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Design Of Information Technology (IT) Governance Using Framework Cobit 2019 Subdomain APO01 (Case Study: Instidla)

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Abstract
The purpose of this research is to apply the 2019 Cobit Framework to build an IT Governance design in Instidla. This research belongs to the type of descriptive qualitative research. The method used in making this system is to analyze the relationship of the state of the data and collect data by field research methods, namely by conducting interviews, literature studies and questionnaires. Based on the results of the capability level obtained and the target level as expected, it can be concluded that the gap analysis in the APO01 process is at level 1, which means that the Instidla process more or less achieves its objectives through the implementation of a series of activities that are incomplete or not very organized.

Keywords: Cobit; APO01; Framework; Governance; IT; Subdomain

I. INTRODUCTION

The development of information technology (IT) is very rapid and makes people find it easier to do their job. IT provides added value in the form of efficiency and effectiveness. The need for IT is quite high because it offers efficiency and effectiveness to support the organization in achieving its goals, which can contribute to increasing its competitiveness. Higher education goals will be achieved if IT planning and strategy are implemented following the organization's business planning and strategy. The changing needs of users also affect the future use of IT. Therefore, IT information governance becomes effective when university leaders can integrate IT and organizational planning to achieve a match between the dynamics of the business environment and the governance desired by the leadership. IT will be optimal if only IT management is maximized. Good IT management in a company will certainly identify all forms of risk from the implementation of IT and handle the risks that will be faced.

Diniyyah Lampung Institute of Technology and Business (INSTIDLA) was recently established in July 2020. However, the agency itself is already "IT literate" or full attention to IT. This is marked by the existence of a study program Software Engineering. In addition, in other IT matters, Instidla has given full attention, as evidenced by the existence of IT-based governance such as websites, social media, email, call center, etc. However, agencies still have to improve the quality of IT governance in improving services for the academic community.

The problems discussed in this research are; 1) do not have IT strategic planning, regulations and clear policies to support the sustainability and maturity of IT implementation; 2) Provision of IT facilities and infrastructure that is not yet optimal, causing gaps in access to information; 3) The condition of culture and work discipline that has not been developed strongly and human resource management that has not used IT. The problem limitation that will be built is that the design of IT Governance only focuses on AP001 (IT Management Governance).

The purpose of this research is to apply the 2019 Cobit Framework to build an IT Governance design in Instidla. While the benefit of this research is to get an overview of the performance of IT governance to determine the extent of the capability (maturity) of IT

governance in the agency that is currently running, with several aspects that need to be considered such as effectiveness, efficiency, IT functional units in an organization, data integrity, asset security, reliability, confidentiality, availability, and security.

In this journal, researchers will conduct an analysis using the 2019 Cobit Framework, focused on the APO01 subdomain (Align, Plan and Organize with subdomain process number 01), with specific metrics APO01.01 to APO01.05. The method used is the descriptive qualitative method.

II. LITERATURE REVIEW

A. Governance

According to Governance Institute in Sutomo and Syaputra explains:

"IT governance is the responsibility of the Board of Directors and Executive Management. It is an integral part of enterprise governance and consists of leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategy and objectives"[1].

Thus IT governance is the management of higher education institutions, including leaders, organizational structures and processes, which are used to ensure IT sustainability within the organization and the development of organizational goals and strategies. This means focusing more on how to help regulate and direct the behaviour of using IT to match the desired behaviour (the behaviour that is following the vision, mission, values, strategy and organizational culture). Era et al also explained that capacity in good records management activities to support bureaucratic and administrative activities is sometimes neglected[2].

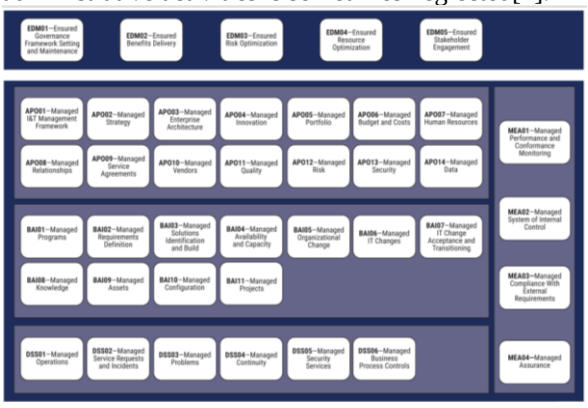

Figure 1: Model 2019 Core COBIT[3]**.**

B. Align, Plan and Organize (APO)

In the 2019 edition of COBIT APO domain itself has 14 subdomains, namely APO01 until APO14. The APO01 subdomain is the IT Governance Management Framework. The APO01 subdomain itself has 11 metrics; APO01.01 to APO01.11. Specifically, this study uses only 5 metrics, namely: APO01.01, APO01.02 APO01.03 APO01.04 and APO01.05.

The APO01 subdomain contains Design management systems for an institution's IT based on the goals of the institution and other design factors. Based on this design, implement all the necessary components of the management system. The objective of the APO01 subdomain is to implement a consistent management approach to meet institutional governance requirements, which includes governance components such as management processes; organizational structure; roles and responsibilities; reliable and repeatable activity; information items; policies and procedures; skills and competencies; culture and behaviour; and services, infrastructure and applications.

III. RESEARCH METHODOLOGY

A. Descriptive Research

This research belongs to the type of descriptive qualitative research. As said by Sugiyono, "Qualitative research method is a research method used to examine the condition of a natural object, (as opposed to an experiment) where the researcher is the key instrument"[4]. The analysis used is a descriptive analysis based on the data obtained. According to Sumadi Suryabrata, Descriptive Analysis Research aims to make a systematic, factual and accurate joke about the facts and characteristics of the object of research. In line with Sugiono, he explained that descriptive statistics are statistics that function to describe or provide an overview of the object under study through sample or population data as it is, without analyzing and making conclusions that apply to the public[5]. This research was conducted to find answers using 5W + H questions (who, what, when, where, why and also how).

B. The Data Collection Techniques

The method used in making this system is to analyze the relationship of the state of the data and collect data by field research methods, namely by conducting interviews, literature studies and questionnaires[6]. The questionnaire in this study was designed to determine the maturity level of information technology management that has been used by looking at user responses and making decisions in using technology. Questionnaires will be distributed according to the respondent table, involving human resources related to the use and management of IT. The questionnaire will contain appropriate questions on the APO01 (IT Governance Management) subdomain more specifically the APO01.01 to APO01.05 metrics. Each assessment questionnaire has a score level that weighs between 1 to 5, namely; Strongly Agree = 5, Agree = 4, Doubt = 3, Disagree = 2, Strongly Disagree = 1.

C. IT Governance Design Method

1. Initiate Program Stage

At this stage, it relates to the duties and authorities carried out at the current university. This is stated in the organizational structure. The data obtained from this stage is the result of interviews with related informants. The calculation results are made in tabular

form to determine the value of the weight, rating and score.

2. Define Problems and Opportunities

At this stage, it is related to IT performance with individual ability levels. Determination of the current level of ability is obtained from the results of the questionnaire that has been given based on the functional organizational structure and refers to the Cobit 2019 structure. The party who is the respondent at the university in this study is Vice Rector 1 for Academic Affairs, Vice Rector 2 for General Administration, Head of UPT, Laboratory, Head of General Infrastructure Division, Head of Personnel Division, Lecturers and Students. At this stage the findings related to the management of information technology with the APO01 subdomain. From these findings, the current level of capability in the agency in managing information technology is obtained

3. Define Road Map

At this stage the definition of targets for improvement from the results of the gap analysis on the results of the questionnaire given. If there is a difference between the current ability value, expectations and reality then it becomes a gap. Gain the gap if the findings and assessments provided are not following the reality at the university. At this stage, it is explained that the target ability to be achieved by the university refers to the capability scale (maturity) which consists of levels 0-5.

4. Plan Programme

At this stage, program plans and proposals are made from the results of the analysis through questionnaires given to the Higher Education. The program plan is based on the selected subdomain area namely APO01 on IT Governance Management.

D. Other Previous Relevant Researches

Researches based on research journals include:

1. Agus Prasetyo Utomo and Novita Mariana. 2011. Analysis of Information Technology Governance (IT Governance) in the Academic Field with Cobit Frame Work Case Study at Stikubank University Semarang. DYNAMIC Information Technology Journal, Volume 16, No.2, ISSN : 08549524.
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IV. DISCUSSION

A. Initiate Program

1) Profile of Institution

From the results of the identification of the IT process that has been carried out, it is obtained the profile of universities and the organizational structure of the Higher Education Institution of Business Technology and Diniyyah Lampung (INSTIDLA) consisting of 3 Study Programs, namely the Study Program Software Engineering, Retail Management, and Entrepreneurship. The three study programs are led by a Rector and 3 Vice Chancellors.

2) *Organizational Structure*

Figure 2: INSTIDLA Organizational Structure.

B. *Define Problems and Opportunities*

1) Identification of Information Technology Process

At this stage, it is carried out to find out the description of governance in higher education institutions. Establishing information technology processes that are following the *Cobit Framework* 2019 related to the problems that exist in the Agency.

The arrangement according to the domain to be used in the Agency is shown in Table 1 as follows:

Table 1: Information Technology Processes at Insitdla.

IT Domain	*IT Process*
Align, Plan, and Organize	*APO 01* (*Manage I&T Management Framework)*

Description of each information technology process above is presented in Table 2 as follows:

Table 2: List of Technological Processes agencies

Process Domain Process	Description
APO01	IT Management Managed

2) Identify Control Objectives

Each I&T process in the Cobit 2019 Framework has activities in each process, which are the control tools of the I&T process. Activities in the I&T process used in this study can be seen in Table 4.3.

Table 4.3 Information Technology Process Activities in Agencies

Table 3: Metric Description APO01.01-05[7]**.**

No	Metric Name	Description
1	APO01.01	Designing a management system for an I&T company.
2	APO01.02	Communicate objectives, directions and management decisions made.
3	APO01.03	Implement management processes (to support the achievement of governance and management objectives).
4	APO01.04	Define and implement the organizational structure.
5	APO01.05	Define roles and responsibilities.

3) Overall Calculation Results The Capability Level

The calculation results above show the acquisition of the value *capability level* for each domain process. The following is the acquisition of the ability of the Agency in the current technology governance in general: The current capability of the Agency (*current capability*) in managing IT Management (APO01).

Table 4: Recapitulation of Results *Capability Level of* Institution Currently

Domain	Process	*Capability*
CurentAPO01	*Manage I&T Management*	1.98

The formula for obtaining current *capability values* with Domain APO01 (Manage I&T Management) is:

$$CC = \frac{\sum \quad CL_2}{\sum \quad P_0}$$

$$= \frac{CL_{APO_{01.01}} + APO_{01.02} + APO_{01.03} + APO_{01.04} + APO_{01.05}}{\sum \quad P_0}$$

$$= \frac{2.00 + 2.00 + 2.00 + 1.91 + 2.01}{5}$$

$$= \frac{11.92}{5}$$

$$= 1.98$$

Table 5: Result Collection of *Capability Level* APO01 (*Manage I&T Management*)

Process for	Finding *Capability Level*
APO01	The existence of agency management The existence of agency goals There is a management review process at the Agencies
APO01.01	The existence of management following the needs of the Agency The existence of management needs following the objectives Agencies
APO01.02	There is communication and promotion of IT objectives to stakeholders There is regular communication about important IT-related decisions and their impact on the organization There is a process for identifying IT management that works following the objectives of purpose There is no standardization related to IT management in Agencies
APO01.03	The existence of process capabilities and IT management priorities There is a process of change related to the advancement of information technology There is no standardization in determining the competencies and skills needed at this time
APO01.04	The existence of an internal organizational structure that is following management Availability of IT knowledge required by IT management Availability of annual work program Availability of work program schedule
APO01.05	Availability of determination, communication, IT responsibilities in Agencies Existence of processes in planning, tracking and IT responsibility

4) Determining Current Maturity Level in Currently Management

Determining the current level of this capability is done through a questionnaire given to respondents who have been previously determined based on the Likert scale. The Likert scale was created by Rensis Likert in 1932. This scale is used for measuring the ordinal scale. This scale wants to distinguish the intensity of a person's attitude or feeling towards a particular thing. For negative or dissatisfying answers. Likert gives a score from the smallest to the largest, namely: strongly agree answers are given a score of 5; those who agree are given a score of 4; Doubtful may agree given a score of 3; Doubtful may disagree given a score of 2, and disagree was given a score of 1, and strongly disagree were given a score of 0[8].

Based on the recapitulation of answers from the respondents (attached), the current capability level value was obtained in the range of 0-5. The highest capability value is found in APO01.

C. *Define Road Map*

1) Desired Maturity Level of Management

Table 6: Value of governance maturity level

No.	Value	Description
1	0.00	0 Non-Existent (none)/ Incomplete Process
2	1.00	1 Initial/ Ad Hoc/ Performed Process
3	2.00	2 Repeatable but intuitive/ Managed Process
4	3.00	3 Define Process/ Established Process
5	4.00	4 Managed and Measurable (set) / Predictable Process
6	5.00	5 Optimized / Optimizing Process

Table 7: Index creation Scale

Scale Maker	Maturity Level Model
4.51 – 5.00	5 – Optimized
3.51 – 4.50	4 – Set
2.51 – 3.50	3 – Defined
1.51 – 2.50	2 – Repeatable
0.51 – 1.50	1 – Initialization
0.00 – 0.50	0 – No

D. *The GAP Analysis*

1) analysis and its recommendations to Management are presented in the following table

Table 8: GAP Analysis and Recommendations

APO01– IT Framework Management	
Recommendations APO01	Based on the analysis *gap* obtained with *the level* target achieved in APO01, then The following are recommendations that researchers can give to increase the level of IT alignment in agencies:
	1. Making regulations related to the IT sector so that the management of supporting factors for managing n the system can run well 2. Manage continuous process improvement in performance goals and create performance metrics
APO01 Manage IT Management Framework	1. Need to make a detailed job description that is standard and written (job description) for example the duties of archive manager, archivist 2. Need to form a security unit archive data archive 3. Conduct management training for staff 4. to evaluate the IT function regularly using an IT audit framework such as the COBIT framework at least once a year
APO01 – Managed the IT Management Framework	1. This process clarifies the vision, mission, organization and maintaining IT governance. 2. Implement and maintain mechanisms to manage information and use of IT in the organization in support of management objectives that are in line with existing policy principles.

E. *Plan Programme*

Based on the findings and the gaps obtained, recommendations or solutions for improvement in information technology governance in Agencies are made, while these recommendations are aimed at the APO01 (Managed I&T Management Framework) domain process. This improvement recommendation uses the fulfilment activities of each process.

Recommendation

The recommendation is a proposal for improvement by researchers to the object of research, namely the Agency regarding the management of information technology. Besides giving recommendations on any process that must be waged to upgrade the expected level of capability is currently at level 1 that is the process that applied, but has not fully achieved the expected objective

At the APO01 are some recommendations for improvement were given, namely:

1. Make IT management schemes needed at agency colleges
2. Create and adjust needs and goals with job descriptions carried out at agency colleges.
3. Create a scheme related to competency training for all personal resources at INSTIDLA tertiary institutions.

4. Evaluating, documenting and reporting on the description of objectives for each individual in the INSTIDLA higher education unit.
5. Conducting schemes related to job descriptions carried out, documentation and reporting and evaluation of job descriptions carried out in Institutional units
6. Reviewing and re-scheming communication of needs, development and performance of IT management at INSTIDLA tertiary institutions.

V. CONCLUSION

Based on the results of research related to information technology governance that has been carried out at Institutional Higher Education using the Cobit 2019 framework in the APO01 process, it can be concluded, based on the results of questionnaires and interviews with capability levels at level 1. Based on the results of the capability level obtained and the target level as expected, it can be concluded that the gap analysis in the APO01 process is at level 1, which means that the INSTIDLA process more or less achieves its objectives through the implementation of a series of activities that are incomplete or not very organized. While at level 3 the process is achieved its objectives in a much more organized way using organizational assets. Processes are usually well defined. The results of the gap analysis in this process are 2. Based on the results of the capability level analysis and gap analysis in the APO01 process, the recommendations for improvement proposed are,
Create an IT management scheme needed at INSTIDLA tertiary institutions. Create and adjust needs and goals with job descriptions carried out at INSTIDLA tertiary institutions. Create a scheme related to competency training for all personal resources at INSTIDLA tertiary institutions. Evaluating, documenting and reporting on the description of objectives for each individual in the INSTIDLA higher education unit. Conducting schemes related to job descriptions carried out, documentation and reporting and evaluation of job descriptions carried out in Institutional units Reviewing and re-scheming communication of needs, development and performance of IT management at INSTIDLA tertiary institutions.

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