

# New Model of Information Technology Governance in the Government of Gorontalo City using Framework COBIT 4.1

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**Abstract.** This study aims to determine the level of maturity of information technology governance in Gorontalo city government by applying the COBIT framework 4.1. The research method is the case study method, by conducting surveys and data collection at 25 institution in Gorontalo City. The results of this study is the analysis of information technology needs based on the measurement of maturity level. The results of the measurement of the maturity level of information technology governance shows that there are still many business processes running at lower level, from 9 existing business processes there are 4 processes at level 2 (repetitive but intuitive) and 3 processes at level 1 (Initial/Ad hoc). With these results, is expected that the government of Gorontalo city immediately make improvements to the governance of information technology so that it can run more effectively and efficiently.

## 1. Introduction

Information technology (IT) is one of the important aspects of governance organizations as a whole. The success of the organization will be greatly influenced by its ability in utilizing IT optimally [1]. IT governance is a procedure directive implementation of organizational arrangements to support the management of IT integrally and follow up the goals and strategies of organizations that have responsibility [2]. Another definition of IT governance is the decision making that ensures the allocation of IT usage in the organization's strategies [3].

IT governance at government institutions is critical to ensure the successful use of IT in supporting the performance of government institutions, as mandated by Presidential Instruction No. 33 of 2003 on "National policies and strategies for e-government development" [4].

To create a progressive and competitive government, Gorontalo City has a great vision "The implementation of the excellent service of Gorontalo city government to realize the prosperous, progressive, active, religious and educated of Gorontalo". In line with that vision, one of the mission related to IT field is to increase the availability of IT infrastructure in urban area by opening cyber city and techno park area, as well as organizing IT-based government service program [5].

At the implementation level, the use of IT in governance needs to take into account the limitations of resources such as data, technology, facilities, and human resources including the fact that IT is relatively costly in its utilization. Limited resources is then an important factor the need for IT governance governing the use of IT in government organizations. IT governance in the process of data management is less good will cause some problems that are weaknesses that will cause threats such as the occurrence of loss, destruction, theft and tapping of important data company or organization.



Based on that, it is necessary to do an analysis of IT needs for the government of Gorontalo city through the measurement of maturity level of IT governance so that it can be known the level of IT governance maturity that runs in Gorontalo city government institutions. In measuring the maturity level of IT governance it will be used COBIT (Control Objective for Information and Related Technology) which is a framework that provides a standard within the framework of a domain consisting of a set of IT processes that represent controllable and structured activities [6] [7] [8].

COBIT is an integrated framework for alignment between IT resource management and organizational objectives with the direction of integration and risk associated with IT and is an IT governance management concept addressed to management, IT service staff, departmental control, audit functions and business process owners for confidentiality, integrity and availability of sensitive and critical data and information [9] [10].

## 2. Method

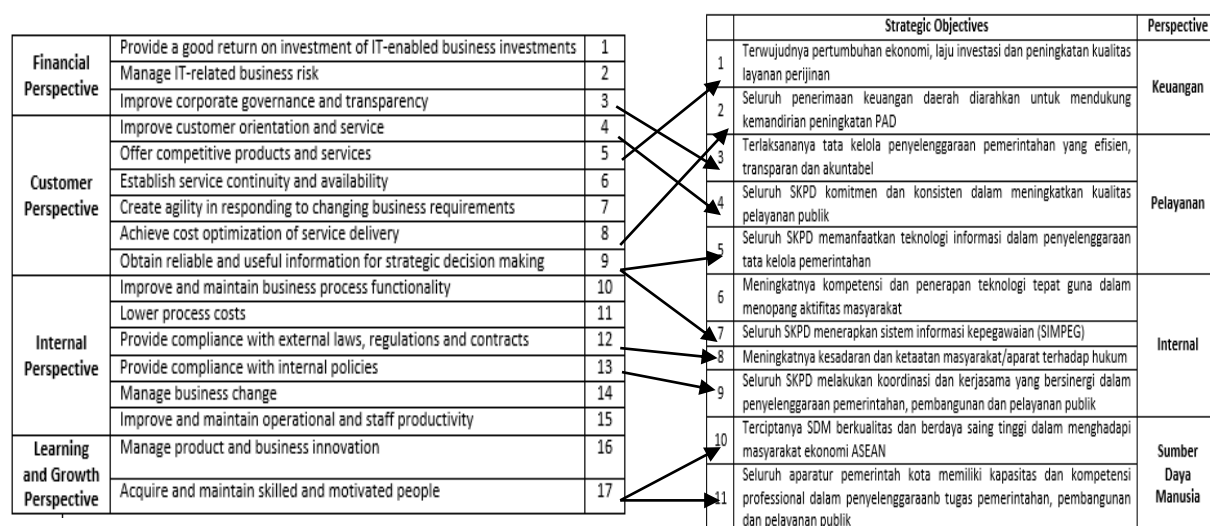
This research method using case study method by conducting survey, collecting data through questionnaire questionnaire and interview related support of information technology service at government institutions of Gorontalo City. There are four stages in this research that is 1). Surveying and data collection, 2). Preparation of Information Technology Governance Framework, 3). Measurement of Information Technology Governance, 4). Information Technology Governance Analysis.

## 3. Results and Discussion

### 3.1. The Result of Compilation of IT Governance Framework

Referring to the COBIT standard 4.1 the scope of information technology governance is divided into several stages of the process: Identification of Business Goals, IT Goals Identification, IT Process Identification and Identification of Control Objectives.

#### 3.1.1. Identification of Business Goals



**Figure 1.** COBIT Business Goals Linkage with strategic goals the government of Gorontalo City

Referring to figure 1 on the linkage between COBIT business goals and strategic goals the government of Gorontalo City can be seen from four perspectives that exist, that the priority of business target relationship is in the perspective of service and human resource. This indicates that the

government of Gorontalo City wants to improve the service to the society and want to increase the capacity and competence of the government employs to create good and quality governance.

### 3.1.2. IT Goals Identification

**Table 1.** Mapping business goals with IT goals of Gorontalo City Government

Perspective	Business Goals COBIT							
Financial	3	Improve corporate governance and transparency	2	18				
	4	Improve customer orientation and service	3	23				
	5	Offer competitive products and services	5	24				
Customer	8	Achieve cost optimization of service delivery	7	8	10	24		
	9	Obtain reliable and useful information for strategic decision making	2	4	12	20	26	
Internal	12	Provide compliance with external laws, regulations and contracts	2	19	20	21	22	26 27
	13	Provide compliance with internal policies	2	13				
Learning and Growth	17	Acquire and maintain skilled and motivated people	9					

Based on the results of the mapping in Table 1, the COBIT IT goals identified in the Gorontalo City Government as described in table 2. the following :

**Table 2.** IT goals identified in the government of Gorontalo City

2	Respond to governance requirements in line with board direction
3	Ensure satisfaction of end users with service offerings and service levels
4	Optimize the use of information
5	Create IT agility
7	Acquire and maintain integrated and standardized application systems
8	Acquire and maintain an integrated and standardized IT infrastructure
9	Acquire and maintain IT skills that respond to the IT strategy
10	Ensure mutual satisfaction of third-party relationships
12	Ensure transparency and understanding of IT cost, benefits, strategy, policies and service levels
13	Ensure proper use and performance of the applications and technology solutions
18	Establish clarity of business impact of risk to IT objectives and resources
19	Ensure that critical and confidential information is withheld from those who should not have access to it
20	Ensure that automated business transactions and information exchanges can be trusted
21	Ensure that IT services and infrastructure can properly resist and recover from failures due to error, deliberate attack or disaster
22	Ensure minimum business impact in the event of an IT service disruption or change.
23	Make sure that IT services are available as required
24	Improve IT's cost efficiency and its contribution to business profitability
26	Maintain the integrity of information and processing infrastructure
27	Ensure IT compliance with laws, regulations and contracts

3.1.3. *IT Process Identification.* At this stage, the results of the identification of IT processes selected in accordance with the IT Goals applicable in the Government of Gorontalo City.

**Table 3.** Result of Identification IT Process

IT Process	IT Domain
PO1, PO4, PO7	Plan and Organize
AI3, AI4	Acquire and Implementation
DS1, DS4, DS7	Deliver and Support
ME1	Monitor and Evaluation

3.1.4. *Identification of Control Objectives.* Based on the research that has been done there are 9 processes and 62 detailed control objectives

### 3.2. The Result of Measurement of Maturity Level from Selected IT Process

The calculation of the maturity level of the selected IT process is done gradually for each IT process by using COBIT 4.1-Maturity Tools. Table 4. Below shows the weight of each level of maturity

**Table 4.** Weight of the level maturity of each process

No	Value of Maturity	Description of Maturity
0	0 – 0.50	Non-Existent
1	0.51 – 1.50	Initial/Ad Hoc
2	1.51 – 2.50	Repeatable but Intuitive
3	2.51 – 3.50	Define Process
4	3.51 – 4.50	Managed and Measurable
5	4.51 – 5.00	Optimised

Furthermore, for each selected IT process will be presented in Table 5 which is the result of maturity level calculation on IT governance that runs on the government of Gorontalo City.

**Table 5.** The Value of the maturity level of the selected IT Process

No	IT Process	IT Process Description	Value of Maturity (existing condition)	Level of Maturity (existing condition)	Description of Maturity Level
1	PO1	Define a strategi IT Plan	3.30	3	Define Process
2	PO4	Define the IT process, Organisation and Relationships	2.35	2	Repeatable but Intuitive
3	PO7	Manage IT Human Resource	2.48	2	Repeatable but Intuitive
4	AI3	Acquire and Maintain IT Technology Architecture	2.15	2	Repeatable but Intuitive
5	AI4	Enable Operation and Use	2.80	3	Define Process
6	DS1	Define and Manage Service Levels	1.20	1	Initial
7	DS4	Ensure Continuous Service	1.15	1	Initial
8	DS7	Educate and Train Users	2.40	2	Repeatable but Intuitive
9	ME1	Monitor and Evaluate IT Performance	0.85	1	Initial

Based on table 5 it can be seen that the value of maturity level of each selected IT process is mostly at level 2 i.e. there are 4 processes (PO4, PO7, AI3 and DS7). Which get the highest level (level 3) that is on process of PO1 and AI4. While there are 3 processes at the lowest level (level 1) i.e. the process DS1, DS4 and ME1.

**Table 6.** The result of the compilation of the IT Process findings

	IT Process Code	Level of Maturity	Compilation of Findings
Domain PO	PO1. Define a strategic IT	Define Process	1. The institution has formal and written standard procedures in defining IT strategy and has been socialized to all parts to be obeyed and worked on. 2. It still allows the occurrence of many irregularities, because there is no supervision in running the procedure.
	PO4. Define the IT process, Organisation & Relationships	Repeatable but Intuitive	1. The institution already has an IT organizational structure but has not yet elaborated on duties and responsibilities 2. There is no mapping of staff needs and skills
	PO7. Manage IT Human Resource	Repeatable but Intuitive	1. The percentage of certified IT personnel is still lacking 2. There is no list of competence and training needs on a regular basis in each institution

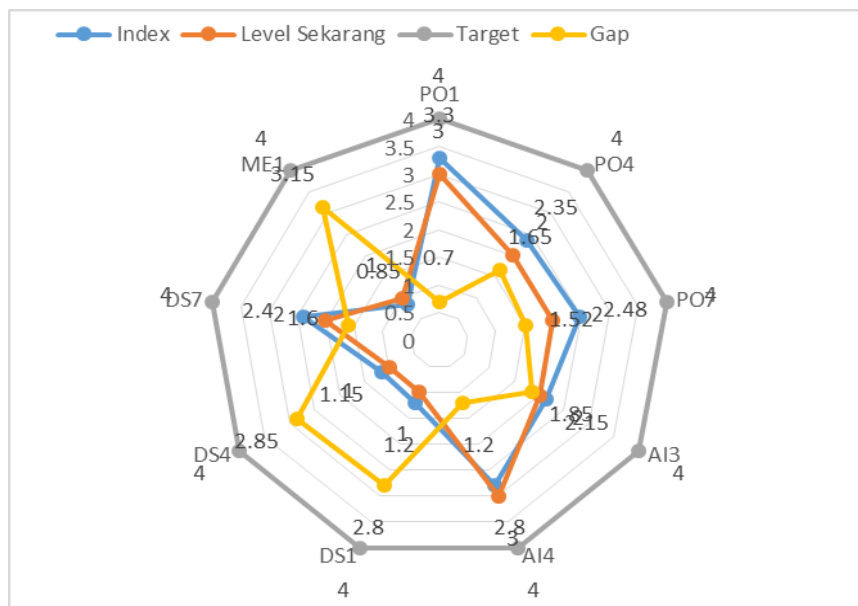
Table 6. Cont.

Domain AI	AI3. Acquire Automated Solutions	Repeatable but Intuitive	1. Institutions have planning in acquiring technology in accordance with the infrastructure plan 2. The institution has not implemented internal controls related to security and auditing measures
	AI4. Enable Operation and Use	Define Process	1. Institutions already have operational documents, user manuals, technical and administration 2. Many applications are stand-alone and not yet integrated in various business processes
Domain DS	DS1. Define and Manage Service Levels	<i>Initial</i>	1. Institutions already has formal procedures for managing service levels 2. The service level management process is still manual 3. Undefined responsibility and accountability of service management
	DS4. Ensure Continuous Service	<i>Initial</i>	1. There is no document of contingency test result and backup plan document and storage protection 2. No service requirement document in the event of an incident
	DS7. Educate and Train Users	Repeatable but Intuitive	1. Institutions have been aware of the need for education and training programs and are being developed 2. There is no standard and documentation related to the training curriculum 3. Lack of monitoring and reporting on the effectiveness of training
Domain ME	ME1. Monitor and Evaluate IT Performance	<i>Initial</i>	1. There is no document and standard of IT performance planning in every institution 2. There is no measurement of IT performance on each institution

### 3.3. Gap Analysis / Gap Maturity Level of Selected IT Process

**Table 7.** The result of the compilation of the IT Process findings

No	IT Process	IT Process Description	Assessment of maturity level			
			Index	Level Exist	Target	Gap
1	PO1	Define a strategi IT Plan	3.30	3	4	0.7
2	PO4	Define the IT process, Organisation and Relationships	2.35	2	4	1.65
3	PO7	Manage IT Human Resource	2.48	2	4	1.52
4	AI3	Acquire and Maintain IT Technology Architecture	2.15	2	4	1.85
5	AI4	Enable Operation and Use	2.80	3	4	1.2
6	DS1	Define and Manage Service Levels	1.20	1	4	2.8
7	DS4	Ensure Continuous Service	1.15	1	4	2.85
8	DS7	Educate and Train Users	2.40	2	4	1.6
9	ME1	Monitor and Evaluate IT Performance	0.85	1	4	3.15



**Figure 2.** Gap Level Diagram Maturity Level

### 3.4. Discussion

In this research produce a measurement value of maturity level of IT governance at government of Gorontalo City. Acquisition of the value of this maturity level refers to the application of the COBIT 4.1 framework. Referring to Gap maturity level produced, the government of Gorontalo City should be willing to cover the gap of the existing gap so that all IT resources owned can be managed optimally, and all business processes in the government of Gorontalo City more effective and efficient, accordingly with strategic objectives that have been established through the vision and mission the government of Gorontalo City. The following recommendations are given from this study to be improved by the government of Gorontalo city so as to increase the value of maturity.

### 4. Conclusion

Based on the result of this research, can be described the conclusion as follows:

1. IT management in the government of Gorontalo city has not been run in accordance with the government's strategic plan, although the government has standard procedure which defines IT implementation strategy
2. There is still a lack of supervision in carrying out the procedure causing frequent occurrence of various deviations in planning and management of IT
3. To measure the maturity level of IT governance in the government of Gorontalo city, the results of the evaluation show that there are still many business processes running at the bottom level, where from 9 processes there are 4 processes at level 2 (Repeatable but Intuitive) and 3 processes are at level 1 (Initial / Ad Hoc)
4. It needs a comprehensive improvement effort from the government of Gorontalo City to the policies, management, and IT resources to produce a good and quality IT governance

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