

Information System Audit for Tangerang Live Application Using Cobit 5 Domain EDM dan APO Framework

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Abstract

The Central Government has the ambition to make Indonesia the fourth-largest in the world's economic power through the vision of Indonesia Emas 2045. To achieve this goal, there is a need for the improvement of public services and rapid restructuring of population administration. Within this framework, Tangerang Live, introduced by the Tangerang City Government on August 17, 2016, is designed to provide online services in the fields of population, education, and healthcare. The success of public services is measured as an indicator of Good Governance, with more than 500 thousand users currently, and downloads show an increase influenced by the quality of services and initiatives from the Tangerang City Communication and Informatics Agency. This research aims to evaluate the implementation of IT governance in Tangerang Live, with data collection using Literature Review and Questionnaire through Gform with 24 respondents. This research method refers to the COBIT 5 model, focusing on two COBIT 5 domains, namely EDM and APO, consisting of five subdomains: EDM02, EDM03, APO04, APO05, and APO11. The results of the information system audit on Tangerang Live show an average Maturity Score of 3.77, with details of EDM02 3.74, EDM03 3.75, APO04 3.94, APO05 3.61, and APO11 3.82. In conclusion, the scores generated are at level 4 (managed), indicating that the overall implementation of information technology is quite good, although there are some recommendations for improvement, especially in the APO05 subdomain related to user data management and the efficiency of data usage. These improvements are necessary to enhance the quality of services for Tangerang Live users.

Keywords — COBIT 5, Tangerang Live, Evaluation of IT Governance Implementation

1. INTRODUCTION

According to information from the official website (setkab.go.id, 2017), the Central Government conveyed the vision of Indonesia Emas 2045, where Indonesia has the ambition to become the fourth largest in the world's economic power. To support the achievement of this goal, improving public services is needed, such as the arrangement of population administration that emphasizes the speed of service as the main urgency because it directly meets the needs of the community. This phenomenon shows the need for reliable technology, along with the development of technology in the millennium era which is not only sophisticated but also provides various benefits. However, it must be acknowledged that negative impacts such as the replacement of humans by technology also arise.

One of the applications listed on the Google Play Store is Tangerang Live, launched by the Tangerang City Government on August 17, 2016 (<https://tangerangkota.go.id>, 2016). This application aims to provide online services for population, education, and health access in Tangerang in accordance with Regulation No. 63/KEP/M.PAN/7/2003 (<https://peraturan.bkpm.go.id>, 2011). The success of quality public services is an indicator of Good Governance, paying attention to the demands and dynamics of society in the context of reform, democratization, decentralization, regional autonomy, and enforcement of human rights.

Up until now, Tangerang Live has been downloaded by more than 500000 current users, showing an increase compared to the first year of its launch by the Tangerang City Government (<https://tangerangkota.bps.go.id>, 2018). The increase in the use of this application is influenced by the quality of the services available. The Tangerang City Communication and Informatics Office actively socializes this application, while the addition of features such as commuter line train schedules and online permits increases public enthusiasm (<https://tangerangkota.go.id>, 2019).

In evaluating the quality of the application, researchers used the EDM and APO domain approaches showing the uniqueness in understanding the core of service quality. The research team intended to test the effect of service quality on the Tangerang Live Application on user interest, adding insight into the validity of this theory in evaluating the quality of information and communication technology services other than websites.

2. THEORETICAL BASIS

2.1. Literature Review

2.1.1. Audit

According to Silvadari et al. (2021:442) "Audit is an activity that collects and examines evidence related to information to determine and make a report on the level of conformity between the information and the established criteria".

According to Zuraidah (2020:85) "Audit is the process of collecting and evaluating evidence to determine whether the information system can protect assets and existing information technology has maintained data integrity so that both can be directed towards achieving business goals effectively by using resources effectively and efficiently".

From the two definitions above, it is concluded that an audit is the activity of collecting and examining evidence of information to assess conformity with criteria. This is also an evaluation of information systems to ensure asset protection, data integrity, and the achievement of business goals effectively with efficient use of resources.

2.1.2. System

According to Sitinjak and Suwita (2020:3) "A system is a collection of elements in the form of data, data networks, networks of interrelated procedures, human resources, technology, both hardware and software, that interact as a whole to achieve certain goals/targets that are the same".

According to Arifin et al. (2022:4) "A system is a collection of elements, the following elements work together to achieve system goals, an existing element is part of another larger system. So the existence of a system is formed to handle, regulate and coordinate routine activities".

From the definition above, it is concluded that a system is a unity of elements such as data, data networks, procedures, human resources, and hardware and software technology that interact to achieve common goals. This system consists of elements that work together, and its existence aims to manage, regulate, and coordinate routine activities.

2.1.3. Information

According to Arifin et al. (2022:9) "Information is data that has been processed or data that has meaning. Information actually comes from data that is then processed so that the data has meaning for the user".

According to Zuraidah (2022:68) "Information is the result of processing data in a certain way so that it is more meaningful and useful for the recipient".

From the definition above, it is concluded that information is the result of data processing that provides meaning and benefits to the recipient, comes from data that has been processed and provides significant meaning for the user routine.

2.1.4. Information System Audit

According to Ron Weber (1999:10), "Information system audit is a process carried out to collect and evaluate all evidence. This evidence can be used to assess the ability of a computerized system to protect company assets, ensure the integrity of data processes, and achieve the company's ultimate goals by using existing resources effectively and efficiently".

According to Zuraidah (2020:85) "Information system audit is the process of collecting and evaluating evidence to determine whether the computer system used has been able to protect the organization's assets, is able to maintain data integrity, can help achieve organizational goals effectively, and use available resources efficiently".

From the definition above, it is concluded that an information system audit is the process of collecting and evaluating evidence to assess the ability of a computerized system to protect assets, ensure data integrity, and achieve company goals effectively and efficiently.

This audit focuses on ensuring that the computer system can protect assets, maintain data integrity, support the achievement of organizational goals, and use resources efficiently.

2.1.5. Maturity Index

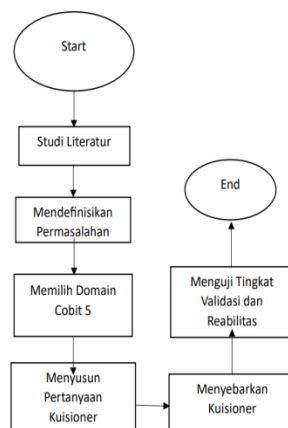
According to Sihotang (in Zuraidah, 2020) "COBIT has a maturity model to control IT processes using a scoring method so that organizations can assess their IT processes". With the maturity level model, organizations can find out their current maturity position, and must continuously and sustainably strive to increase their level to the highest level so that aspects of governance of information technology can run effectively. According to Sihotang (in Zuraidah, 2015) the Generic Maturity Model consists of:

- **0 - Non Existent** - The company does not care at all about the importance of information technology to be managed properly by management.
- **1 - Initial / Ad Hoc** - The company reactively implements and implements information technology according to sudden needs that exist, without prior planning.
- **2 - Repeatable but Intuitive** - The company has a pattern that is repeatedly carried out in managing activities related to information technology governance, but its existence has not been defined properly and formally so that it is consistent. there is still a lack of
- **3 - Defined** - The company has a formal and written standard procedure that has been socialized to all levels of management and employees to be adhered to and carried out in daily activities.
- **4 - Managed and Measurable** - The company has a number of indicators or quantitative measures that are used as targets or performance goals for each application of existing information technology applications.
- **5 - Optimized** - The company has implemented information technology governance that refers to "Best Practices".

3. RESEARCH METHOD

3.1. Research Stages

In this study, there are several stages in the research. The stages of the research can be seen from the image below:



Picture 1. Research Stages

3.2. Data Collection

In the data collection stage, the author conducted a data collection method with 2 methods, namely:

A. Literature Study

The literature study conducted by the author is by studying various books and journals related to COBIT 5 and the credit system as a source of relevant information so that it can be used as a guideline in this research process.

B. Questionnaire

The questionnaire was filled out by 24 respondents, namely users of the Tangerang Live Application. The purpose of filling out this questionnaire is to find out whether the Tangerang Live application is useful or not, and whether the features provided are optimal. The questionnaire contains questions that are arranged based on the COBIT 5 sub-domains as follows:

Table 1. Research Questionnaire

No	Questions
1	Can the Tangerang Live application provide significant benefits in providing online services to the public?
2	Do users feel increased efficiency and convenience in accessing services through this application?
3	Do people feel the ease of bureaucratic access when using services available at Tangerang Live?
4	Does the adoption of the Tangerang Live application by the community have a positive impact on their participation and involvement in the online services provided?
5	If there is a problem with the Tangerang Live application, should it be optimized as quickly as possible?
6	Does the developer of the Tangerang Live application provide sufficient understanding and information to users about the risks that may occur during use of the application?
7	Do you feel that the security features provided by the Tangerang Live application are sufficient to protect your privacy and information security?
8	Do the current Tangerang Live application features need to be changed to make them more user friendly when used by the public?
9	Apakah fitur pada aplikasi Tangerang Live saat ini dapat meningkatkan tingkat kenyamanan dan keefektifan penggunaan oleh masyarakat?
10	Can the features on the current Tangerang Live application increase the level of comfort and effectiveness of use by the public?
11	When registering, does the Tangerang Live application user member documentation have to contain complete data?
12	Do users feel that having complete member documentation at the time of registration provides an advantage or added value in using the Tangerang Live application?

No	Questions
13	Do you agree that portfolio management helps in optimizing resources and increasing the efficiency of using the Tangerang Live application?
14	Users can easily submit complaints for Tangerang Live Application services.
15	Input from user complaints is used as a guideline for improving the Tangerang Live Application.
16	How do you agree with the Tangerang Live application regarding the quality management provided, namely in ensuring an intuitive user interface and ease of use of the application?

3.3. COBIT 5.0 Domain Identification

How many COBIT 5.0 domains are used to analyze the level of reliability and validity of the use of the iPusnas application. The following is the identification of the Cobit 5 domains used in the study.

Table 2. Cobit 5.0 Domain Identification

Domain	Process
EDM (Evaluate, Direct and Monitor)	EDM02 (Ensure Benefits Delivery)
	EDM03 (Ensure Risk Optimisation)
APO (Align, Plan dan Organise)	APO04 (Manage Innovation)
	APO05 (Manage Portfolio)
	APO11 (Manage Quality)

3.4. Determination of Maturity Level

The next stage is determining the maturity level, at this stage the researcher analyzes the results of the questionnaire regarding the credit system used by PT Aneka Optimal. This stage aims to determine the maturity level of the credit system currently used by PT Aneka Optimal when measured by the COBIT 5 Frameworks and determine the expected level of maturity. Determination of this maturity level is based on the COBIT 5 sub-domains obtained after the author analyzed the objectives of the IT division of PT Aneka Optimal.

3.5. GAP Analysis

The next stage is to analyze the gap between the current maturity level and the expected maturity level.

3.6. Conclusion

After each stage is carried out, research results will be obtained that describe the entire research.

4. RESULT AND ANALYSIS

4.1. Tangerang Live Application Business Process

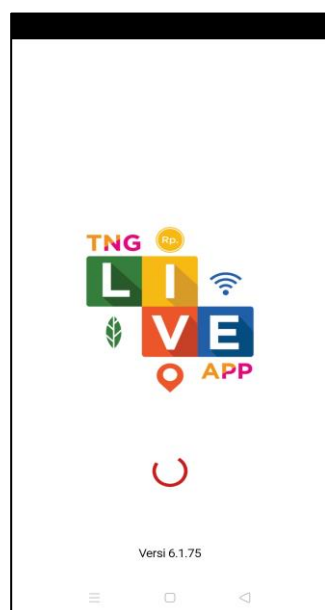
To use the Tangerang Live application, we as users must first install the application on Playstore or Appstore. After the user opens the application, the user must register himself by inputting data, namely Full name, NIK, Email, telephone number, password, upload a picture of KTP and upload a selfie holding a KTP. After registering as a member, the user waits for the verification process carried out by the admin, after which the user gets a notification that the Tangerang Live account has been verified by the admin or actively fill out the registration form to be able to enter the iPusnas application. Users are also expected to complete their personal data and photos.

After the account is activated, the user will be directed to the main page (home). On that page, users can access all the features provided by the Tangerang Live application. These features include population services, information, health, economy, Islamic, education, social welfare, emergency, statistics, and geospatial. To use the available services, users only need to click, and the system supervised by the admin will immediately respond automatically.

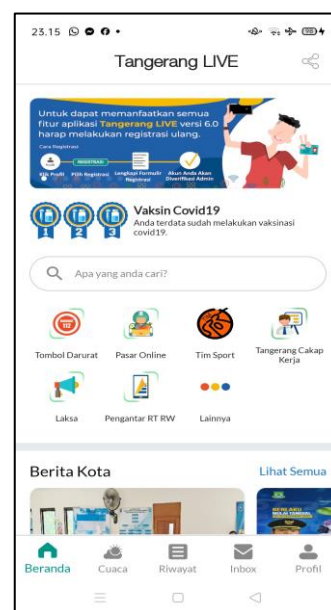
The Tangerang City Government has set the quality standard for this application at 4 (Managed), but several aspects need to be considered, especially the stability of the service and system. This is an evaluation for the Tangerang City Government to continue to improve and develop the application. All services provided are focused on the interests of the Tangerang community.

4.2. Tangerang Live Application System

The following is a picture of the digital library system, namely the mobile-based Tangerang Live Application used in this study:



Picture 2. Splash



Picture 3. Home

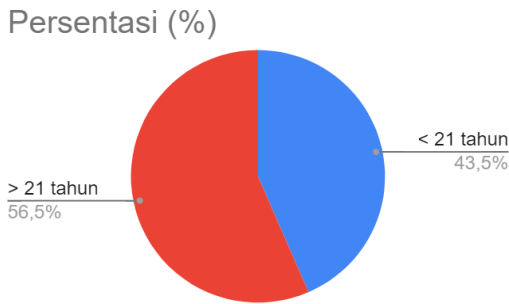
4.3. Respondent Data

Table 3 . Respondent Data

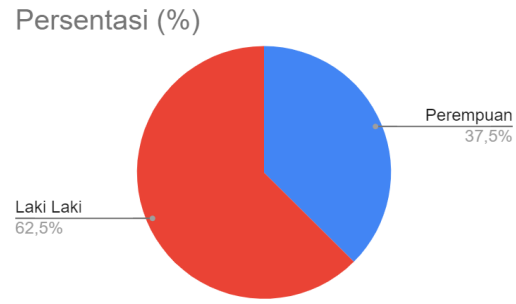
Respondent Characteristics		Frequency	Percentage (%)
Age	a. <20 Years old	10	43,48%
	b. > 21 Years old	13	56,52%
Gender	a. Female	9	37,50%
	b. Male	15	62,50%

This table explains the data from respondents who filled out the questionnaire with age and gender categories. At the age of <20 years there were 10 people, >21 years there were 13 people. Respondents who were female were 9 and male were 15 respondents. So the total number of respondents was 24 people with a percentage of each category of 100%.

The output of the pie chart shows the percentage of each age and gender that each respondent has.



Picture 4. Pie Chart Age



Picture 5. Pie Chart Gender

4.4. Maturity Level

To determine the level of maturity calculated based on the results of the questionnaire analysis of each sub-domain. The results of the calculation of the level of maturity of several Domains were obtained at level 3 (three) - Defined. It was concluded that the management of information technology that was built was then implemented in accordance with the specified process (in accordance with the standard). Further management needs to be improved and developed to achieve level 4 (four) - Optimizing Process based on the expected level of maturity as in the following table:

Table 4. Questionnaire Data

No	EDM02				EDM03			APO04			APO05			APO11		
	P1	P2	P3	P4	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
1	5	5	5	3	5	4	4	1	3	4	5	4	3	4	4	4
2	5	4	4	4	5	2	3	4	4	5	2	2	4	2	4	4

No	EDM02				EDM03			APO04			APO05			APO11		
	P1	P2	P3	P4	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
3	3	3	3	4	5	2	2	3	3	4	3	3	3	4	4	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	4	4	3	3	4	2	4	5	4	5	2	2	5	5	5	3
6	4	5	4	4	5	4	4	5	4	5	4	4	4	5	5	4
7	5	3	3	5	5	3	3	5	4	5	4	3	3	4	3	3
8	3	3	4	4	5	4	4	4	4	5	4	3	3	5	5	4
9	3	3	3	4	5	3	4	4	5	3	4	5	3	4	3	5
10	3	3	3	4	5	3	3	3	3	3	3	3	3	3	4	3
11	4	3	3	3	5	3	3	5	3	5	3	5	5	3	5	3
12	3	3	3	4	5	3	3	3	3	5	3	3	3	3	5	3
13	4	5	4	4	3	2	3	4	3	4	4	2	4	5	4	3
14	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	4
15	3	3	3	3	5	3	2	5	3	3	4	3	3	5	3	4
16	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
17	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4
18	3	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4
19	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3
20	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
21	5	5	5	5	5	5	5	5	5	5	5	5	5	3	5	5
22	4	4	4	4	5	4	4	4	4	4	4	4	4	4	3	3
23	4	4	4	4	4	4	4	5	5	5	5	4	4	4	4	4
24	3	4	4	4	3	3	4	4	3	4	3	4	3	4	4	3
Total	90	90	87	92	105	80	85	95	89	100	87	85	88	93	96	86
Question Index	3,75	3,75	3,625	3,83	4,375	3,33	3,54	3,96	3,7	4,17	3,6	3,54	3,66	3,87	4	3,58

This question index is obtained using the formula:

$$\frac{\sum (\text{Nilai Jawaban})}{\sum (\text{Responden})}$$

Note: The maturity index value is obtained by adding up all respondents' answers and then dividing by the number of respondents.

Process Domain	Process Description	Current Maturity Level
EDM02	Value Optimization	3,74
EDM03	Ensure Risk Management	3,75
APO04	Identifying innovation opportunities	3,94
APO05	Identifying Display Tactics Strategy	3,61
APO11	Defining and managing quality	3,81
Average		3,77

Source: Primary Data After Processing

Table 5. Maturity Level

The current Maturity Level is obtained using the formula:

$$\text{Maturity} = \frac{\Sigma (\text{Rata-rata Jawaban})}{\Sigma (\text{Jumlah Responden})}$$

Based on the current maturity value obtained from the results of the Tangerang Live Application user questionnaire analysis, when compared to the expected level, it turns out that there is still a gap. The gaps in each domain are then analyzed. With the hope of providing convenience for the management of information technology. This analysis shows the gap between the current maturity level and the expected maturity level, namely:

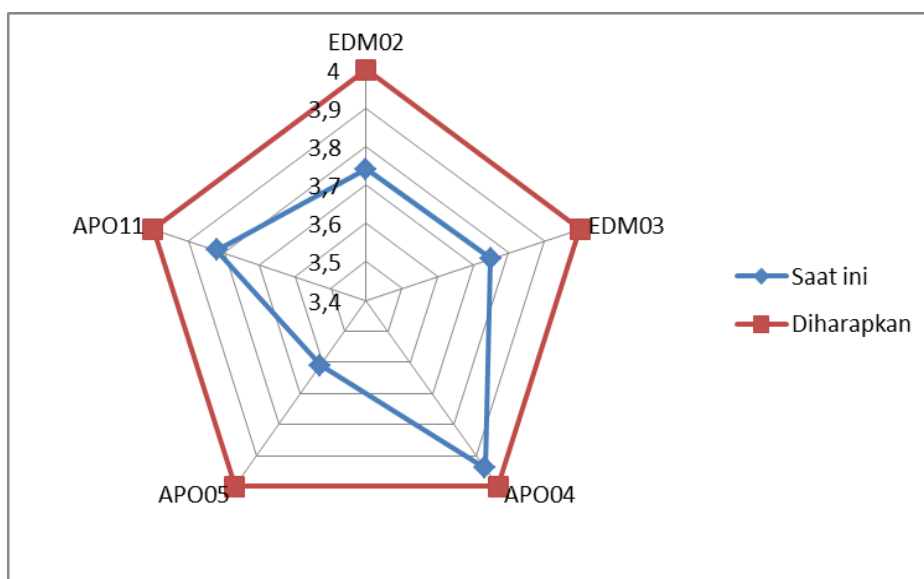
Maturity Level			
Sub-Domain Process	Current Condition	Expectacy	GAP = (Expectacy – Current Codition)
EDM02	3,74	4	0,26
EDM03	3,75	4	0,25
APO04	3,94	4	0,06
APO05	3,61	4	0,39
APO11	3,82	4	0,19
Average			0,23

Source: Primary Data After Processing

Table 6. Maturity Level

The average gap in all process domains studied is 0.23. Adjustments are needed for each process sub-domain, because the value of 0.23 is the average value of all process sub-domains, so the author will provide recommendations for each process studied, so that the recommendations for improvement given are very appropriate. The difference in the current

governance gap conditions of all process sub-domains with the expected governance can be described in the following diagram:



Picture 6. Comparison Diagram of Governance Condition Gaps

From the diagram results above, it is known that Sub Domain APO04 (Manage Innovation) or the available features are very good, then in Sub Domain EDM03, EDM02, and APO11 are quite good, so recommendations are given specifically for the Tangerang Live application in Sub Domain APO05 (Manage Portfolio) namely in managing user data and the level of efficiency of data usage. There needs to be an improvement in this regard to improve the quality of service for Tangerang Live application users.

5. CONCLUSION

Tangerang Live application, as part of the Tangerang City Government's efforts to improve public services through the use of technology. This study was conducted with the aim of evaluating the implementation of Information Technology governance in Tangerang Live, using a data collection approach through Library studies and questionnaires through Gform. The research method refers to the COBIT 5 model, focusing on two COBIT 5 domains, namely EDM and APO, covering five subdomains: EDM02, EDM03, APO04, APO05, and APO11. The results of the information system audit on Tangerang Live showed an average Maturity Score of 3.77, with details of EDM02 3.74, EDM03 3.75, APO04 3.94, APO05 3.61, and APO11 3.82. In conclusion, the resulting score is at level 4 (managed), indicating that the implementation of information technology in general is quite good, although several recommendations for improvement are given, especially in the APO05 subdomain related to user data management and data usage efficiency. This improvement is necessary to improve the quality of service for Tangerang Live users.

6. SUGGESTED

In evaluating the performance of the APO05 subdomain which has a maturity score of 3.61, there are several aspects that need special attention. This APO subdomain is closely related to user data management and data usage efficiency. With a lower maturity score compared to other subdomains, improvements and enhancements in this aspect become imperative.

Some suggestions that can be implemented to improve the performance of the APO05 subdomain are as follows:

1. It is recommended to provide premium application services to users who fill in their data completely. This can not only encourage users to provide more detailed information, but also improve the quality of the data collected.
2. Providing points or discount vouchers can be an effective incentive when users completely fill in their data, both for field rentals and other services.

These steps are expected to provide positive encouragement in improving the quality of Tangerang Live application services, making user data management more effective and efficient.

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