

## Application of Cobit Freamwork 4.1 Method in Information Technology Audit

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### Abstract

To Fine the performance of information technology that can easily make decisions, so that the performance of the technology used is more effective and efficient, it is necessary to carry out an information technology audit at the BPKAD office. In this study, the standard used is COBIT 4.1, Using the calculation of the Maturity Level which represents the level of technology alignment information and objectives of the Agency. The calculation of the Maturity Level value will be carried out in the Acquire and Implement (AI2, AI3, AI4, AI5) and Deliver and Support (DS7, DS10, DS12, DS13) domains. The BPKAD office already uses information technology in every process of its activities. The overall results in the agency reached level 4 (Managed). From the level results obtained, recommendations were made that could be applied by the BPKAD office to reach the desired level, namely level 5 (Optimized) so that it could support the performance of the agency to be even better in terms of information technology.

Keywords: Audit, IT , COBIT 4.1, Maturity Level, Acquire and Implement, Deliver and Support.

### 1. Introduction

The development of computer technology and information systems at this time has experienced a very rapid increase, which is in line with the public's need for information. Today's society tends to be fast in following the flow of technological developments, demanding the availability of fast, precise, and accurate information. Every agency, both government and private agencies, definitely needs an information system that can support its performance to obtain and produce information more effectively and efficiently[1]. The utilization of information technology (IT) in the government process can improve efficiency, effectiveness, transparency, and accountability of government administration. For the implementation of IT governance to run well, an organization evaluates the extent to which IT governance is running and can identify improvements that can be made[2].

The Regional Asset Financial Management Agency (BPKAD) of the city of Padang is an institution that is obliged to assist the Mayor in administering the government in the field of financial management and regional assets of the city of Padang, where all rights and obligations of the state can be valued in money, as well as everything in the form of money or in the form of money. goods that can be used as state property related to the implementation of these rights and obligations must be managed in an orderly manner and obey the laws and regulations. In this regard, BPKAD is obliged to prepare a Revised Strategic Plan based on the priority scale of development activities that can be realized by the potential and capabilities of all stakeholders in Padang City. Who in all their work

activities uses Information Technology to improve performance to remain effective and efficient.

Based on the results of interviews, in the implementation of the use of information technology at the Padang City BPKAD, several problems were found, such as the lack of experts in information technology and the non-optimal maintenance of the information system used, causing the slow handling of system improvements so that it has an impact on employee performance. Then in the use of the application, as well as the supporting processes that allow the implementation of the information technology system, it is still not effective and efficient because the resources that operate the application are not fully trained and training in the use of the application is still needed.

So that the results of the analysis can produce recommendations to improve IT governance at the Padang City BPKAD, a Maturity Level analysis is carried out. The audit was conducted using the COBIT 4.1 framework and focused on the Acquire and Implement (AI) and Deliver and Support (DS) domains. COBIT (Control Objectives for Information and Related Technology) is an IT governance framework to address the gap between technical issues, business risks and control needs. COBIT is a set of general guidelines (best practice) for IT management created by the Information Systems Audit and Control Association (ISACA) and the IT Governance Institute (ITGI). COBIT integrates good practices in managing information technology and provides a framework for IT governance that can help understand and manage risks and gain benefits related to information technology[3].

Based on the description above, to measure the maturity level of Information Technology used to support performance and productivity at BPKAD Padang City, Maturity Level analysis was carried out using the COBIT 4.1 framework, resulting in recommendations to improve IT governance at BPKAD Padang City.

## 2. Research Method

The research framework is a concept or stage that will be carried out in research. The research framework created has the aim of getting results as expected and easy to understand. The steps that will be made in this research are arranged systematically. So it is necessary to develop a research framework. The following will explain the stages of the research contained in Figure.1.

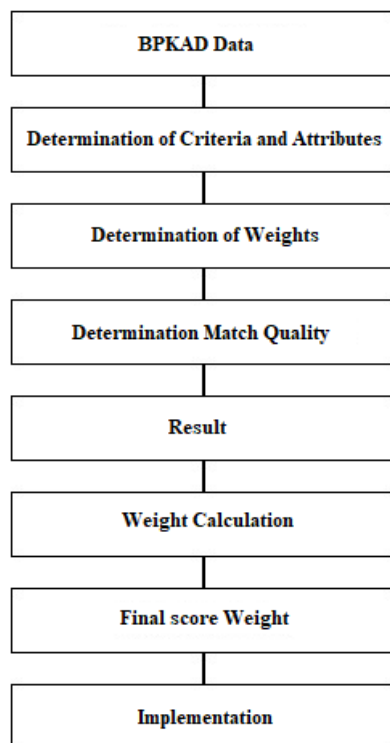


Fig. 1 Stages Of The Research

To get a good system, of course, it cannot be separated from the existing methods or methods when conducting the research process, which includes the preparation of thesis reports and in data collection which consists of three parts, namely:

### A. Field Research

This research was conducted for primary data by visiting companies/agencies to collect data or information needed in research, with data collection techniques:

### B. (Observation)

Swallowing data by making direct observations, so as to get clear information about technology, problems from using the current system.

### C. Questionnaire Method (Questionnaire)

This method is carried out by distributing questionnaire sheets to the parties concerned.

#### 2.1 Analysis

This sub-chapter will be explained analysis which consists of the analysis of the applied system, data analysis, processes, and systems. The explanation of the analysis can be described as follows:

#### A. Analysis of the applied system

Analysis of the ongoing system to find out and study the problems and weaknesses that exist in the system and determine the needs of system users.

#### B. Data Analysis

Analysis of the data obtained directly from the results of interviews and the results of the questionnaires that have been distributed. The data is in the form of an analysis of the use of the system, how the system works, and the information generated by the system.

#### C. Process Analysis

In the analysis process, the method used in this research is the COBIT 4.1 Framework to assist in analyzing the system based on the framework provided by the COBIT 4.1 Framework. Knowledge will be represented by using methods that are useful for finding conclusions about the quality of the system.

#### D. System Analysis

System analysis is the basis for planning and designing the system to be implemented. System analysis is carried out to find out and obtain measurement results from the quality of the system. This system requires some data to then measure the system.

#### 2.2 System planning

In the stages of designing this questionnaire calculation system, researchers use the Unified Modeling Language (UML) as tools in explaining the flow of program analysis, where the UML used is:

#### A. Use case diagrams

Use case diagram is modeling for the system to be made. Use cases are used to find out what functions are in the information system and who has the right to use these functions.

#### B. Class Diagram

Class diagram The relationship between classes and a detailed explanation of each class in the design model of a system, as well as the rules and responsibilities of entities that determine the behavior of the system.

#### C. Sequence Diagram

Sequence Diagram that depicts the interaction of objects in and around the system. Sequence diagrams

are used to describe the behavior of a scenario that is applied to the system to model the implementation of the programming language.

#### D. Activity Diagram

Activity diagrams describe the various streams of activity in the designed system, where each flow begins, the decisions that may occur, and how they end.

#### 2.3 Implementation System

Implementation is a stage that is carried out when the questionnaire calculation application designed is ready to be operated. Implementation aims to confirm the results of the application design, so that users can provide input to application developers.

### 3. Result and Discussion

In measuring the maturity level of the circulation system for borrowing and returning books at the Padang City BPKAD office. A questionnaire is used as a data collection method that will assess the index of each criterion in the measurements made by using the Formula. 1.

$$\text{Index} = \frac{\epsilon \text{ Answer}}{\epsilon \text{ Question}} \quad (\text{I})$$

The index creation scale has a mapping of maturity levels as follows:

1. 0.00 – 0.49 is at level 0 (Non-Existent)
2. 0.50 – 1.49 is at level 1 (Initial/Ad Hoc)
3. 1.50 – 2.49 is at level 2 (Repeatable but Intuitive)
4. 2.50 – 3.49 is at level 3 (Defined Process)
5. 3.50 – 4.49 is at level 4 (Managed and Measurable)
6. 4.50 – 5.00 is at level 5 (Optimised)

The data presented by researchers for respondents in the form of a questionnaire at the BPKAD office in the city of Padang can be seen in Table. 1.

Table. 1. Data Questionnaire

Responden	AI2		AI3		AI4		AI5		DS7		DS10		DS12		DS13		Nama Responden
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	
1	4	4	3	3	4	4	3	3	3	3	3	4	5	4	4	4	RindaRahayu
2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	WiliaKastuti
3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	FadhlaArnil
4	4	4	4	5	4	4	4	4	5	5	5	5	5	5	4	4	Benny
5	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	FikryAsyhary
6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	Andika
7	4	5	4	4	4	5	4	5	4	5	4	5	4	4	5	5	ShintaFabrian
8	5	5	5	5	5	5	5	4	5	4	4	5	4	4	5	5	YodiEkaPutra
9	5	4	4	5	5	4	5	5	2	5	4	5	5	5	5	5	ResyaRezki
10	4	4	4	4	4	4	4	4	4	4	4	5	5	4	5	4	WindaSari

Table. 4 Recommended Results

No	Domain	Index	Recommendation
1	AI2 (Acquire and Maintain	4.40	From the results obtained with the expected level of comparison, the GAP results are 0.60. So the recommendation given is that the Padang city BPKAD office has obtained

After the calculation process is carried out, the results of the calculation of each questionnaire are obtained from the total questions that have been collected by 10 respondents. The following is a method for calculating in determining the index of each domain process that has been managed, which can be seen in Table.2.

Table. 2 Maturity Level

No	Domain	Total Pertanyaan	Jumlah Skor Domain	Index
1	AI2	20	88	4.40
2	AI3	20	87	4.35
3	AI4	20	88	4.40
4	AI5	20	88	4.40
5	DS7	20	89	4.45
6	DS10	20	87	4.35
7	DS12	20	90	4.50
8	DS13	20	91	4.55
TOTAL				35.40
RATA - RATA				4.43

The following is a comparative analysis of the maturity level of 15 respondents with the target set, which can be seen in Table. 3.

Table. 3 GAP comparison

No	Domain	Index Sekarang	Diharapkan	GAP
1	AI2	4.40	5	0.60
2	AI3	4.35	5	0.65
3	AI4	4.40	5	0.60
4	AI5	4.40	5	0.60
5	DS7	4.45	5	0.55
6	DS10	4.35	5	0.65
7	DS12	4.50	5	0.50
8	DS13	4.55	5	0.45
TOTAL				4.60
RATA - RATA				0.58

From the table above, the key is that the maturity of the Acquire and Apply (AI2, AI3, AI4, AI5) and Provide and Support (DS7, DS10, DS12, DS13) sub-domains is 4.35 – 4.55 which is at level 4. The maturity level of the information technology audit at the Padang city BPKAD office using the COBIT 4.1 framework has an average of 4.43 at level 4 (Managed and Measurable), while the maturity level target achieved by the Padang city BPKAD office is level 5 (Optimized). From this comparison, it can be obtained GAP with an average of 0.58 This indicates that the target maturity level has not been achieved as expected by the Padang City BPKAD office. The results of the recommendations obtained can be seen in the Table. 4.

	Application Software)			and maintained application software properly, so it is necessary to continue to develop steps in software maintenance to make it even better.
2	AI3 (Acquire and Maintain Technology Infrastructure)	4.35		From the results obtained with the expected comparison, the GAP result is 0.65. So the recommendation given is that the BPKAD in the field of state-owned goods has developed and maintains the technological infrastructure well, but the need for infrastructure maintenance by related parties and carried out periodically for continuous better development.
3	AI4 (Enable Operation and Usage)	4.40		From the results obtained with the expected comparison, a GAP of 0.60 is obtained. So the recommendation given is that the Padang City BPKAD office has carried out operations and uses it well. It is necessary to conduct socialization related to the steps for operating and using technology to related parties. Socialization is carried out in the form of training and knowledge transfer to system users.
4	AI5 (IT Resource Procurement)	4.40		From the results obtained with the expected comparison, a GAP of 0.60 is obtained. So the recommendation given is that the Padang city BPKAD office on the procurement of IT resources must be aligned with the plans and resource needs of the BPKAD office in the field of state property.
5	DS7 (Educate and Train Users)	4.45		From the results obtained with the expected comparison, the GAP result is 0.55. So the recommendation given is that the Padang City BPKAD needs program training and user education so that the application can be utilized optimally to provide benefits for the Padang City BPKAD.
6	DS10 (Manage Problems)	4.35		From the results obtained with the expected comparison, the GAP result is 0.65. So the recommendation given is the BPKAD office in the field of state property which needs to be understood about the benefits of problem management, any possible problems that have occurred, and documenting any problems that have been resolved with the aim of increasing employee productivity in order to move towards a better direction.
7	DS12 (Managing Physical Environment)	4.50		From the results obtained with the expected comparison, a GAP of 0.50 is obtained. So the recommendation given is the Padang city BPKAD office the need for environmental control carried out by the operational section. In carrying out control and supervision, it is necessary to allocate funds with the aim of assisting the maintenance and protection of important assets. The need to protect and maintain the physical environment with security procedures both in terms of hardware and personnel.
8	DS13 (Managing Operations)	4.55		From the results obtained with the expected comparison, the GAP is 0.45. So the recommendation given is that the Padang city BPKAD office needs to increase understanding of the importance of operational roles supported by more active management and implementation of procedures to protect sensitive outputs, as well as the need for instructions on what to do and when to do it. Management can be done by carrying out routine, scheduled management, and clear assignment placements.

#### 4. Conclusion

After researching the application of the COBIT 4.1 method in an information technology audit at the Padang City BPKAD office, based on the data obtained and analyzed that has been done, the authors can conclude, including: It can be seen that the maturity level of the subdomains AI2, AI3, AI4, AI5, DS7, DS10, DS12, DS13 is in the range of 4.35 – 4.55 which is at level 4 (Managed and Measurable). And the GAP value of subdomain AI2, AI3, AI4, AI5, DS7, DS10, DS12, DS13 is in the range of 0.58 with the target maturity level to be achieved by the Padang City BPKAD office is level 5 (Optimised). This shows that the performance of technology governance at the Padang City BPKAD office needs to be further improved so that information technology governance at the Padang City BPKAD office becomes more optimal.

It can be seen that the maturity level of the information technology audit at the Padang City BPKAD office using the COBIT 4.1 framework is 4.43 at level 4 (Managed and Measurable). Meanwhile, the target maturity level that the BPKAD office wants to achieve in the city of Padang is level 5 (Optimised). From this comparison, a GAP of 0.58 can be obtained, this indicates that the maturity level target has not been achieved as expected by the Padang city BPKAD office.

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