IT Governance Measurement using COBIT 5 for Evaluating IT Project Management Aspect: Case Study of Insurance Company

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Abstract. IT Governance is one of the essential aspects of optimizing resources in a company; the purpose of this research is to assess the capability level of IT Governance in a company, specifically in IT Project Management Activity. The method we use in this paper is Control Objective for Information and Related Technologies 5 (COBIT 5), the ways of working help the company to measure the gap in the current condition and propose an improvement to level up IT Governance aspect, specifically in the insurance company. The results of this study showed that of the 8 processes assessed, 6 are at level 1, and 2 are at level 3, with the average ability of the company at level 1 (Completed), where the company's target is level 3 (Establish). Based on the result, we found that COBIT 5 framework guide to improving IT Governance aspect of the company in the form of several rules and procedures as guidance for the company to manage their IT Governance. This research can be a recommendation for other researchers who overcome the same study case by assessing the domain that is being used in this research.

Keywords: COBIT 5, IT governance, IT project management, process assessment model, insurance company

1. Introduction

Technological improvements are expanding in lockstep with scientific progress in today's digital age. information technology in a company must also evolve to meet the standards necessary to suit consumers' expectations.

Based on Bimantara's research (2015), the existing information technologybased services it has become an essential component for companies in efforts to escalate the quality of services provided to consumers. Companies also start to understand that information technology is not only seen as a support for services but can also provide opportunities to make changes and increase productivity in companies/organizations (Sitinjak et al., 2015).

In addition, according to Henrique (2014) the implementation of information technology investment, if not well planned, will eventually result in failure or futility of investment that results in the emergence of the assumption that the significant costs incurred for the development of information technology are a waste.

In the work of project management, the Project is said to be successful if it can be completed following the scope, resources, and pre-determined time (Schwalbe, 2016).

Based on the competition within another company, this requires the company to have information system governance, often called IT Governance, to optimize its SI /IT capabilities to help business processes run. Information system governance is the best practice step to manage the system owned by a company. Based on Joshi et. Al research (2018), It also demonstrates that IT capabilities are important to accomplishing a strategic business objective. Businesses without effective IT governance, however, experience inaccurate information quality, inefficient operating costs, and inaccurate cost projections for IT jobs (under specification and more than budget (Salehi et al., 2021).

Frameworks for IT Governance and management such as Control Objective for Information and Related Technologies (COBIT) 5 proposed by ISACA (2012) To determine the work offered by service providers like the IT department or a thirdparty business, use the concept of service as a scope element. The COBIT 5 framework has been the subject of numerous prior studies about the capability level assessment of IT governance. The research also demonstrates that COBIT 5 can be used by businesses to manage IT governance.

However, from previous research, there are still gaps in the research carried out, several studies conducted assessments on the entire process in COBIT 5, this is different from this research because the author will focus on the project management scope, because this aspect is something the company wants to improve.

On top of that, we also provide case study analysis about Insurance company, Insurance XYZ is one of the Top 3 the oldest State-owned Insurance company, is one of the companies under the ministry of State-Owned Enterprise engaged in underwriting insurance, which until now also continues to utilize the use of IT / SI to support the company business processes, this is also included in IT Governance aspect to match the compliance of current government regulation.

2. Related Works

The purpose of IT governance is the ability to realize desired IT values, can use and maximize certain benefits, make responsible use of IT resources, and manage IT-related risks effectively (Christian & Legowo, 2019). At the same time, the use of IT for decision-making will be done by implementing IT to help internal activities carried out on a day-to-day basis, thus it can be said that there is a direct relationship between IT which becomes a good IT governance standard (Rubino et al., 2017). IT investments add value to businesses by providing crucial systems, yet, the cost of an IT venture continues to rise, and it must be managed appropriately (Abdollahbeigi & Salehi, 2020).

Based on previous research IT governance is characterized as a framework for decision rights and accountability implemented via a combination of structural, process-based, and relational processes (Gregory et al., 2018). IT governance seeks to guarantee that IT-related operations are aligned with a company's strategy (Turel et al., 2019). To effectively implement IT management, a collection of IT governance methods is always used to complement one another (Zhen et al., 2021). Organized governance, in particular, explicitly specifies organizational divisions and roles to correctly put decision-making duties and connect IT and business processes horizontally; it includes some formal organizations, such as executive teams, committees, and councils (Wu & Saunders, 2016). a company must consider information security measures and frameworks to lower the risk of harming information quality for effective information governance. This will negatively influence the efficiency and effectiveness of information as a management resource (Asfoura, 2022).

For Project management aspect, According to Kathy (Schwalbe, 2016), the application of information, technology, techniques, tools, and procedures to project activities to achieve the requirements of the project is known as project management. In addition, according to Lalmi et. al (2021) project management is the basis of any project construction, because projects are constantly evolving, well-planned processes to ensure their success, the advantages that may occur in the construction of large projects are difficult to quantify due to their many variables. involved. On the other side many countries around the world employ project management as a valuable and efficient technique for planning and organizing procedures, crisis management, and time management. Routine, repetitive activities are not dealt with in project management (Vrchota et al., 2021). In accordance with the present results, previous studies have demonstrated that one of the most common roles of a (Enterprise) PMO is to develop and maintain a project management methodology or standard(Salehi et al., 2021).

Previous research also stated that project management is both a scientific and a professional subject, strong practice theories are required to address the theory practice including reflective practice and situated theorization. However, strong practice theories are in low supply(Svejvig, 2021). Project management experts are in charge of ensuring that projects are completed on schedule, on budget, and to the desired standard of quality and scope (Paton & Andrew, 2019). Framework that being use in this research is Control Objective for Information and Related Technologies (COBIT) 5. Some previous research explained that COBIT 5 is an IT governance framework issued by ISACA organization in 2012, this framework serves to help organizations in achieving strategic goals in information technology governance and management, this framework can be implemented in various sectors of the company both profit and non-profit. The COBIT framework is used as a tool to measure IT Governance maturity, develop IT personnel in enterprise architectures, and perform risk analysis and provide support for business needs (Astuti et al., 2017) (Bin-Abbas & Bakry, 2014). COBIT 5 is divided into two main sections, Governance and Management. The Governance section includes domains Evaluate, Direct, and Monitor(EDM), while the Management section includes domains such as Align, Plan, and Organize(APO), Build, Acquire, Implement (BAI), Deliver, Service, and Support (DSS), and Monitor, Evaluate, and Assess (MEA), all of the five domains if in breakdown again there are 5 domains, 37 processes, 210 practice processes, and 1112 activities (ISACA, 2012).

Based on previous research, we found several research that have similar topic, Accordingg to Adhiatma (2018), this study focuses on domains related to IT project management, of the 6 domains assessed, 4 processes are at level 1, and 2 processes are at level 2. Based on the result of this study, the company does not have a reference regarding resource utilization in working on IT projects, slightly different from research by (Andry & Setiawan, 2019) which states that companies that apply COBIT 5 as a reference do not yet have documentation ready and also a clear strategy, apart from documentation readiness, several other factors influence this, which is also explained in the study by (Wiraniagara & Legowo, 2020) which explains that aspects of IT security and risk management also affect the IT Governance assessment of the company's business performance is considering the IT outsourcing strategy, which will be a mediator for establishing the IT Governance mechanism.

3. Research Methodology

Based on literature review, we will analyse the similar research which is the application of COBIT 5 in organization in order to obtain feasibility study, so we can use it as practical recommendation for the case studies. Several COBIT 5

processes have been highlighted in several previous studies, but the processes that will be assessed are not limited to the processes shown in the table below.

COBIT 5 IT Process	(Adhiatma & Legowo, 2018)	(Andry & Setiawan, 2019)	(Wiraniagara & Wijaya, 2019)	(Wulandari et al., 2019)
EDM04 - Resource Optimization			\checkmark	
APO01 - Manage IT Management Framework	\checkmark			
BAI01 - Manage Program and Project	\checkmark			\checkmark
BAI02 - Manage Requirement Definition				
BAI06 - Manage Changes			\checkmark	
DSS03 - Manage Problems				

Table 1: Reference for feasibility study

Regarding IT Governance aspect, there are many different aspects that could be assessed, because the author want focused the assessment on Project management aspect, so we search similar research that mainly focused on Domain BAI which is Build, Acquire and Implement in COBIT 5.

For evaluating and match the current topics, author decided to present the case study in one of Insurance Company to show how COBIT 5 can assess the current capability level of IS / IT Aspect and chance for improvement.

3.1. Insurance XYZ Study Case

Insurance XYZ is one of the Top 3 the oldest State-owned Insurance company, is one of the companies under the ministry of State-Owned Enterprise engaged in underwriting insurance, which until now also continues to utilize the use of IT / SI to support the company business processes, this is also included in application development activities and other IT projects.



Fig. 1: Progress of IT project released in 2020

Based on the data shown in Fig. 1, we can see the number of projects that have been released during 2020, in the process, there are 11 projects that have not started, when viewed from the graph, this means that the current condition still has not met the target desired by the company, where ideally at the end of the year at least all projects have entered the Requirement Gathering stage. 4 projects at requirement gathering, 2 project at procurement process, 12 are in the process of development, 2 are in the process of User Acceptance Test (UAT) and at the moment 1 under preparation of UAT, 2 are in the process of migration, 11 In the process of production trial run (PTR), 63 releases are already in live condition, 24 releases were dropped or cancelled, ideally, every IT project that has been planned is not cancelled. The things that resulted in the project being dropped are as follows:

- 1. Non-conformance of implementation with the original plan
- 2. There are other projects that are more in priority, right.
- 3. Lack of human resources to work on the project.
- 4. There is a change in the requirement of the user when doing testing

In addition to the project problems described above, there are problems regarding regulatory compliance from the Ministry of State-Owned Enterprise that apply today, issues regarding regulatory compliance include the following:

- Changes in IT governance standardization under the holding company
- Change of governance framework standards from COBIT 4.1 to COBIT 5

Based on the problems described above, it takes a corporate governance process that can align the company's business processes supported by adequate information technology.

3.2. Research Methodology

To assess the company's capability level, the author provides ways of working that will be used in this research.



Fig. 2: Research Methodology

1. Problem Identification

Problems identification is done by conducting interviews with IT Division Head and IT Section Head in the IT Division of Insurance XYZ, the questions asked are related to strategic objective and corporate governance, especially in project management activities, from the results of the interview the problems faced by the company's IT division are:

No	Problem
1	There is no optimal utilization of the resources owned by the IT division to the projects undertaken.
2	There is a change in regulations from the ministry of SOEs related to the standardization of SI / IT governance in companies under the ministry
3	There is a project release that is dropped, because there are other projects that are prioritized.
4	Mismatch of implementation with the original plan
5	There is a change in the requirement of the user when doing testing
6	Change of standardization of governance framework from COBIT 4.1 to COBIT 5

Table 2: Problem identification at insurance XYZ

2. Data Collection

In this section that will be discussed is the method used for data collection that is divided into 2 ways, namely:

- 1) The author will make observations on the IT Division of Insurance XYZ, this is done well with a review related to the current conditions in the IT Division for research support materials. What is seen is the process of working on the project from the requirement gathering process to the testing process.
- 2) The author will conduct an interview with the IT planning section head working on SI /IT projects in the IT Insurance XYZ division and the distribution of questionnaires related to the work of COBIT 5 products in the PIC found in the IT division, specifically those related to project management activities, for the process assessed.

3. Key Practice COBIT 5 Identification

At this point, the author will identify key practices on each process used to ensure what kind of control should be done in the IT division. The selection of this key practice also aims to limit the COBIT 5 process selected in accordance with the scope of this research

4. Capability Level Measurement

In this step, the author will measure the level of capabilities in organization match with the standards owned by COBIT 5, a summary of the achievement of the capability level is displayed in the table below to make it easier for readers to understand existing conditions in the company, the following is a table that describes the capability level in accordance with the COBIT 5 standard

5. Gap Analysis and Improvement priority

Based on the Capability level measurement, we analyze the gap of current result of assessment with the desired target, then author suggest the organization to complete several requirements in order to fulfill the gap of the assessment.

4. Result and Discussion

4.1. Problem Identification

Based on the problem stated by IT Team of the company, author proceed to the next activity of the assessment, which is problem identification, this process includes mapping COBIT 5 Process, this begins the assessment process, followed by Mapping the problem with the process provided by the Framework so that author can then carry out an assessment.

Mapping COBIT 5 Process.

The first thing to do is map the company's strategic objectives with Enterprise Goals provided by COBIT. Based on the Interview, the strategic objectives of Insurance XYZ itself are divided into 5 points, namely:

- 1. **Key Account Partnership:** Prioritizing partnerships with State banks, Regional Development Bank, and Private banks.
- 2. Synergy of State-Owned Enterprise (SOEs), Holdings, and subsidiaries: Expanding synergies between SOEs and companies under holding companies both in terms of investment, to procurement of goods and services.
- 3. **Centre Of Excellence:** centralize business processes, continue the ongoing IT transformation process.
- 4. **Governance:** adjustment of risk management structure, establishment of business process improvement taskforce, and improvement and implementation of KPIs
- 5. **IT Transformation:** integration of surrounding applications into the Core System, and implementation of the Corporate Website platform.

After knowing the Strategic Objectives of XYZ Insurance, the next step is to map the strategic objectives from the company with the Enterprise Goals balance scorecard provided by COBIT 5, the Selection of Enterprise Goals has been adjusted to the strategic objectives owned by XYZ Insurance. the mapping is displayed at Figure 3 below:



Fig. 3: Mapping enterprise goals COBIT 5 with strategic objective

From the mapping result, 37 IT Process provide by COBIT 5 is selected but the author only chose several Process related with the project management scope that has been explained in introduction, Table 3 below is the results of mapping the COBIT 5 IT process with problems described in the interview process, the selected COBIT 5 process is as follows:

COBIT 5 IT Process	Process Name	Problem
EDM04	Ensure Resource Optimization	There is no optimal utilization of the resources owned by the IT division to the projects undertaken.
APO01	Manage the IT Management Framework	There is a change in regulation from the ministry of SOEs related to the standardization of SI / IT governance in companies under the ministry
BAI01	Manage Programmes and Projects	There is a project release that is dropped, because there are other projects that are prioritized.
BAI02	Manage Requirement Definition	Non-conformance of implementation with the original plan
BAI03	Manage Solutions Identifications and Build	There is a change in the requirement of the
BAI06	Manage Changes	There is a change in the requirement of the user when testing
BAI07	Manage Change Acceptance and Transitioning	user when testing
MEA02	Monitor, Evaluate and Assess the System of Internal Control	Change of standardization of governance framework from COBIT 4.1 to COBIT 5

Table 3: Mapping COBIT 5 process with problem

From tables 3 above, we present the problem faced by the company, each of the problem is mapped to COBIT 5 IT Process and we have 8 Process selected. After identifying the COBIT 5 process to be included, according to the framework, the next step is to determine the Key Practice in each selected domain in accordance with the problems described above, table 4 below describes the Key Practice that was successfully identified.

Table 4. Key plactice of each selected COBIT 5 domain				
COBIT 5 Domain	Process Code Key Practice			
Evaluate, Direct, Monitor (EDM04)	EDM04.01	Manage Resource		
Align, Plan, Organize (APO01)	APO01.02	Establish Role and Responsibilities		
	BAI01.04	Develop and Maintain the Program Plan		
	BAI01.05	Launch and Execute Program		
	BAI01.08	Plan Projects		
	BAI01.11	Monitor and Control Project		
Build, Acquire, Implement	BAI01.12	Manage Project Resource and Work Package		
(BAI01, BAI02, BAI03, BAI06, BAI07)	BAI02.02	Perform a feasibility study and formulate alternative solutions.		
	BAI03.07	Prepare for solutions Testing		
	BAI06.01	Evaluate, Prioritize, and Authorize Change Request		
	BAI06.03	Track and report change status		
	BAI07.06	Promote to Production and manage Release		
	MEA02.01	Monitor Internal Control		
Monitor, Evaluate, Assess (MEA02)	MEA02.02	Review business process control effectiveness		
	MEA02.03	Perform control self-assessment		

Table 4: Key practice of each selected COBIT 5 domain

At this stage, out of a total of 37 processes contained in the COBIT 5 IT process, the author chooses 8 processes that are in accordance with the scope of project management and the problems described earlier. The selected process is as follows.

- 1. EDM04 is Ensure Resource Optimization which ensures that the IT division has the ability to manage the resources owned,
- 2. APO01 is Manage the IT management framework which is the ability of the IT Division in optimizing the IT Management Framework such as implementation of Scrum Method in Software Development process.
- 3. BAI01 is Manage Programme and Project is the ability of the IT division in managing IT Projects carried out, this includes project planning, monitor and project control,
- 4. BAI02 is Manage Requirement Definition which is the ability of the IT division in terms of project feasibility studies,
- 5. BAI03 is Manage solution identification and build, namely the creation of solutions and testing plans,
- 6. BAI06 is Manage Change which is the ability of the IT division to set change requests in projects,

- 7. BAI07 is Manage Change Acceptance and Transitioning explain about change acceptance and Transitioning is the ability of the IT division in organizing each project release, and
- 8. MEA02 Monitor Evaluate and Assess the System of Internal Control is the capability of the IT division in monitoring internal control and understanding related to self-assessment of business processes and technologies used today.

4.2. Data Collection Method

In this section that will be discussed is the method used for data collection that is divided into 3 ways, namely:

1. Observation

The author will make observations on the IT Division of Insurance XYZ, this is done well with a review related to the current conditions in the IT Division for research support materials. What is seen is the process of working on the project from the requirement gathering process to the testing process.

2. Interviews and questionnaires

The author will conduct an interview with the IT Section Head of planning, working on SI /IT projects in the IT Division in Insurance XYZ and then distribute questionnaires related to the work of COBIT 5 products in the PIC found in the IT division, specifically those related to project management activities, for the assessment process.

4.3. Capability Level Measurement

After taking capability measurements on each selected COBIT 5 process, based on the questionnaire, we found that the result is mainly below 85%, so the process cannot be defined as level 2. table 5 below show summary of each process that has been assessed.

Table 5. Current capability level				
COBIT 5 Process	Governance Practice	Score	Level	
EDM04	EDM04.01	75,00%	Level 1	
APO01	APO01.02	91,50%	Level 2	
	BAI01.04		Level 1	
	BAI01.05	77,00%		
BAI01	BAI01.08			
	BAI01.11			
	BAI01.12			
BAI02	BAI02.02	29,00%	Level 1	
BAI03	BAI03.07	75,00%	Level 1	
BAI06	BAI06.01	00.500/	Level 2	
	BAI06.03	90,50%		
BAI07	BAI07.06	66,50%	Level 1	

 Table 5: Current capability level

	MEA02.01		
MEA02	MEA02.02	56,00%	Level 1
	MEA02.03		

From table 5 can be seen the current capability value, of the 8 selected processes there are 6 processes that are at level 1, and 2 processes that are at level 2.

With the formula presented by Bermejo's research)(Bermejo et al., 2014), the score of overall capability can be determined from these formula.

$$N = \frac{(1*6) + (2*2)}{8}$$
N=1.25

Therefore, there is a gap in the current capability value. The following table describes the gap of each process with the company's desired target.

Tuele et summary et eupaemer assessment			
COBIT 5	Current	Target	Gap
Process	Level	Level	Gap
EDM04	Level 1	Level 3	2
APO01	Level 2	Level 3	1
BAI01	Level 1	Level 3	2
BAI02	Level 1	Level 3	2
BAI03	Level 1	Level 3	2
BAI06	Level 2	Level 3	1
BAI07	Level 1	Level 3	2
MEA02	Level 1	Level 3	2

Table 6: Summary of capability level assessment

Based on the Gap analysis described by table 6, we can see that the gap in 8 processes that are assessed on average is at level 2, which means this still does not meet the target specified by the company at level 3, for that it is necessary to improve in terms of the completeness of product work provided by COBIT 5 so that the company's capability value can meet the specified target.



Fig. 4: Capability gap analysis

Based on the figure 4, the gap between the current process with the company target in EDM04 (Ensure Resource Optimization), BAI01 (Manage Program and Project), BAI02 (Manage Requirements Definition), BAI03 (Manage Solutions Identification), BAI07, and MEA02 (Monitor, Evaluate, and Assess the System on Internal Control) is 2 levels, while in the APO01 (Manage IT Management Framework) and BAI06 (Manage Changes) gap with the company target is 1 level.

4.4. Improvements Recomendation

Based on the results of the assessment conducted, the company can make improvements on various aspects in accordance with the standards described by COBIT 5 so that the level of capability that is still less can be achieved in accordance with the targets desired by the company, improvements that the company can do are as follows:

4.4.1. EDM04

Company can deciding training methods / workshops for IT employees to improve IT HR capabilities in accordance with the scope of work undertaken, such as ISO 27001 for Information Security, systems management, and maximizing the Guiding Principle of Enterprise Architecture to create and implement work procedures regarding enterprise architecture that refer to specific frameworks such as Zachmann framework / TOGAF Framework, and monitoring and evaluating related to the implementation of resource planning both in terms of HR and technology approved by stakeholders.

4.4.2. APO01

The IT division can conduct reviews related to policies and procedures related to the division of duties and responsibilities in the IT division, and ensure documentation related to guidelines / guidelines on data / information access rights, for example classification related to IT governance policy documents or it work supervision activities.

4.4.3. BAI01

The recommendations given are to maximize resource requirement and role, namely creating and implementing documents related to the needs and role of human resources in IT initiatives, monitoring periodically related to the realization of IT initiatives in order to have a positive impact on the company, conducting evaluations / audits on IT initiatives both from the aspect of project budget realization and investments made have significant benefits for the company, Running a business case consistently in the IT portfolio management process that addresses project benefits, goals and criteria, costs, and project risks, and ensures post implementation review is carried out consistently and analyses gaps in project planning with certainty.

4.4.4. BAI02

The recommendation given is to maximize the feasibility study of the project supported by documentation, such as the example of a report of the results of a feasibility study on an aspect, ensuring the application development plan, and the feasibility study has clear documentation.

4.4.5. BAI03

Ensuring the preparation of all Test Plans in accordance with the specified template, and conducting evaluations related to SOP Testing applications.

4.4.6. BAI06

Ensuring that the impact analysis of all IT project changes both through Change Request and Service Desk applications is done properly, ensuring that the change request document is in accordance with the available template, and confirming to the user about changes that occur in the implementation of the change request project implementation (e.g. through weekly meetings or through memorandums).

4.4.7. BAI07

Optimizing and improving the consistency of release plan documents to fit the available templates, perform matching in the fulfilment of deliverables needed in the implementation of implementation as solution criteria before going up to the production phase. And Ensure lesson learned after implementation completed through the preparation of post implementation review.

4.4.8. MEA02

Ensuring monitoring availability (SLA), incidents, change management, and IT performance assessment in the realization of portfolio projects, conducting special annual audits of IT divisions related to IT governance audits, IT compliance audits, etc., and establishing special functions that have responsibility for internal IT control.

5. Conclusions

Based on the results of the assessment that has been done obtained the conclusion that:

- 1. Based on the findings of an interview with the Head of IT Planning section at insurance XYZ, information was obtained that the company currently wants to take capability measurements using the COBIT 5 Framework which is in accordance with the change in standardization of the Ministry of State-Owned Enterprises which initially used COBIT 4.1 to COBIT 5.
- 2. The COBIT 5 process selected is in accordance with the scope of project management, namely EDM04 APO01, BAI01, BAI02, BAI03, BAI06, BAI07, MEA02. Of the 8 COBIT 5 processes assessed, the average of capability level owned by the company is currently at level 1 with an average capability level of 1.25, and the goal intended by the company to be at level 3 with a gap of 1.75.
- 3. To increase the capability level in accordance with the specified target of level 3, the company can improve the documentation of the process owned in accordance with the product work specified by COBIT 5 in the Process Assessment Model and Enabling Process documents, this can be in the form of the creation of new documents or SOPs in the IT division.

This research more likely can continue to be developed, specifically while conducting the research, author also overcame several limitations like:

- 1. We need to spend much time to confirm the evidence of every process that being assessed, it often facing several issues like it is difficult to determine the time during the interview process. As well as filling out the questionnaire, because of the user's busyness, good communication is needed in determining the time of data collection.
- 2. During creation of questionnaire related to assessment, we often create questions that do not represent the criteria provided by the COBIT 5 framework. Therefore, in conducting the assessment, we must refer to the criteria and processes described in the Framework to obtain accurate assessment results.

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