

Information Technology Asset Governance Analysis of Cobit 5 with Domain BAI09 Manage Assets (Case Study: A Life Insurance Company)

Samjar Berti Salasa¹, Dewi Agushinta R.², Fani Yayuk Supomo³

¹Master Program in Information System, Gunadarma University, Jakarta, Indonesia

²Information System Department, Gunadarma University, Jakarta, Indonesia

³Civil Engineering Department, Gunadarma University, Jakarta, Indonesia

E-mail : ¹samisamjar @ gmail.com, ^{2,3}{dewiar, fani_ts}@staff.gunadarma.ac.id

Abstract— Information security analysis is important to ensure the security of Information Technology (IT) assets in a company. COBIT 5 helps many companies create optimal value from IT assets by maintaining a balance between realizing benefits and optimizing the level of risk and resource use. This study aims to determine the mechanism for planning, implementing, and managing IT assets, the maturity level for the utilization of IT assets, and the concept of implementing appropriate IT asset governance to increase the productivity of an insurance company located in Jakarta. The framework used to measure the maturity level of IT asset governance is Build, Acquire, and Implement (BAI09) domain for COBIT 5. The results show that the maturity level of IT asset governance implementation mechanism in this insurance company for Domain BAI09 is at a Level 3. This indicates that the IT planning, implementation, and governance mechanisms in this insurance company are following the expected concept (ideal conditions). The maturity level of IT asset governance in this insurance company in Domain BAI09 is at Level 3 (Define Process). The maturity level of IT governance in this insurance company is in an ideal condition. The company still needs to improve to the next level by optimizing the performance of IT asset governance by providing additional tools and automation for the IT asset governance process.

Keywords— COBIT 5, BAI09, Information Technology Asset Management, Manage Assets.

I. INTRODUCTION

Information technology (IT) is the most important asset that every organization must-have. It can help increase the effectiveness and efficiency of the organization's performance. Information technology (IT) is an integrated part of the organization's business goals. Information technology applications will affect the achievement of the organization's vision, mission, and strategic goals. Proper governance is needed in order to be able to conduct supervision, monitoring and evaluation as a whole so that every IT management and management is carried out according to planning, performance, and organization goals [1].

IT assets in a company, including an insurance company, have a large capital value and greatly support the company's business processes. Assets that are well maintained can affect life which becomes more durable so that they can produce longer periods and provide benefits for the company. [2]

The reality in the field shows that many cases started from errors in asset management, which resulted in company losses.

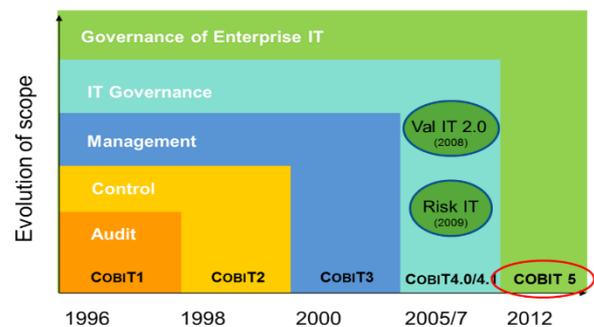
Factors that influence the process of moving IT assets in this company are :

1. User mutation from one branch to another. Users will carry the assets which contain their job data.
2. Repair of assets due to damage.
3. Assets are lost due to theft so it needs to be replaced.

Information security analysis is important to ensure the security of IT assets in a company. A framework is needed to map incidents that are likely to occur, related to information security, and handling so that these incidents can be anticipated. One of the frameworks used to measure the maturity level of IT governance is COBIT.

COBIT is a framework created by ISACA for IT management and IT governance. COBIT has a business orientation that consists of linking business goals with IT objectives, providing a matrix, and a model for performance measurement, as well as identifying business-related responsibilities and IT process holders [3].

COBIT can also be interpreted as a collection of the best documentation and guidelines for IT governance that can help and make it easier for auditors, users and managers to bridge the gap between business risks or threats, control needs and technical problems in information technology services. [4] COBIT 5 helps companies create optimal value from IT by maintaining a balance between realizing benefits and optimizing the level of risk and use of resources [5]. Regarding the measurement at the maturity level, this will be carried out in the BAI09 domain. The BAI09 Manage Assets domain is used to manage company IT assets.



An business framework from ISACA, at www.isaca.org/cobit

Figure 1. Business Framework COBIT [6]

Figure 1 showed, the COBIT5 Framework no longer uses the Maturity Level as in the previous COBIT 4.1. However, it was changed to a Capability Model which adopted from ISO/IEC 15504-2, the assessment process will be based on the level of an organization's ability to carry out the processes defined in the assessment model. [6]

Asset Management is the science and art of integrating wealth management which includes the process of planning asset needs, obtaining, investing, conducting legal audits, assessing, operating, maintaining, renewing, or removing to transfer assets effectively and efficiently. [7]

This study aims to (a) determine the mechanism for planning, implementing, and managing IT assets in insurance companies; (b) knowing the maturity level of the utilization of IT assets in the company; (c) knowing the concept of implementing IT asset governance appropriately to increase company productivity.

II. RESEARCH METHODS

Methods of data analysis using the Calculation Analysis of Process Capability Levels with the Guttman Scale (Process Capability Levels). The data analyzed refers to the results of the questionnaire rating from the level of process capability, which consists of yes or no answers. The conversion results will be normalized by dividing the total score by the number of questions at each level. After normalization, the calculation is done by dividing the total value of the answer by the number of respondents.

From the results of these calculations, the final results are obtained which are then categorized according to the capability assessment in Table 1.

TABLE 1. Capability Assessment Categories

Range Value	Capability Value	Capability Level
0 – 0,50	0,00	0 Incomplete Process
0,51 – 1,50	1,00	1 Performed Process
1,51 – 2,50	2,00	2 Managed Process
2,51 – 3,50	3,00	3 Established Process
3,51 – 4,50	4,00	4 Predictable Process
4,51 – 5,00	5,00	5 Optimizing Process

The questionnaire calculation formula uses the Guttman Scale [8]:

1. Calculating the recapitulation of respondents' answers and respondent normalization.
 - a. Calculate Average Conversion

$$R.K = \frac{nK}{\sum P_i} \tag{1}$$
 R.K is the average conversion of respondents' answers with a value of 1 for Yes and 0 for No. nK is the conversion value for each question. A conversion value consisting of 1 for Yes and 0 for no. $\sum P_i$ is the number of questions for the respondent per level (0-5).
 - b. Calculating the normalization using the formula:

$$N = \frac{\sum RK_i}{\sum RK_a} \tag{2}$$
 N is normalized. $\sum RK_i$ is the average number of conversions per level (level 0-level 5), and $\sum RK_a$ is the average number of overall conversions.
 - c. Calculating Normalization Level

$$NL = N.L \tag{3}$$

NL is the Normalization Level. N is the normalization of the average result of the conversion of respondents' answers. L is the level in each process domain which consists of levels 0-5.

2. Calculating Data Domain Capability Level
 - a. Calculating the Capability Level of Each Respondent

$$CL_i = NL_0 + NL_1 + NL_2 + NL_3 + NL_4 + NL_5$$
 CL_i = Capability level value for each respondent in each process domain
 - NL_0 = Normalized value at level 0
 - NL_1 = Normalized value at level 1
 - NL_2 = Normalized value at level 2
 - NL_3 = Normalized value at level 3
 - NL_4 = Normalized value at level 4
 - NL_5 = Normalized value at level 5
 - b. Calculate the overall Capability level for each process:

$$CLa = \frac{\sum CL_i}{\sum R} \tag{4}$$
 CLa is the capability level value in each process domain. $\sum CL_i$ is the capability level value in each process domain, and $\sum R$ is the number of respondents in each process domain.
 - c. Calculating Current Capability Level

$$CC = \frac{\sum CLa}{\sum P_o} \tag{5}$$
 CC = current capability level, $\sum CL$ is the total number of capability values in each domain, and $\sum P_o$ is the number of processes in each domain.

III. RESEARCH RESULT AND DISCUSSION

The discussion will start from determining the mechanism for planning, implementing, and managing IT assets in insurance companies, calculating the maturity level for the utilization of IT assets, and designing the concept of implementing appropriate IT asset governance to increase the productivity of the insurance company.

IT Asset Procedures

IT Asset procedure in this insurance company is to register, transfer, and dispose of company IT assets. This procedure is structured to implement the CITCC BlueBook - Section Service Management (SM3).

IT assets include tangible assets and intangible assets. According to local accounting policy, all individual tangible assets that cost more than IDR 2.5 million are capitalized as property, plant, and equipment. Classification for IT Assets needs to meet the following criteria:

- a. Non-consumable goods.
 - b. Goods are not components of IT assets that cannot be used independently.
 - c. Items considered as gifts.
- Procedures should be consulted with the IT department for guidance. If the IT asset category is not clear, IT will discuss it with CRE & WS and Finance. The objective of the IT Asset Procedure is to put in place effective controls and to ensure the consistency and proper cycle transparency of IT assets, including the operation and disposal of assets.

The scope of this procedure is the items that are classified for IT assets. This procedure does not apply to Non-IT assets, fees, gifts, items under IDR 2.5 million, and can be consumed.

Demand for IT Assets

The procedure for requesting IT assets implemented in this insurance company is carried out in three stages, as follows:

- 1) The user requests an IT asset item to IT by filling out the PC Supplies form. The approval follows company procurement guidelines.
- 2) IT will check if the requested item is available in stock. If available, the IT Asset Admin will process the request based on the Initialization process and IT transfer and provide it to the applicant.
- 3) If the requested item is not available, IT will create a Purchase Request Form (PRF) approved by the Head of IT and perform a classification for the goods whether it is an asset or non-asset. PRF was sent to CRE/ WS for the procurement process.

Initialization and Transfer of IT Assets

Every IT asset received by IT must be checked and configured according to company standards. IT will add or update the CMDB based on the current state of the IT assets. IT ensures all functions of IT assets, accessories and configurations are functioning normally.

To transfer assets, whether IT is giving IT assets to a user, or the user is returning IT assets to IT, it must use the IT Asset receipt form. IT is not responsible for user data in IT assets (if any).

Outdated IT Assets

IT assets can be categorized as Outdated Assets if they meet one of the following categories:

- a. Lost or Stolen
 - 1) Relevant staff whose assets were stolen must report, using the form of lost or stolen assets supported by chronology and local police reports (if necessary) to the IT Helpdesk, Finance, HR, Compliance and acknowledged by the Line Manager. This issue will be noted in HEAT by the IT Helpdesk.
 - 2) The standard treatment for assets that are lost, stolen, or physically damaged (total loss of function), is decided after a case by case investigation. IT, the head of the user department, HR, Finance, and Compliance (Committee) will investigate the case and follow up with an action approved by the CFO. Based on the investigation led by Compliance (Antifraud Framework), a decision will be made.
 - 3) After the investigation, if it is the user's fault, the user will have to pay a fine amount to the company. The numbers follow the information in table 2.

TABLE 2. Fines for Replacement of Lost Assets or Stolen

Value after depreciation	% Amount owed of the purchase cost
Year -1	90
Year -2	80
Year -3	75
Year -4	50

a. Damage

Whenever an asset is malfunctioning or cannot be used properly due to hardware failure or an irreversible application, the user should report it to the IT helpdesk.

b. Worn

IT assets that no longer have economic value for the business can be categorized as obsolete and may be proposed by the IT Asset Admin for disposal.

Asset Disposal

Guidelines for disposal of IT assets are established when IT identifies and proposes a list of IT assets that can be categorized as single-use assets. It must be approved by the Head of IT, Chief Operating Officer (COO), Chief Financial Officer (CFO), and Chief Executive Officer (CEO), using the Asset Disposal & Approval Request form.

IT ensures that all-important data and information has been deleted or destroyed, recognized by IT security. Approval of Asset Disposal Requests and a list of disposal items must be submitted to CRE & WS. Disposal methods can be through auction, selling to vendors, crushing, or trading. IT updates the asset information in the CMDB, then IT tells Finance to remove it from their fixed assets list.

IT Asset Stock Retrieval

IT conducts a review at the head office and sales offices every two years at the latest in Q3 using CMDB data which should be reconciled with data from the list of fixed assets Finance. The purpose of this activity is to compare data in CMDB, actual, and reconcile with Finance data. During the stock-taking activity, there may be a normal recognition where the data matches the record (reconciled), 'New Found Asset', or 'Asset Not Found' form. Details for the IT asset stock activity are described in the IT asset stock-taking work instructions.

Identify Business Goals

In designing operational models that can answer current and future needs, this insurance company always refers to the company's three main pillars as a foundation, namely customers, convenience, and innovation. Good asset management can extend the life of assets in the company. Assets that are well maintained can have an impact on the life of the assets which are more durable so that they can produce longer periods and provide benefits for the company.

The objectives of IT asset governance in this insurance company are asset security, system effectiveness, system efficiency, availability, confidentiality, reliability, and maintaining data integrity.

Identification of IT Asset Governance

The company's success in achieving its business goals can be seen from how the company achieves its IT asset governance goals. To explain how the company's achievement in achieving IT asset governance goals, it is necessary to determine the BAI09 domain following the company's IT goals, so it can be seen how the company's achievement is from the achievement of the BAI09 Domain.

Research Instruments

The research instrument is structured based on the dissemination of theoretical, empirical, and operational concepts regarding IT asset management.

TABLE 3. List of Questions on Domain BAI09 Manage Assets

Domain BAI09	Maturity Level						Total
	0	1	2	3	4	5	
Domain BAI09 Manage Assets							
BAI09.01 Identify and Record Current Assets	2	2	2	2	2	2	12
BAI09.02 Manage Critical Assets	2	2	2	2	2	2	12
BAI09.03 Manage the Asset Life Cycle	2	2	2	2	2	2	12
BAI09.04 Optimize Asset Costs	2	2	2	2	2	2	12
BAI09.05 Manage Licenses	2	2	2	2	2	2	12
Total	10	10	10	10	10	10	60

The questions in this questionnaire use a Yes and No scale (Guttman Scale), by converting the value of each respondent's answer. The conversion results are normalized by dividing the total conversion value by the number of questions at each level. Then the average is calculated by dividing the total value of the answer by the number of respondents, to determine the level of maturity of each BAI09 domain.

Maturity Level Analysis

The analysis was conducted to determine the maturity level of IT asset management in this insurance company against the BAI09 domain. The assessment of the maturity level of each IT asset management process refers to the COBIT 5 maturity model with the assessment index criteria in Table 4.

TABLE 4. Measures of Maturity Level Maturity Level Index Criteria

Range	Maturity Level
0 – 0.50	Non-Existent
0.51 – 1.50	Initial/ Ad Hoc
1.51 – 2.50	Repeatable But Infnitive
2.51 – 3.50	Defined Process
3.51 – 4.50	Managed and Measurable
4.51 – 5.00	Optimized

TABLE 5. Recapitulation of the COBIT Maturity Model Questionnaire Results

Domain BAI09	Questions	Index	Maturity level
Domain BAI09 Manage Assets			
BAI09.01 Identify and Record Current Assets	10	2.92	3
BAI09.02 Manage Critical Assets	10	2.68	3
BAI09.03 Manage the Asset Life Cycle	10	2.81	3
BAI09.04 Optimize Asset Costs	10	2.96	3
BAI09.05 Manage Licences	10	2.87	3
	Total	Rata-rata	
	50	2,84	2,86

The index column is the result of the answers to the questionnaire of all respondents which is converted into numbers using normalization calculations on a Likert scale. The Maturity Level column is the result of rounding the index. The average is obtained from the sum of the numbers from each column divided by the number of BAI09 Domain

variables. From the results of these calculations, the average index value is 2.84 and the maturity level is 2.86. Based on the rounding provisions, it can be concluded that the maturity level of IT asset governance is in position 3 (rounding from 2.86).

Maturity Level Analysis of Each BAI09 Domain

Based on the results of the configuration of the respondent's answers and the predetermined rounding mechanism, the maturity level of this insurance company is at Level 3. Table 6 shows the value of the conversion results of the questionnaire answers in all BAI09 domains, with the expected maturity level target.

TABLE 6. BAI09 Domain Maturity Level

Domain BAI09	Current Maturity level	Target Maturity level
BAI09.01 Identify and Record Current Assets	2,92	3
BAI09.02 Manage Critical Assets	2,68	3
BAI09.03 Manage the Asset Life Cycle	2,81	3
BAI09.04 Optimise Asset Costs	2,96	3
BAI09.05 Manage Licences	2,87	3
Rata-rata	2,84	3

Based on Table 6, the overall maturity level in the BAI09 Manage Assets Domain is close to the target maturity level. It is clear that this insurance company has identified all IT assets, optimal operational financing, and regularly manages software licenses.

The description of this process is the governance of IT assets through their life cycle to ensure that their use provides value at optimal cost, stay operational (as intended), their accounts are physically accounted for and protected, and assets that are critical to supporting reliable and available service capabilities.

Manage software licenses to ensure that the optimal number of acquired, retained, and used in connection with required business use, and that software is installed is by the license agreement.

TABLE 7. Findings from the Questionnaire for Domain BAI09-01

Domain BAI09	Current Maturity level	Target Maturity level
BAI09.01 Identify and Record Current Assets	2,92	3
BAI09.02 Manage Critical Assets	2,68	3
BAI09.03 Manage the Asset Life Cycle	2,81	3
BAI09.04 Optimise Asset Costs	2,96	3
BAI09.05 Manage Licences	2,87	3
Rata-rata	2,84	3

BAI09.01 Identify and Record Current Assets

Maintain up-to-date records of all IT assets required to deliver services and ensure alignment with configuration management and financial management. In sub-process BAI09.01 Identify and Record Current Assets the attainment of process attributes stops at process measurement and does not reach process control process attributes, then the maturity level in this sub-process is level 3 established process. All

assets have been registered and verified based on the current asset status. Data backup is done regularly. Predicts the lifetime of each asset, and performs commissioning before the asset is listed. The accounting process for all assets has been going well.

TABLE 8. Findings from the Questionnaire for Domain BAI09-02

BAI09-02	Index	Maturity Level
Manage Critical Assets	2,68	3 Define Process
Descriptions of COBIT 5		
<ul style="list-style-type: none"> Achievement of process attributes. The existence of management of server network problems. Have a priority to repair assets, consider the risk of maintenance needs, and establish a routine maintenance schedule Have actions to minimize the risk of damage to assets, have a cost-benefit analysis. 		

BAI09.02 Manage Critical Assets

Identify assets that are critical in providing service capabilities and take steps to maximize their reliability and availability to support business needs. In the BAI09.02 Manage Critical Assets sub-process, the achievement of process attributes stops at 3.2 process deployment, then the capability level in this sub-process is level 3 Define Process. The existence of management of server network problems. Have a priority to repair assets, consider the risk of maintenance needs, and establish a routine maintenance schedule. Have actions to minimize the risk of damage to assets, have a cost-benefit analysis.

TABLE 9. Findings from the Questionnaire for Domain BAI09-03

BAI09-03	Index	Maturity Level
Determining the Direction of Technology	2,81	3 Define Process
Descriptions of COBIT 5		
<ul style="list-style-type: none"> Manage assets from procurement to disposal to ensure that assets are used as effectively and efficiently as possible and accounted for and protected physically. Procurement of assets based on company approval and labeling of each listed asset. Disseminate information based on standard procedures, and communication with customers. Have a management way of the process of exposing assets and considering their impact. 		

BAI09.03 Manage the Asset Life Cycle

Manage assets from procurement to disposal to ensure that assets are used as effectively and efficiently as possible and accounted for and protected physically. In sub-process BAI09.03 Manage the Asset Life Cycle the attainment of process attributes stops at 3.2 process deployment, then the capability level in this sub-process is level 3 Define Process. Asset procurement based on company approval and labeling for each listed asset. Disseminate information based on standard procedures, and communication with customers. Have a management way of the process of exposing assets and considering their impact.

BAI09.04 Optimize Asset Costs

Regularly review the entire asset base to identify ways to optimize costs and keep alignment with business needs. In BAI09.04 Optimize Asset Costs sub-process the achievement of process attributes stops at 3.2 process deployment, then the

capability level in this sub-process is level 3 Define Process. The company periodically reviews that the assets meet business needs. Have an assessment and consider maintenance costs, and have identified maintenance cost options. Has considered the opportunities for exploiting new technology to increase profits.

TABLE 10. Findings from the Questionnaire for Domain BAI09-04

BAI09-04	Index	Maturity Level
Defining IT Processes, Organization, and Relationships	2,96	3 Define Process
Descriptions of COBIT 5		
<ul style="list-style-type: none"> Regularly review the whole basis asset to identify ways to optimize costs and maintain alignment with business needs. The company periodically reviews that the assets meet business needs. Have an assessment and consider maintenance costs, identify maintenance cost options. Consider opportunities to use new technology to increase profits. 		

TABLE 11. Findings from the Questionnaire for BAI09-05

BAI09-05	Index	Maturity Level
Manage software licenses	2,87	3 Define Process
Descriptions of COBIT 5		
Manage software licenses so that the optimal number of licenses is maintained to support business needs and the number of licenses held is sufficient to cover the software used		

BAI09.05 Manage Licenses

Manage software licenses so that the optimal number of licenses is maintained to support business needs and the number of licenses held is sufficient to cover the software being used.

Overcoming the BAI09 Domain Maturity Gap

To overcome the gap at the BAI09 Domain maturity level, the company should take the following actions:

- 1) Compiling SOPs to document IT assets in detail, monitoring their implementation regularly, making procedures for asset requirements in line with needs.
- 2) Setting priorities in SOPs continuously, monitoring the implementation of SOPs, planning the existence of vital IT assets, and monitoring and recording the existence of IT assets.
- 3) Prepare SOP for the destruction of unused IT assets, conduct monitoring, compile sorting procedures, and monitor or destroy IT assets that are no longer in use to be donated to other parties.
- 4) Prepare SOPs for periodic improvements to IT assets, monitoring the implementation of repair SOPs periodically, making documentation, monitoring the implementation of alignment of IT services and assets.
- 5) Creating SOPs related to the legality of some software that is considered vital, supervising the implementation of software licenses, regularly obtaining software licenses, and monitoring software license updates used by the company.

IV. CONCLUSION

The implementation mechanism for IT asset governance in insurance companies for Domain BAI09 is at a Level 3

maturity level. This shows that the current IT planning, implementation, and governance mechanisms are following the expected concept (ideal conditions).

The maturity level of IT asset governance in insurance companies is at Level 3 (Define Process) which indicates a condition in which IT asset governance provides value at optimal costs, continues to operate (as intended), their accounts are physically accounted for and protected, and assets which are very important to support reliable and available service capabilities. The governance of software licenses is installed according to the license agreement.

Unfortunately, there is still a gap. To apply the right IT concept to support productivity, the company needs to improve the performance of the IT asset management process by setting new goals and objects with several indicators and measuring scales quantitatively to increase the company's maturity level to the highest level.

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