# INFORMATION TECHNOLOGY GOVERNANCE IN ADVISORY AND ECONOMIC DEVELOPMENT SECTOR USING COBIT 5 FRAMEWORK

**Arie Vatresia[*1], Ruvita Faurina[2], Diky Kurnia Ramadhan[3]**

[1,2]Informatika, Fakultas Teknik, Universitas Bengkulu, Indonesia
[3]Sistem Informasi, Fakultas Teknik, Universitas Bengkulu, Indonesia
Email: [1]arie.vatresia@unib.ac.id, [2]ruvita.faurina@unib.ac.id, [3]dikykurniaramadhan05@gmail.com

### *Abstract*

*Bank Indonesia is the central bank of the Republic of Indonesia and an independent state institution, free from interference from the Government or other parties. Bank Indonesia Bengkulu City has a field of Advisory and Economic Development, which uses information technology to handle and assist operational activities. However, there is no clarity regarding the level of the company's ability to manage information technology. This has an impact on the use of IT that is not in line with company goals. Based on these problems, it is necessary to have a capability level in managing information technology using the COBIT framework, to assist companies in utilizing IT to be in line with company goals, through improving quality and value and simplifying the implementation of an organization's process flow from the information technology perspective. So the researchers chose COBIT as the framework that will be used in this research. From the results of the study, it was obtained that the Capability level got a level 4 value for the as is state. Meanwhile, for the condition of Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector, it expects to reach level 5. Gap analysis is determined by the condition of the current level with the expected level, where the current level is 4 and the expected level is 5 so that the results obtained The analysis gap is 1. This means that Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector must meet the requirements for process capability indicators at level 5 which have not been met. Such as constantly developing new technologies through innovative ideas based on the company's information technology potential.*

**Keywords**: *Bank Indonesia, Capability Level, COBIT, Gap, IT Governance.*

# TATA KELOLA TEKNOLOGI INFORMASI DALAM PEMBIMBINGAN DAN SEKTOR PEMBANGUNAN EKONOMI MENGGUNAKAN KERANGKA COBIT 5

### Abstrak

Bank Indonesia adalah bank sentral Negara Republik Indonesia dan lembaga negara yang mandiri, bebas dari campur tangan Pemerintah atau pihak lain. Bank Indonesia Kota Bengkulu memiliki bidang Pembinaan dan Pengembangan Ekonomi yang memanfaatkan teknologi informasi untuk menangani dan membantu kegiatan operasional. Namun, belum ada kejelasan mengenai tingkat kemampuan perusahaan dalam mengelola teknologi informasi. Hal ini berdampak pada penggunaan TI yang tidak sejalan dengan tujuan perusahaan. Berdasarkan permasalahan tersebut, maka diperlukan adanya tingkat kapabilitas dalam mengelola teknologi informasi dengan menggunakan framework COBIT, untuk membantu perusahaan dalam memanfaatkan TI agar sejalan dengan tujuan perusahaan, melalui peningkatan kualitas dan nilai serta penyederhanaan pelaksanaan alur proses organisasi. dari perspektif teknologi informasi. Maka peneliti memilih COBIT sebagai framework yang akan digunakan dalam penelitian ini. Dari hasil penelitian diperoleh bahwa tingkat Capability mendapat nilai level 4 untuk keadaan apa adanya. Sedangkan untuk kondisi Bank Indonesia Provinsi Bengkulu di Bidang Pembinaan dan Pengembangan Ekonomi diperkirakan mencapai level 5. Analisis kesenjangan ditentukan oleh kondisi level saat ini dengan level yang diharapkan, dimana level saat ini adalah 4 dan level yang diharapkan. level 5 sehingga diperoleh hasil Analisis gap adalah 1. Artinya Bank Indonesia Provinsi Bengkulu pada Bidang Pembinaan dan Pengembangan Ekonomi harus memenuhi persyaratan indikator kapabilitas proses pada level 5 yang belum terpenuhi. Seperti terus mengembangkan teknologi baru melalui ide-ide inovatif berdasarkan potensi teknologi informasi perusahaan.

**Kata kunci**: *Bank Indonesia, Capability Level, COBIT, Gap, IT Governance.*

## 1. INTRODUCTION

The development of increasingly advanced information technology systems causes changes in roles ranging from the role of efficiency, to the role of strategy. Currently, information technology is an important part for companies to meet the needs and support the achievement of the company's strategic plans. This provides an advantage in competing, increasing efficiency, time, and reducing expenses, which is a very important role of information technology in today's business area. Judging from the very important function and role of information technology, there is a need for information technology governance that can manage information technology well. This aims to increase the optimal benefits obtained from information technology projects and can manage risks related to information technology [1][2].

Information technology governance emphasizes who is authorized and responsible for decision making. What are the procedures for making and monitoring the implementation of these decisions, as well as what decisions must be taken so that there is alignment between business and IT with effective use of IT [3]. Information technology governance is a process that guides and manages investments as well as IT-related decisions within the company in order to achieve goals [4], [5]. Based on Bank Indonesia regulation Number: 9/15/PBI/2007 states that "Information Technology is a valuable asset for the Bank, so its management is not only the responsibility of the Information Technology operating unit, but also all parties who use it". This is done to increase the usability of information technology and approaches that increase the value of the utilization and management of information technology.

Bank Indonesia Bengkulu City has a field of Advisory and Economic Development, which uses information technology to handle and assist operational activities. However, there is no clarity regarding the level of the company's ability to manage information technology. This has an impact on the use of IT that is not in line with company goals. Based on these problems, it is necessary to have a capability level in managing information technology using the COBIT framework, to assist companies in utilizing IT to be in line with company goals, through improving quality and value and simplifying the implementation of an organization's process flow from the information technology perspective. So the researchers chose COBIT as the framework that will be used in this research. The COBIT version that will be used is COBIT 5, because it supports a unit or entity in creating optimal value from IT by maintaining a balance between awareness of benefits, optimization of risk levels and use of resources.

## 2. METHODS

This study uses qualitative and quantitative methods, in the study there are primary data and secondary data is the data needed for research on information technology governance. Primary data were obtained from observations, interviews and questionnaires filled out by employees of Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector. While secondary data obtained from various existing sources such as literature studies, and the results of research that has been done previously.

### 2.1. Data Processing Method

This study uses primary data with the method of collecting data through the questionnaire method. The questionnaire contains a written statement given to respondents at Bank Indonesia Bengkulu Province in the field of Advisory and Economic Development. The statement made in the questionnaire refers to the COBIT 5 framework with the taken domain being APO (Align, Plan and Organise). The data processing method used is by using the COBIT 5 framework, namely by calculating the capability level from the questionnaire results. This Likert scale is used to calculate the level of each statement in the COBIT 5 process, where the scoring is based on the provisions as in Table 1 the Likert scale score.

Table 1 Score Skala Likert [6]

| No | Skala Likert | Indeks |
|----|--------------|--------|
| 1 | Strongly agree | 5 |
| 2 | Agree | 4 |
| 3 | Doubtful | 3 |
| 4 | Disagree | 2 |
| 5 | Strongly Disagree | 1 |

The results of the questionnaire calculations are recapitulated to be able to represent the percentage and Capability Level [6], [7]. Then it can be explained by the assessment formula for Calculating the Recapitulation of Questionnaire Answers with equation (1):

$$C = \frac{H}{JR} \, x100\% \qquad (1)$$

Where,
C : Recapitulation of answers to the Capability Level questionnaire (in the form of percentages for each answer choice a, b, c, d, e or f in each activity).
H : The number of answers to the Capability Level questionnaire for each answer choice of level 0, 1, 2, 3, 4 or 5 in each activity.
JR : Number of Respondents/Resources
And the formula for calculating the value and level of capability is describe in equation (2).

$$NK = \frac{(LPxNk)0 + (LPxNk)1 + \cdots + (LPxNk)5}{100} \qquad (2)$$

Where,

NK : Maturity Value

LP : Level percentage (percentage level in each distribution of caspability level questionnaire answers)

Nk : The maturity value listed in the answer mapping table, value and maturity level.

## 2.2. Data analysis method

The method of analyzing information technology governance data in this study using the Assessment Process Activities is the activity stages in the capability level assessment process for companies [8].

1. Initiation

At this stage, primary data collection is carried out with the aim of explaining the identification results from information obtained directly from Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector such as an overview of the Bank Indonesia Bengkulu Province organization in the Advisory and Economic Development Sector which assists in the process of determining the domain process. COBIT 5.

2. Planning the Assessment

At this stage the researcher plans to determine the respondents who will be involved in the process of measuring the capability level which aims to obtain the results of the capability level assessment.

3. Briefing

At this stage, an explanation process is carried out to parties involved in the capability level process at Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector, where the parties who are given an explanation are respondents who are involved in the assessment process in managing information technology.

4. Data Collection

At this stage the researcher identifies the output requirements for each process that will be carried out at Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector according to COBIT 5 to prove the fulfillment of the capability level that has been achieved in the specified process domain so that the scope of the process is assessed based on evidence. objective.

5. Data Validation

At this stage the researcher validates the findings shown by the respondents according to the domain process that has been determined by ensuring that the documentation submitted by the respondents is accurate data and sufficiently covers the scope of the assessment.

6. Proses Attribute Level

At this stage, the researcher recapitulates all existing processes in the domain process that has been set in stages on the predetermined domain process whether the process has met the requirements for documentation that must be met at each level, the assessment is carried out based on data that has been validated at each level. previous stage.

7. Reporting the Result

At this stage the researcher will report the results of the information technology governance capability level in the form of findings, activities for each process, and gaps that aim to provide recommendations proposed by researchers to improve existing deficiencies based on research results in accordance with the COBIT 5 framework.

## 3. ANALYSIS

COBIT 5 is a suitable method for the purpose of assessing process capability, there is a mechanism to translate specific Stakeholder needs, organizational goals (Enterprise Goals), implementable and customized IT-related goals that will set specific goals at each level, and every area of the company in supporting the organization's processes to effectively support the alignment between organizational needs, IT solutions and services [9], [10]. At this stage it is used in determining the domain that will be used by researchers.

### 3.1. Mapping Enterprise Goals

At this stage, stakeholder needs are related to several general goals. To obtain IT-related goals (IT-Related Goals), Enterprise Goals mapping is carried out in accordance with the 17 (seventeen) IT-Related Goals COBIT 5 which consists of 4 dimensions of the balanced scorecard, which oversees organizational goals that are in line with organizational goals and the relationship between the three core organizational goals (realization of profits, optimization of risks, and optimization of resources) [11], [12]. Strategic target mapping is carried out using the BSC based on four perspectives, namely financial, customer, internal business process, and learning & growth. From the mapping results, 11 COBIT 5 Enterprise Goals obtained (EG1: Stakeholder value of business investment; EG2: Portfolio of competitive products and services; EG3: Managed business risk (safeguarding of assets); EG5: Financial transparency; EG7: Business services continuity and availability; EG8: Agile responses to a changing business environment; EG9: Information-based strategic decision making; EG14: Operational and staff productivity; EG15: Compliance with internal policies; EG16: Skilled and motivated people; EG17: Product and business innovation culture)

### 3.2. Mapping IT-Related Goals with Enterprise Goals

After knowing the Enterprise Goals according to COBIT 5 which are in accordance with the

strategic objectives of Advisory and Economic Development, then these goals are mapped to IT-Related Goals according to COBIT 5. To obtain IT-related goals, Enterprise Goals are mapped in accordance with the 17 IT-Related Goals COBIT 5. From the results of the Enterprise Goals mapping category which was selected by selecting a process categorized as Primary "P", it was entered into the IT-Related Goals mapping table[4]. Obtained IT-Related Goals 1–17 which will be continued to Process mapping.

### 3.2. Mapping Process Control with IT-Related Goals

After determining the IT objectives, then a mapping will be carried out between the IT objectives and the IT processes in COBIT 5. In this mapping, the primary "P" COBIT 5 processes will be selected. Mapping Process Control is the last stage of the process in determining the domain category to be used by researchers. Process Control mapping is carried out by re-inputting the results of mapping IT-Related Goals with Enterprise Goals, namely IT-Related Goals 1–17.

Based on the results of the mapping that has been done, there are 13 domain processes that have a primary scale where the goals related to IT are the main support for company goals. The thirteen process domains (APO01 Manage IT Management Framework; APO02 Manage Strategies; APO03 Manage Enterprise Architecture; APO04 Manage Innovation; APO05 Manage Portfolios; APO06 Manage Budgets and Costs; APO07 Manage Human Resources; APO08 Manage Relationships; APO09 Manage Service Agreement.; APO10 Manage Supplier; APO11 Manage Quality; APO12 Manage Risk; APO13 Manage Security)

## 4.    RESULTS AND DISCUSSION

### 4.1. Research Flowchart
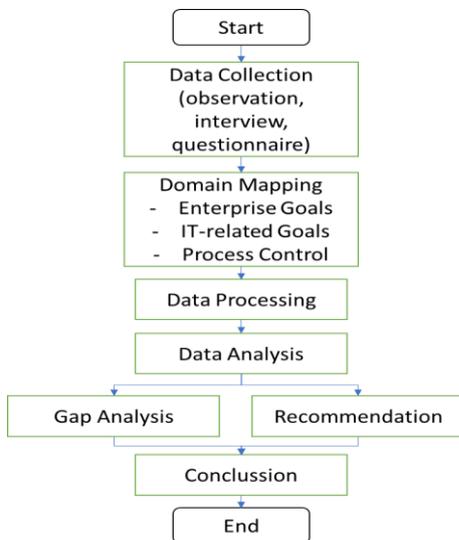


Figure 1. Research Flowchart

In the data collection steps to collect data and information as supporting data in order to identify the object of research and assist in knowing what the organization's expectations are in the future, as well as determining the domain that will be used in this research. The following are the results of the Initiaion stage that the researchers obtained in Figure 1.

### 4.2. Determination of APO Value and Capability level

It can be concluded in table 2, that the level of capability of Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector in managing IT is on average at level 4. Meanwhile, the Advisory and Economic Development Sector wants to improve IT management to level 5. With the hope that IT management processes in the field of Advisory and Economic Development in the future can be continuously improved. The current condition of IT management owned by Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector with the expected conditions, creates a gap in the level of capability.

Table 2. APO Capability Level

| Process | Process Name | Capability Value | | Capabilities Level | |
|---|---|---|---|---|---|
| | | As is | To Be | As is | To Be |
| APO01 | Manage IT Management Framework | 3,53 | 4,62 | Level 4 | Level 5 |
| APO02 | Manage Strategies | 3,54 | 4,66 | Level 4 | Level 5 |
| APO03 | Manage Enterprise Architecture | 3,55 | 4,65 | Level 4 | Level 5 |
| APO04 | Manage Innovation | 3,54 | 4,66 | Level 4 | Level 5 |
| APO05 | Manage Portfolios | 3,55 | 4,7 | Level 4 | Level 5 |
| APO06 | Manage Budgets and Costs | 3,6 | 4,75 | Level 4 | Level 5 |
| APO07 | Manage Human Resources | 3,54 | 4,70 | Level 4 | Level 5 |
| APO08 | Manage Relationships | 3,6 | 4,75 | Level 4 | Level 5 |
| APO09 | Manage Service Agreement | 3,65 | 4,8 | Level 4 | Level 5 |
| APO10 | Manage Supplier | 3,55 | 4,6 | Level 4 | Level 5 |
| APO11 | Manage Quality | 3,54 | 4,70 | Level 4 | Level 5 |
| APO12 | Manage Risk | 3,55 | 4,75 | Level 4 | Level 5 |
| APO13 | Manage Security | 3,55 | 4,7 | Level 4 | Level 5 |

It can be concluded in table 3, that the gap is determined from the condition of the current level with the expected level, where the current level is 4 and the expected level is 5 so that the result of the gap analysis is 1.

Table 3. Gap results in current and expected conditions

| Process | APO Domain Process Description | Conditions in the Advisory and Economic Development Sector | | |
|---------|-------------------------------|-------|-------|-----|
| | | As is | To Be | Gap |
| APO01 | Manage IT Management Framework | Level 4 | Level 5 | 1 |
| APO02 | Manage Strategies | Level 4 | Level 5 | 1 |
| APO03 | Manage Enterprise Architecture | Level 4 | Level 5 | 1 |
| APO04 | Manage Innovation | Level 4 | Level 5 | 1 |
| APO05 | Manage Portfolios | Level 4 | Level 5 | 1 |
| APO06 | Manage Budgets and Costs | Level 4 | Level 5 | 1 |
| APO07 | Manage Human Resources | Level 4 | Level 5 | 1 |
| APO08 | Manage Relationships | Level 4 | Level 5 | 1 |
| APO09 | Manage Service Agreement | Level 4 | Level 5 | 1 |
| APO10 | Manage Supplier | Level 4 | Level 5 | 1 |
| APO11 | Manage Quality | Level 4 | Level 5 | 1 |
| APO12 | Manage Risk | Level 4 | Level 5 | 1 |
| APO13 | Manage Security | Level 4 | Level 5 | 1 |

Figure 3 depicts a graph of the APO (Align, Plan, and Organise) gap in the level of IT management capability in the Advisory and Economic Development Sector, where the current condition is at level 4 and the expected condition is at level 5.
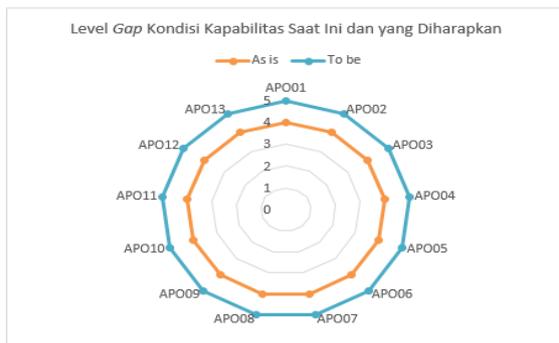


Figure 3. Graph of the gap in the level of IT management process capability

### 4.3. Gaps, and APO Recommendations

In Table 4, the calculation of the assessment that has been carried out shows that the current APO process on average is at level 4. The following table describes the gaps, and recommendations for improvement in the APO domain process.

Table 4 Gaps, and APO Recommendations

| APO Domain Process | |
|--------------------|--|
| Gap | Recommendation |
| There has been no regular checks to ensure the integrity and consistency of all information stored in electronic forms such as databases, data warehouses, and data archives. | The Advisory and Economic Development Division is recommended to conduct periodic checks to ensure the integrity and consistency of all information stored in electronic forms such as databases, data warehouses, and data archives to avoid factors such as human error. |
| When implementing new technological innovations, the company applies them according to need, not based on the interest and potential of information technology owned by the Advisory and Economic Development Division. | The field of Advisory and Economic Development is recommended to implement and develop new technologies through innovative ideas based on the company's information technology potential. |
| No research has been done on websites, journals, and conferences to identify emerging technologies. | The field of Advisory and Economic Development is recommended to expand information on new emerging technologies by conducting research on websites, journals, and conferences to quickly identify new technologies. |
| There has been no update on the documentation of guidelines and recommendations for the results of trends and innovation programs in the Advisory and Economic Development Sector. | The Advisory and Economic Development Division is recommended to continue to improve written guidance documentation for the results of trends and innovation programs. |
| There is no evaluation regarding the use of new technology in the Advisory and Economic Development Sector. | The field of Advisory and Economic Development is recommended to evaluate the use of new information technology. |

## 5. CONCLUSION

This research had described the results of the assessment of information technology management at Bank Indonesia Bengkulu Province in the field of Advisory and Economic Development of the object of research, at the pre-research stage a process mapping was carried out from Mapping Enterprise Goals, Mapping IT-Related Goals with Enterprise Goals, Mapping Process Control with IT-Related Goals obtained the scope of the APO domain, namely APO01-APO13. From the results of the study, it was obtained that the Capability level results from all selected APO scopes, both APO01 to APO13, got level 4 values for the as is state. Meanwhile, for the condition of Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector, it expects to reach level 5. Gap analysis is determined by the condition of the current level with the expected level, where the current level is 4 and the expected level is 5 so that the results obtained The analysis gap is 1. This means that Bank Indonesia Bengkulu Province in the Advisory and Economic Development Sector must meet the requirements for process capability indicators at level 5 which have not been met. Such as constantly developing new technologies through innovative ideas based on the company's information technology potential.

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