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Analysis of Information Technology Governance Management of Work Units in XYZ Agencies with the Cobit Framework 2019

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Information Technology (IT) governance has become an important topic in information system management because it can affect the ability of companies/organizations and government agencies to achieve goals. Maturity level assessment in the Information and Communication Technology Division (Div TIK) work unit needs to be carried out in order to determine the current condition of IT governance. Maturity level measurement is carried out using the COBIT 2019 framework, namely by mapping organizational goals into COBIT 2019 so that related domains are obtained. Measuring the level of maturity in the Div TIK work unit shows that there are 8 process domains. The EDM01, APO07, APO08, BAI01, and MEA04 domains are at level 3 while the APO04, BAI11, and DSS04 domains are at level 4. Measuring the value of the gap between the current maturity level and the expected maturity level is also carried out. The biggest discrepancy value is in the APO04 domain with a value of 1.48, and the smallest is in the APO07 domain with a value of 0.59. Analysis of improvements that can be carried out to increase the maturity level include periodically assessing whether the agreed IT governance mechanisms are operating effectively; conducting regular reviews to assess skills evolution; and controlling IT services, assets and resources.

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1. Introduction

Information Technology (IT) has become a major topic in information systems management over the past few years. The widespread use of IT and the increasing complexity of management and governance demand better attention on the topic of IT governance (S. Borja, 2022). Because IT has become a tool that can affect the ability of companies / organizations and government agencies to achieve goals.

The use of IT will enable the implementation of innovation systems, reduce costs, and improve service delivery. Good IT governance management is needed to meet the needs of the company/organization's strategy and realize a positive and conducive work environment.

Organizational governance is defined as the responsibilities and practices carried out by the board and management with the aim of developing strategies and ensuring the achievement of objectives (D. Zhu, 2014). Organizational governance management has an effective influence on IT governance (X.X. Wang, 2010). IT governance is one of the most important parts of the successful implementation of good corporate governance.

IT governance is useful for improving the company/organization's business processes to achieve the company's strategic goals effectively and efficiently. IT governance makes business processes more transparent, responsible and the accountability of each function/individual will be clearer. Good governance is needed to improve the ability of public authorities to implement information technology infrastructure that meets the needs of their communities.

A recent study conducted in Colombia (S. Borja, 2022) found that IT governance practitioners consider structure to be the most effective and easy IT governance mechanism to implement. However, Process is the most widely applied mechanism.

These results show that there is still considerable room to improve the effectiveness of IT governance by implementing several

important structures. The structure will be easier to implement than the process and only takes less time.

This research shows that implementing IT governance will have a positive impact on organizations. Organizations should keep in mind that the more structures that are implemented, the better the IT governance effectiveness score can be achieved. Structure refers to the business unit responsible for all IT-related decision making such as the formation, roles, and responsibilities of committees. This process includes the development of policies, procedures, and all documents necessary for IT management.

The results of a study from (P. Weill, 2004) stated that companies with poor IT governance practices have 20% lower profitability compared to companies that implement a set of good IT governance mechanisms. Another study conducted on a number of companies in Brazil (G. L. Lunardi, 2014) found evidence that companies that adopt IT governance mechanisms perform better than their counterparts who do not adopt formal IT governance mechanisms.

Several other studies evaluated the effectiveness of IT governance (S. Ali, 2012), (S. S. Maidin, 2010). The research was conducted by studying the influence of several IT governance mechanisms on individuals such as the IT strategy committee, IT steering committee, corporate performance measurement system, ethics/compliance culture, and corporate communication system. The results found similarities that the committee's IT strategy and corporate communication system had a positive and significant effect on the overall level of effectiveness of IT governance.

Information and Communication Technology Division or abbreviated as ICT Div is an organization in an XYZ agency whose task is to deploy and foster electronic telecommunications systems and data communications such as the construction, development, and service of electronic and data communications as well as maintaining and repairing telecommunications equipment and networks.

Currently in the ICT Div, the implementation of IT governance should be carried out at every stage of the implementation of IT activities, namely the planning, development, operational and monitoring stages, of every IT resource, namely Information, Applications, Infrastructure and Human Resources.

In order to know, evaluate and continue to improve the performance

of the ICT Div in its support for the organization, it is necessary to analyze the level of governance maturity in the ICT Div satker. The current ICT Div work unit needs to evaluate the level of maturity to determine the current state of IT governance.

In this study, governance evaluation management was carried out using the COBIT 2019 framework for continuous improvement on ICT Div. COBIT provides a comprehensive framework to support organizations and IT management to achieve expected goals.

This research will use a new method, namely by aligning organizational goals into the COBIT 2019 framework, by including the latest process domains that did not exist in the previous version of COBIT, namely the BAI01, BAI11, and MEA04 domains to obtain maturity level scores.

2. Research Method

There are several important steps as illustrated in Figure 1. The first step, the author mapped and aligned the ICT Div tasks according to the domain in COBIT 2019. Using this mapping, stakeholders can align organizational goals and organizational performance (ISACA, 2018). The research will be conducted in the Work Unit of the Information and Communication Technology Division at XYZ Agency. Next, the author will conduct interviews with stakeholders to get a maturity level score. And the last Jakarta step is data analysis and the author also provides an improvement analysis to increase the maturity level in each domain.

Figure 1
Research Methods

Data Collection

Data collection is carried out by documentation studies and interviews. The document study method is carried out by analyzing the Information Technology Master Plan document and related documents. The results of the document study are used to complete the picture of IT management conditions in the ICT Div. While the interview was conducted face-to-face to identify the

condition of IT governance management in the ICT Div. Finally, this study also used an online form, namely google form to facilitate data processing. The results of this interview are used as a basis to determine the maturity level of IT governance in the ICT Div

Mapping Organizational Goals to the COBIT Process 2019

The ICT Div organizational goals contained in the Information Technology Master Plan (MPTI) 2019-2025 will be mapped into Enterprise goals contained in the COBIT 2019 guidelines. To be able to find out the process that is the focus of measurement, it is first necessary to map the ICT Div organizational goals to Enterprise Goals (EG) shown in Figure 2. Enterprise Goals are realized by achieving (a set) of organizational goals defined in the COBIT 2019 framework (ISACA, 2018).

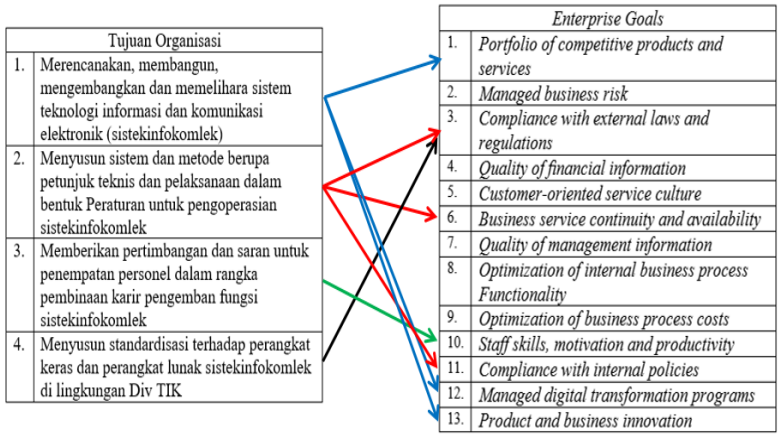

Figure 2
Mapping Organizational Goals to Enterprise Goals (ISACA, 2018), (MPTI, 2019)

The seven enterprise goals obtained were then mapped to the COBIT 2019 alignment goals shown in Table 1. Alignment goals emphasize the alignment of all IT efforts with business goals (ISACA, 2018). This is done to obtain targets related to management that will be the focus of IT Governance capability management in the ICT Div. The overall alignment objective chosen is an alignment goal that has a Primary scale.

Tabel 1 Pemetaan *Enterprise Goals* ke *Alignment Goals*

	EG01	EG03	EG06	EG10	EG11	EG12	EG13
AG01		P					
AG03						P	
AG07			P				
AG09	P					P	
AG11		P			P		
AG12				P			
AG13	P						P

Next, the priority process domain selection ends with the mapping *of alignment goals* into the COBIT 2019 process domain. The seven *selected alignment goals* are then mapped into process domains through a generic Table provided in the COBIT 2019 guidelines. Using this mapping, stakeholders can align IT-enabled business investments with organizational goals and organizational performance. Table 2 illustrates the mapping of *alignment goals* to related process domains for which maturity levels will be evaluated.

Table 2 Mapping Alignment Goals to the COBIT 2019 Process

	AG01	AG03	AG07	AG09	AG11	AG12	AG13
EDM01	P	P					
APO04							P
APO07						P	P
APO08						P	P
BAI01		P		P			
BAI11		P		P			
DSS04			P				
MEA04					P		

The results of mapping alignment goals to the COBIT 2019 process domain obtained eight domains, namely EDM01, APO04, APO07, APO08, BAI01, BAI11, DSS04, and MEA04. The eight domains will measure maturity levels based on activities related to each domain and management practices in COBIT 2019.

Respond

Specific criteria are needed to be able to determine the maturity level of each process domain. COBIT 2019 provides a detailed description of each role in the organization involved and responsible for determining value in each process domain (ISACA, 2018). Each domain describes the organizational structure that has responsibility and/or accountability in that domain. The author identifies roles/positions in the ICT Div organizational structure along with their duties and functions which will then be adjusted to the responsibilities of each role in COBIT 2019. The results of the identification found eight roles/positions contained in the ICT Div organizational structure that have the responsibility to make decisions based on activities in the COBIT 2019 process domain:

1) Kabag GerminaTE TIK : Domain EDM01, APO04, APO07, BAI01, BAI11, DSS04, give MEA04.
2) Kabag Duknis : Domain APO04, APO07, APO08, BAI01, DSS04, dan MEA07.
3) Kabag Renmin : APO07 and DSS04 domains.
4) Kasubbag in Kams : APO04, APO07, DSS04 and MEA04 domains.
5) Kassubbag Sumda : Domain APO07.
6) Kaurkeu : EDM01 and APO08 domains.
7) Ps. Paur Subbag Kamsis : Domain APO04, APO07, APO08, DSS04 dan MEA04.
8) Pama Duknis : Domain APO04, APO07, APO08, DSS04 dan MEA04.

3. Result and Discussion

Based on the results of interviews from the speakers, the maturity level value of each resource person has been obtained. The answer results are then processed to obtain the value of the maturity level of IT governance in the ICT Div using the domain maturity level equation.

From the results of data processing, the maturity level obtained a variable value, namely with the lowest maturity level value found in the APO08 domain with a value of 2.95, and the highest maturity level value found in the BAI11 and DSS04 domains with a value of 3.86 as shown in Table 3.

$$\text{Tingkat Kematangan Domain} = \frac{\sum tingkat\ kematangan/responden}{jumlah\ responden}$$

Table 3 Domain Maturity Levels

Domain	Maturity level	Level
EDM01	3,06	3
APO04	3,52	4
APO07	3,41	3
APO08	2,95	3
BAI01	3,22	3
BAI11	3,86	4
DSS04	3,86	4
MEA04	3,12	3

There are 5 domains that are at level 3, namely EDM01, APO07, APO08,

BAI01, and MEA04 domains, while there are 3 domains that are at level 4, namely APO04, BAI11, and DSS04. Domains that are at level 3 say that the activities contained in each domain have been carried out in a much more organized manner using assets in the organization, and the stages of the process to achieve goals can also be well defined.

While the domain that is at level 4 states that the activity is carried out well and the stages of the process can be measured quantitatively. This is because the ICT Div has several Standard Operating Procedures (SOPs) that are applied in all areas of the organization. In addition, the ICT Div adopts ISO international standards to support organizational performance in managing IT assets and resources.

Data Gaps

Gap data is used to see how big the gap is between the current maturity level and the expected maturity level (Megawati, 2017). The level of IT maturity can be determined not only from the strategic plan of the organization, but also by looking at the internal environment of the ICT Div and the high expectations of stakeholders or respondents towards the implementation of the COBIT 2019 process (Fitroh, 2011)

$$Gap = A - B$$

The gap value is obtained using the equation where A is the expected maturity level and B is the current maturity level. Table 4 shows the gap values of each domain. The largest gap is in the APO04 domain with a value of 1.48 while the smallest gap is in the APO07 domain with a value of 0.59.

This represents, that the ICT Div must make improvements in IT governance and management to achieve organizational goals or levels. Expected maturity. Figure 3 shows a graph illustrating the gaps of each domain.

Table 4 Maturity Level Gap

Domain	Current maturity level	Expected level	Gap
EDM01	3,06	4	0,94

APO04	3,52	5	1,48
APO07	3,41	4	0,59
APO08	2,95	4	1,05
BAI01	3,22	4	0,78
BAI11	3,86	5	1,14
DSS04	3,86	5	1,14
MEA04	3,12	4	0,88

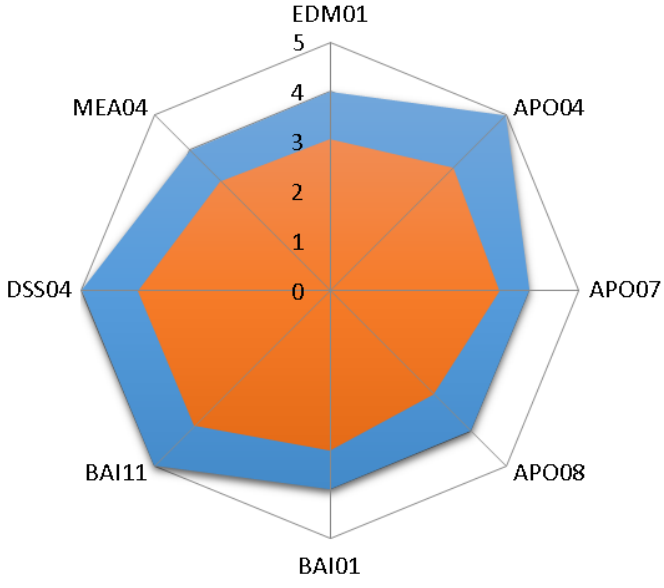

Figure 3
Maturity Level Gap Graph

Maturity Level Improvement Analysis

Because there is a gap found between the current level of information technology governance maturity, it is necessary to improve IT governance in the ICT Div. The goal of the IT governance program is to improve the appropriate level of IT maturity and control for each business unit, on a priority basis.

In this phase, recommendations for improvements related to IT governance are made based on the gap analysis that has been obtained. These recommendations are intended to help the ICT Div to improve IT governance so as to achieve the expected level of maturity in each domain.

1. Domain EDM01

a) Periodically, assess agreed IT governance mechanisms such as organizational structures, principles, and processes have been established and are operating effectively.

b) Supervise the extent to which IT governance has complied with legal obligations (regulations, legislation, contracts), internal policies, professional standards and guidelines.

2. Domain AP004

Assess new technologies or IT innovations implemented as part of an enterprise IT strategy and architecture development. Evaluate adoption rates during program management initiatives.

3. Domain AP007

a) Conduct periodic audits to assess the capabilities and competency development of internal and external resources.

b) Conduct periodic reviews to ensure that the contractor's role and access rights are appropriate and in line with the contract.

4. Domain AP008

a) Create a custom schedule based on mutually agreed goals such as service, performance, strategy review or new plans, etc.

b) Perform a customer and supplier satisfaction analysis and ensure that all issues can be addressed.

5. Domain BAI01

a) Undertake a benefits realisation process across the programme to ensure that planned benefits are achieved, sustainable and optimised. Perform root cause analysis for deviations from the plan and identify and address necessary corrective actions.

b) Monitor and control IT services, assets, and resources, performance against organizational strategies and goals.

6. Domain BAI11

a) Analyze interests, requirements, and stakeholder involvement and take corrective actions as needed.

b) Measure and analyze deviations from established project performance criteria to find out the causes and assess positive and negative effects on the project.

c) Recommend and monitor corrective actions in line with the project governance framework.

7. Domain DSS04

a) Based on the results of the review, develop recommendations to improve the current sustainability plan.

b) Identify weaknesses or omissions in the plan and make recommendations for improvement.

8. Domain MEA04

Supervise and ensure the work is completed and has met the objectives and quality that has been set. Revise detailed approaches

or measures in case of quality gaps

4. Conclusion

COBIT 2019 is a framework used to manage the IT management of organizations and companies. Measurement of the maturity level of IT governance on the ICT Div satker can be done by mapping organizational goals into COBIT 2019 so that 8 related process domains are obtained, namely EDM01, APO04, APO07, APO08, BAI01, BAI11, DSS04, and MEA04 domains.

The results of the maturity level measurement found that 5 domains were at level 3 and 3 domains were at level 4. While the gap data obtained the smallest value was found in the APO07 domain with a value of 0.59 and the largest value was found in the APO04 domain with a value of 1.48. An analysis of the improvement of maturity levels in each domain is also formulated to increase the appropriate maturity levels in each business area.

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