Maturity Level Analysis of Politap's Information Technology Governance Using COBIT 2019 Framework

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A B S T R A C T	A R T I C L E I N F O

The implementation of information technology at POLITAP, intensively carried out since 2019, has consumed quite a bit of budget and resources, has a risk of failure, and in the future will become increasingly complex following the growth of the organization. This investment is expected to be directly proportional to the improvement of the organization's business processes and the achievement of organizational goals, thereby providing a competitive advantage for the organization. IT governance is a form of good corporate governance. For this reason, IT governance analysis is an important thing to do in the POLITAP environment. This research aims to analyze the maturity level of the implementation of information technology infrastructure at POLITAP using the COBIT 2019 framework. Maturity level analysis was carried out on the capability level assessment of four domains, namely, EDM, APO, BAI, and DSS. Based on the assessment results, the average capability level of the four domains is at level 1. Therefore, the maturity level of IT governance at POLITAP is at the initial level, which means that the overall goals of the organization have not been focused on being achieved because the IT governance process has not been properly organized. good and complete.

1. INTRODUCTION

The modern digital era makes information technology an important part of a modern organization. Since 2019, Ketapang State Polytechnic (POLITAP) has intensively begun developing and implementing information technology to support organizational business processes, especially in the fields of academic and non-academic administration. The implementation of information technology in the POLITAP environment has proven to have a significant impact. The process of accessing, storing, sending, and processing information becomes more effective and efficient, thus encouraging improvements in the organization's business processes.

The implementation of information technology at POLITAP continues to this day, of course it has used up quite a bit of budget and resources, has a risk of failure, and in the future will become more complex following the growth of the organization. POLITAP's investment in information technology development is expected to be directly proportional to the improvement of the organization's business processes and the achievement of organizational goals, thereby providing a competitive advantage for the organization. For this reason, information technology governance (IT governance) is an important thing to do within the POLITAP environment.

IT governance is a manifestation of good organizational governance (good corporate governance) (Andrianti & Astri, 2020). IT governance is the process of ensuring harmony between information technology and an organization's business objectives through the formulation of policies and strategies for implementing information technology which is the responsibility of the organization's management (Wu *et al.,* 2015). IT governance provides a basic structure that links and harmonizes IT processes, IT resources, and the information needed by an organization to implement its strategy to achieve the goals it wants to achieve. Through the implementation of good IT governance, organizations will gain profits, optimize risks, and optimize resources (Bayastura *et al.*, 2021).

To determine the alignment between the implementation of information technology and the goals to be achieved by POLITAP, it is necessary to carry out an IT governance analysis using the COBIT framework. This will help the organization to find out the extent of the organization's maturity level in using information technology (maturity level) and identify deviations in the implementation of information technology. IT governance analysis using Control Objective for Information & Related Technology (COBIT) has been widely carried out and the results of the recommendations help organizations to improve information technology governance to be more effective and efficient (Hakim *et al.*, 2015; Saleh *et al.*, 2021; Haay & Sitokdana, 2022; Putra & Wijaya, 2022; Ikhsan *et al.*, 2021; Nachrowi *et al.*, 2020).

The COBIT framework provides general steps and best practices used to help use information technology in accordance with organizational goals. COBIT 2019 is the latest version of COBIT which was built and developed with the principle of explaining the core requirements of an IT governance system, as well as the principles of using governance performance measures used to build a governance system for an organization. COBIT 2019 developed by ISACA is an improved version of COBIT 5 (Purwono, 2023) with 6 principles, namely, provide stakeholder value, holistic approach, dynamic governance system, governance distracted from management, tailored to enterprise needs, and end-to-end governance system. Based on the results of research conducted by Kaban (Kaban, 2009), COBIT has a compromise between horizontal and vertical dimensions that is better than other standards.

This research aims to analyze the maturity level of the implementation of information technology infrastructure at POLITAP using the COBIT 2019 framework. It is hoped that the results of this analysis can provide recommendations for improving POLITAP's IT Governance in the future. In addition, the results of the analysis can help management understand the IT governance system, as well as help management decide on the necessary controls (Kaban, 2009).

2. METHODS

To analyze the maturity level of information technology governance at POLITAP, several research stages were carried out as follows:

2.1. Literature Study

At this stage, a study of the COBIT 2019 framework and a study of POLITAP business documents were carried out.

2.2. COBIT 2019 Process

At this stage, business objectives are identified and COBIT 2019 governance processes are identified that are appropriate for the organization. Identification of the organization's business objectives is carried out using interview techniques. Interviews were conducted with POLITAP management, namely, Director, Deputy Director 1, Deputy Director 2, and Deputy Director 3 to determine the priority goals of the organization and to get a comprehensive picture of information technology management currently running in the organization. The COBIT 2019 governance process is aligned with the priority objectives to be achieved by the organization so that appropriate governance objective domains are found. There are several changes in the COBIT 2019 framework when compared to COBIT 5 as in **Table 1**.

Table 1. Comparison of COBIT 5 and COBIT 2019 (Syuhada, 2021)

No.	Points of Difference	COBIT 5	COBIT 2019
1	Factor design	Has no design factors	Has design factors
2	Principle	5 principles	9 principles; 6 principles of governance system and 3 principles of governance framework
3	Process domain	Called the IT governance process	Called IT governance objectives
		37 domains	40 domains
4	Goal cascade	5 goal cascades	4 goal cascade, alignment of company goals with IT goals
5	Maturity level	Capability level	Capability level and maturity level

No.	Points of Difference	COBIT 5	COBIT 2019
6	Governance	Enablers	Governance system components

COBIT 2019 provides a flexible framework for enterprise IT governance, incorporating the latest methods and technological evolution, and includes new guidance on data management, as well as continuously updated with specific topics focused on in a coherent manner, such as security, risk, DevOps, and small business or intermediate (see **Figure 1**).

The governance and management objectives in the COBIT 2019 framework consist of five main domains (Saleh *et al.*, 2021), namely:

a.   EDM (Evaluate Direct Monitor), the governance area evaluates strategic options, then provides direction to senior management on the selected strategic options and monitors the selected strategic achievements. Consists of 5 processes.

b.   APO (Build Acquire Implement) discusses the overall organization, strategy and supporting activities for information technology. Consists of 14 processes.

c.   BAI (Build Acquire Implement), discusses how to define, acquire, and implement information technology solutions and their integration in business processes. Consists of 11 processes.

d.   DSS (Deliver Service Support), discusses 6 operational delivery processes and information technology service support.

e.   MEA (Monitor Evaluate Assess), discusses 4 processes, namely monitoring performance and conformity of information technology with internal performance targets, internal control objectives and external requirements.
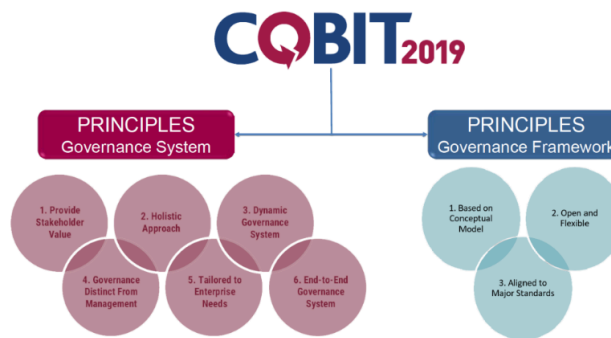

Figure 1. COBIT 2019 Principles

Maturity level analysis was carried out on five domains, namely, stakeholder involvement, management support, financial support, internal organizational effects, IT personnel management and IT structure. These five domains were chosen because they are critical factors that influence the success of IT Governance in an organization (Alreemy *et al.*, 2016).

2.3. Data Collection and Processing

At this stage, the data needed to analyze the maturity level will be collected using the questionnaire method. The capability questionnaire is used to analyze the maturity level of organizational information technology governance prepared in accordance with the COBIT 2019 guidelines (Haay & Sitokdana, 2022; Lompoliu *et al.,* 2022) (see **Figure 2**).
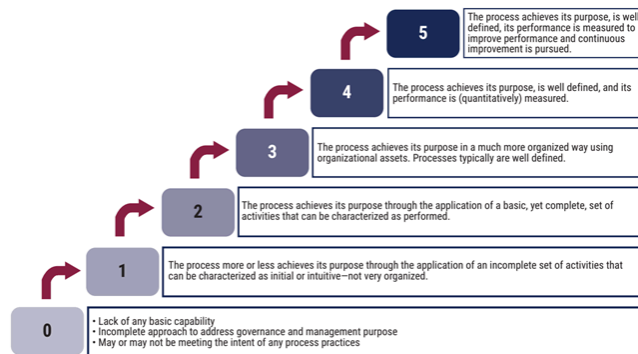
Figure 2. COBIT 2019 Capability Level.

The assessment scores used to analyze the results of the capability level questionnaire are as follows:

N: the level of ability achieved is less than 15%, score 1.

P: level of ability achieved between 15% to 50%, score 2.

L: level of ability achieved between 50% to 85%, score 3.

F: the level of ability achieved is more than 85%, score 4.

2.4. Formulation of Recommendations and Conclusions

At this stage a conclusion is formulated based on the results of the IT governance maturity level analysis. In addition, a recommendation is proposed to improve information technology governance for the organization. It is hoped that these results can be used by the organization to achieve its goals and be useful for encouraging organizational progress (see **Figure 3**).
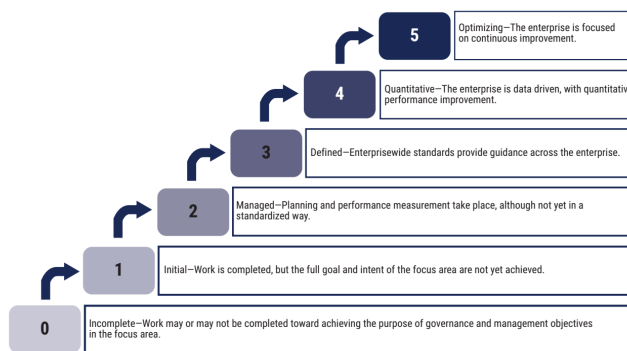
Figure 3. COBIT 2019 Maturity Level.

3. RESULTS AND DISCUSSION

Based on the results of interviews with POLITAP management, POLITAP's business objectives are generally stated in the 2020-2024 POLITAP Strategic Plan document which has 5 objectives, namely:

(i) Produce human resources who are capable and master applied science and technology in the fields of agriculture and mining in the context of regional development and national development;

(ii) Produce applied research that is beneficial for the development of science and technology, the world of business and industry and society; And

(iii) Producing community service based on applied technology and services to improve community welfare;

(iv) Produce an education management system that meets the principles of good governance; And

(v) Producing graduates who have noble character, ethics, superior competence, and are competitive, both at the national and international levels.

However, POLITAP's current priority goals are increasing the use and infrastructure of information technology to support organizational business services as well as improving the quality of human resources, both educational and teaching staff. It is hoped that this will encourage the achievement of POLITAP's overall goals. These priority objectives are then aligned with five important domains in IT governance and also based on the existing domains in COBIT 2019, namely, stakeholder involvement and internal organizational effects including in the EDM domain, management support and financial support including in the DSS domain, IT personnel management including in the APO domain, and IT structure management is included in the BAI domain. The domain components that are considered important for assessing capability levels are as follows:

(i) EDM02 Ensured benefits delivery, to assess the impact of IT implementation on the organization.

(ii) APO07 Managed human resources, to assess human resource governance in supporting IT implementation in the organization.

(iii) BAI04 Managed availability and capacity, to assess IT availability to support the organization's business services.

(iv) BAI09 Managed assets, to assess the IT asset management process in the organization.

(v) DSS01 Managed operations, to assess IT operational procedures (provision of infrastructure, environment, and facilities) in the organization.

(vi) DSS04 Managed continuity, to assess organizational policies in supporting the continuity of IT services for the organization.

The results of the EDM01, APO07, BAI04, BAI09, DSS01 and DSS04 questionnaires are shown in **Table 2**.

Table 2. Capability Level Assessment Results

Domain	*Average (maks. 4)*	*Capability Level*
EDM02	2.46	2
APO07	1.22	1
BAI04	1.25	1
BAI09	1.25	1
DSS01	0.54	0
DSS04	1.16	1

From **Figure 4** the majority of domains are at capability level 1 (APO07, BAI04, BAI09, DSS01, and DSS04) except for the EDM02 domain which is at capability level 2 with an average value of 2.46 and the lowest average value is in the DSS01 domain with a value of 0.54 or capability level 0. This means that there are still a lot of IT activities at POLITAP that

are not yet equipped with complete supporting documents so that the governance process is not well organized. Support for the continuity of IT service operations at POLITAP such as employees with IT expertise, availability and continuity of IT activities, and IT asset management is carried out without clear operational standards. The DSS01 domain which relates to managing operational procedures, managing IT services, monitoring IT infrastructure, managing IT facilities and managing the IT environment at POLITAP is still not implemented.

Figure 4. APO 07 Questioner example.

Based on the results of the capability level assessment, it can be taken that the average IT governance capability level at POLITAP is still at level 1, which means that the governance process carried out achieves organizational goals through implementing a series of activities that are incomplete or not very organized. Therefore, the IT governance maturity level value at POLITAP is currently at the initial level.

4. CONCLUSION

The maturity level of IT governance at POLITAP is at the initial level, which means that the overall goals of the organization have not been focused on being achieved because the IT governance process has not been well organized and complete. This level needs to be increased further in the future by carrying out a series of IT activities in an organized manner by providing supporting documents that become operational standards for IT activities. This document is very necessary and needs to be immediately prepared as a standard that is adhered to in POLITAP's internal environment so that the process of providing, operating, monitoring, and maintaining IT services becomes easier to carry out and manage. Apart from that, support is needed from POLITAP management to be able to allocate a more effective budget to maximize IT investments that have been made to support the achievement of POLITAP's goals.

5. ACKNOWLEDGMENT

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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