to the system but also impacting the performance of the institution [3].

Training Institute X is a certification body with services as Courses and Training Institutions, Job Training Institutions, Professional Certification Institutions and Competency Test Places. Development of Training Institute X to date has organized Courses and Training Institutions plusJob Training Institutions offered to both University X students and the general public. University X students who have participated in the Courses and Training Institutions until the first semester period of 2018 amounted to 1467 students.

The COBIT 5 framework helps in the information technology audit process because it covers all elements of the information technology used, besides being able to provide an evaluation of the state of Information Technology governance [4], knowing the maturity level of IT but also can provide recommendations for solutions to improve future management.

The focus of the audit in this study was to measure the level of governance capabilities of IT system development towards the suitability of the Training Institute X's vision, mission and purposes of becoming an Information Technology-based Job Training and Education Center in Bali to produce appropriate and capable HR (Human Resources) by the international job market. This is the main objective in research where the COBIT 5 framework can provide recommendations for solutions to improve the quality of information technology utilization in Training Institute X, therefore an audit or evaluation is needed to ensure that stakeholders' needs, conditions and choices are in accordance with the organization's objectives. in decision making, and monitoring performance based on objectives and direction.

COBIT 5 audit framework conducted focuses on 3 related process domains according to the company's business process objectives, namely EDM (Evaluate, Direct, and Monitor) in sub domain EDM04 , DSS (service delivery and support) in sub domain DSS01 and APO (Align, Plan , and Organize) in sub domain APO07 and APO01.

II. Literature Review

A. Audit TI

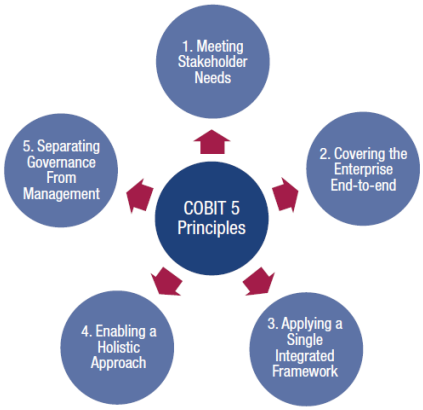
Information technology audits are the process of gathering and evaluating evidence to determine whether a computer system can secure assets, maintain data integrity, can encourage the achievement of organizational goals effectively and use resources efficiently [5].

B. IT Governance

Information Technology governance taken from the IT Governance Institute is a policy framework, procedure and set of company regulations to produce a system of supervision and transparency in IT utilization, which consists of leadership, organizational structure, and processes that ensure that IT companies support and expand strategies and organizational goals [6]. Simply, IT governance can align and place IT strategies with business strategies, ensure that companies stay on track to achieve their strategies and goals and implement good ways to measure IT performance by providing added business value, through balancing IT benefits and risks along with the processes that are in it.

C. COBIT 5

The COBIT 5 Framework helps auditors, users and management to bridge the gap between business risk, control needs and information technology technical issues. COBIT 5 is a comprehensive framework or framework that can help companies achieve their goals for corporate governance and IT management where COBIT 5 is built based on the development of COBIT 4.1 by combining IT Val and Risk IT from ISACA, ITIL, and relevant standards from ISO. COBIT 5 is based on five key principles for corporate governance and IT management [7].



(source: http://www.isaca.org)
Figure 1 Five Principles in COBIT 5

The focus on managing information technology resources in COBIT is on 4 sources, namely:

1) Applications
2) Information
3) Infrastructure
4) People

D. Process in the framework COBIT *5*

In COBIT 5 there are 2 parts, namely governance (EDM) and management (APO, DSS, BAI, MEA).

1) Governance: contains five governance processes; each process is evaluated, directed, monitored (EDM).
2) Management: contains four domains, aligned with the area of responsibility for planning, building, running and overseeing (PBRM), and providing information technology coverage from end to end. This domain is an evolution of the COBIT 4.1 domain and process structure. Here's the domain name:
   a. Align, Plan, Organise (APO)
   b. Build, Acquire, and Implement (BAI)
   c. Deliver, Service, and Support (DSS)
   d. Monitor, Evaluate, and Assess (MEA)

E. Capability Level

The following is a mapping of the capability model conditions set by the COBIT 5 framework into values with a scale of 0 to 5.

TABLE I
Capability Level

0 Incomplete Process	At this level indicates that the process is not implemented or fails to achieve the planned goals.
1 Performed process	The process has been implemented and achieved the planned goals.
2 Managed process	Implementing and managing with planning, monitoring, adjusting to the work products, control and maintenance.
3 Established Process	This level indicates that the management process described has now been implemented using a defined process that is able to achieve the desired process results.
4 Predictable process	This level indicates that the processes that have been applied previously now operate within the specified limits to achieve the results of the process.
5 Optimizing process	Process performance continues to be improved continuously to meet current and future business goals.

III. Research Methodology

A. Research Location

Training Institute X is an institution to get certificates from training/courses that have been followed such as training in the field of computers, English language, hospitality training and others as well as to improve skills in the field. Training Institute X is currently developing an IT system that can improve operational performance and the goal of becoming the right Human Resource Center to be absorbed by the international labor market.

B. Research Methodology

The research was carried out through several structured stages so that the research process carried out became more organized, systematic, controlled and directed. This study describes how the IT operational performance process in the Training Institute X runs and determine the level of capability of IT operational performance in Training Institute X.

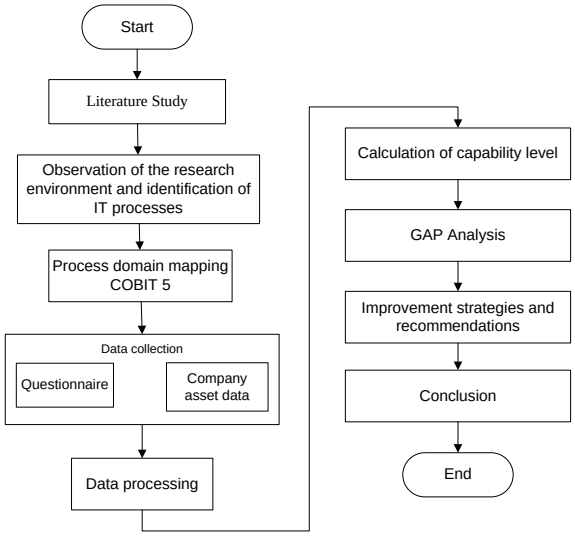


Figure 2 Research Methodology

Explanation of the 9 stages carried out in conducting the audit process:

1) Literature Study, the process of collecting theories related to COBIT 5, accompanying research that has been done before, information systems, IT audit standards and other supporting theories.
2) Observation The environment of research and identification of IT processes is carried out by interviews to explore all information related to research, both the problems studied and the objects that are the objectives of the research.
3) Mapping the COBIT 5 process domain to determine the COBIT 5 domain to be used.
4) Data collection is done by collecting data on company assets and questionnaires with interested respondents.
5) Data Processing, this stage is done after obtaining the data needed in the study, then the next step is to manage data to obtain the results of capabilities.
6) Calculation of Capability Level, perform capability level calculation process and be analyzed.
7) GAP Analysis, the results of capability analysis carried out then a verification process is carried out on the facts.
8) Improvement strategies and recommendations, provide recommendations for recommendations from the audit results.
9) Conclusions, provide conclusions on the results of the audit.

IV. Analysis and Results

A. Identify Business Purposes

Identification of business objectives is the first step to determine the IT process that will be conducted later on the audit, in this process mapping of the Training Institute X mission to the company's business objectives according to COBIT 5.

TABLE 2
Mapping Of Company Goal With COBIT Business GOAL 5.

PERFORMANCE PERSPECTIVE	NO	BUSINESS GOAL	COMPANY GOAL
Financial	1	Stakeholder value of business investments	Becoming an Information Technology based Education and Training Center in Bali to produce appropriate HR (Human Resources) and able to be absorbed by the international labor market.
Customer	7	Business service continuity and availability	
Internal	11	Optimization of business process functionality	
Learning & Growth	16	Skilled and motivated people	

B. Determination of Interest

The process of selecting COBIT domains that are assessed based on the level of audit importance, because of the limited time owned by the auditor, then the determination of the level of interest is only selected at a very important level. Determine the level of importance in the research by referring to the objectives of the research as well as the objectives of the company and the critical level of business processes obtained from collecting data through the importance questionnaire.

TABLE 3
Questionary Results Of Interest

Proses ID	EDM04
Process Name	Ensuring Resource Optimization
Process Description	Ensure adequate availability of capabilities related to IT (people, processes and technology) to effectively support company goals at optimal costs.
Process Purpose Statement	Ensure that resource needs are met in an optimal manner, IT costs are optimized, enable increased realization of profits, and readiness for future changes
Proses ID	**DSS01**
Process Name	Manage operations
Process Description	Coordinate and carry out operational activities and procedures needed to provide outsourcing IT services, including the implementation of predetermined standard operating procedures and necessary monitoring activities.
Process Purpose Statement	provide operational results for IT services as planned
Proses ID	**APO07**
Process Name	Managing Human Resources
Process Description	Provides a structured approach to ensure optimal structuring, placement, decision and human resource skills. This includes communicating roles and responsibilities, learning and development plans, and performance expectations supported by competent and motivated staff.
Process Purpose Statement	Optimizing the ability of human resources to meet company goals
Proses ID	**APO01**
Process Name	Managing the Information Technology Management Framework
Process Description	Clarify and maintain the company's mission and vision in the IT field. Implement and maintain mechanisms and authorities to manage information and use of IT in the company in supporting the company's goals in line with existing principles and policies.

Process Purpose Statement	Provide a consistent management approach to enable institutional governance requirements to be met, including management processes, organizational structures, roles and responsibilities, reliable and repeatable activities, and skills and competencies.

C. Respondents

Respondents used in this study amounted to 10, because of the 10 respondents, they were able to represent the entire sample of data needed.

TABEL 4
RESPONDENTS LIST

Section / Position	Amount
Head of Program for Tourism Program	1
Secretary of Study Program	2
Administrative Coordinator	1
Finance	2
Public Relations / Marketing	1
General and Facilities infrastructure	2
IT	1

D. Capability Level Calculation Results

Measurement of capability model is done by taking data through questionnaires. The sample of respondents involved in filling out the questionnaire is in the information technology unit and users of other units whose daily operations directly operate information technology and know the problems related to the selected process.

TABLE 5
CAPABILITY LEVEL CALCULATION RESULTS

Domain	Process	Respondents						Amount	Capability Level Result
		0	1	2	3	4	5		
EDM04	EDM04.01		1	6	3			22	2.2
	EDM04.02		2	3	3	2		25	2.5
	EDM04.03		2	5	2	1		22	2.2
Average									**2.3**
DSS01	DSS01.01		3	5	2			20	2,0
	DSS01.02	2	4	2	2			14	1,4
	DSS01.03	1	1	6	2			13	1,3
	DSS01.04	1	2	4	3			19	1,9
	DSS01.05	2	2	4	2			20	2,0
Average									**1,72**
APO07	APO07.01			2	6	2		24	2,4
	APO07.02		2	3	4	1		24	2,4
	APO07.03		2	3	3	2		25	2,5
	APO07.04		2	4	2	1		20	2,0
	APO07.05		4	3	2	1		20	2,0
Average									**2,26**
APO01	APO01.01		3	4	1	2		22	2,2
	APO01.02		2	5	3			18	1,8
	APO01.03		2	3	2	3		26	2,6
Average									**2,2**

Explanation from table 5 shows the average process domain is at level 2 (Managed process) for EDM and APO domains. This means that in general the IT process has been implemented properly where planning, monitoring, adjustments to the work products, control and maintenance have been carried out. The DSS domain at level 1 (Performed Process) means that the process has been implemented and has achieved the planned goals because the Training Institute X is developing an information system that is still felt to be less than optimal in delivering the information needed..

The following is how to do a calculation to find the Capability Level value, such as:

$$Capability\ level = \frac{(0 * y0) + (1 * y1) + (2 * y2) + (3 * y3) + (4 * y4) + (5 * y5)}{z}$$

Declaration:
Respondents Result 0-5 = Choice of Likert Skort Numbers
Yn(y0…y5) : Number of processes at level n
Z : The number of respondents who made the assessment

Next is to do calculations to find out the average capability level that has been achieved with the average calculation formula as follows:

Rata-rata = $\frac{\Sigma \text{ SubProcess Results}}{\Sigma \text{ SubProcess Domain}}$

E. GAP Analysis

Based on the manager's level of awareness questionnaire and maturity level questionnaire, knowledge was obtained about the state of the manager's expectation level. Then a gap analysis will be carried out to find out what activities should be carried out by the Training Institute X so that the current level of capability reaches the desired level of expectations. Calculations look for the value of GAP by means of:

GAP result = Σ Target Level - Σ Current Level

TABLE 6
GAP ANALYSIS RESULT

Process Name	Target Level	Current Level	GAP
EDM04	4	2,3	1,7
DSS01	3	1,72	1.28
APO07	4	2,26	1,74
APO01	4	2,2	1,8

The target level that the company wants to achieve varies from the level reached at this time where the target level is 2x greater than the current level so that it can be achieved in at least the next 5 years. GAP difference between the current level and target level still looks very large for it to be needed repairs to increase the level of the level in order to reach the expected target level at least the difference in GAP value is not too large.

Figure 3 Chart GAP Analysis

Figure 3 is a GAP analysis chart display where if the green line (GAP value) approaches the value of 0, the current capability level gap is close to the expected target level, but in the analysis of this study the green line (GAP value) still looks very large in each domain the audit so the need for recommendations for improvements that can minimize the value of GAP to be able to achieve the expected target level of the company.

F. Recommendations

Recommendations are given differently for each process domain. The following recommendations must be met in order to minimize the GAP value against the desired target level.

1) For APO07 that is grouping inventory related to HR in the IT division, so that the ability and competence of each individual can be distinguished as well as training according to the field each month to increase.
2) For DSS01, it is necessary to pay attention and arrange aspects of migration, conversion, and backup of data and information when changes occur in the system or in the operation of IT services and identification and formulation of a mechanism that can measure how availability, performance, and service capacity IT that is in line with the Training Institute X culture.
3) For EDM04 which is doing good resource allocation documentation. Allocation of resources (IT, technology and people) is expected to be detailed with specifications and capabilities. So that it can make it easier for the Training Institute X to do the mapping of current conditions.
4) For APO01, which must evaluate the quality of the IT strategy process at this time, in this case the leadership and staff must define and implement the process to consistently follow the processes available to clarify the objectives of the institution.

V. Conclusion

Based on the results of an audit of information technology governance, the Training Institute X using COBIT 5 includes:

1) Results The identification of mapping between business goals in the Training Institute X has 16 out of 37 processes which are the main focus of the research which is divided into 3 domains.
2) The results of IT governance analysis at the Training Institute X obtained the capability level for the DSS domain at level 1 (Performed Process) and for the EDM and APO domains on level 2 (Managed process).

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