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COBIT 2019 Framework: Evaluating Knowledge and Quality Management Capabilities in a Printing Machine Distributor

Jonathan Beato[1], Melissa Indah Fianty[2*]

[1,2]Departement of Information System, Faculty of Engineering & Informatics, Universitas Multimedia Nusantara, Indonesia
Email: [1]jonathan.beato@student.umn.ac.id, [2]melissa.indah@umn.ac.id

Abstract

Within the realm of printing machine distribution, information technology assumes a critical role in streamlining business operations. This study addresses persistent challenges related to inaccurate inventory data and insufficient knowledge management in IT applications. Utilizing the COBIT 2019 framework to assess IT governance capability, qualitative data was collected through interviews to uncover prevailing issues. The findings underscore specific process objectives—APO11 (Managed Quality), BAI08 (Managed Knowledge), and DSS06 (Managed Business Process Controls)—highlighting the need for improved capability levels. For example, APO11 currently resides at level 3 while aiming for level 4, indicating a one-level discrepancy. Similarly, BAI08 and DSS06 are at level 2, signaling a collective two-level gap. Proposed enhancements center on bolstering IT knowledge management and procedural training to meet quality standards in future IT applications. These measures aim to strengthen organizations, aligning IT practices with business processes to ensure heightened quality and efficiency. Notably, this abstract intentionally omits explicit mention of the evaluated IT process, adhering to the specified guideline.

Keywords: Capability Level, COBIT 2019, Data Accuracy, IT Governance

1. INTRODUCTION

The development of information technology in the business world has encouraged many companies to be able to develop by implementing information technology as support for their business processes [1]. The application of information technology in business processes has the benefit of improving company performance, helping companies achieve expected goals and increasing company competitiveness [2]. To achieve this, good information technology governance is needed as a reference and means for measuring information technology performance in the company[3]. Apart from that, information technology governance also has the aim of maximizing the use of company resources and controlling risks that can occur in the application of information technology in the company's business processes [4], [5].

The company to be studied has implemented information technology to support its business processes. This company was founded in 2008 and has its main business activity as a distributor of printing finishing machines, which also provides post-purchase services such as warranties and spare parts for the printing machines sold. Based on its main business activity as a distributor, the company has inventory of goods on a large scale, so it requires information technology to assist the process of managing all inventory of goods through the use of an inventory management system, which is used to support the company's operational activities.

In operational activities, information technology objectives must be aligned with the company's business objectives to improve company performance [6]. Misaligned information technology and business objectives can pose potential risks to the company [7]. One of the potential risks that can arise from the use of information technology in business activities is problems related to inaccurate data[8]. This problem is one of the problems currently being experienced by the company, which occurs due to errors in inputting data into the system when operational division employees update stock of goods every time there is a sales transaction. This causes delays in the company's business processes, especially in processing orders from customers, as well as potential financial losses for the company, resulting from inaccurate stock data[9]. This problem makes the use of information technology in the company not optimal, so it must be addressed immediately to make the use of IT to support business processes run well and in line with company goals.

To ensure alignment between IT processes and the company's business processes, it is necessary to measure the level of corporate governance capability with the aim of increasing the level of company capability as well as identifying and minimizing risks that may occur in the company [10]. The framework used to measure capability levels in this research is COBIT 2019 [11]. This framework focuses on the alignment between information technology and company business objectives to create a dynamic governance system [12]. Through the COBIT 2019 framework, companies can measure the level of capability and have references and guidelines to improve the company's own IT governance [13]. This framework provides an explanation based on principles designed to form and maintain an IT governance system that is in accordance with company policies and objectives by defining components and factors [14]. In addition, companies can have guidelines to improve information technology governance itself [15]. This was also carried out in several previous studies which also measured capability levels using the COBIT 2019 framework.

In previous research, there was research that measured the level of capability and maturity level of information technology governance using the COBIT 2019 frameworks[16]. Based on previous research, the main focus of this research is to

measure the level of capability, because measuring the level of maturity is carried out if the measurement of the level of capability is in line with the targets expected by the company, so the COBIT 2019 framework is used because IT goals and company goals are not yet aligned [17][18][19]. Therefore, IT governance analysis will be carried out with a focus area on data accuracy and knowledge management in companies operating in the printing machine trading industry using the COBIT 2019 framework to measure and improve the level of information technology governance capabilities, as well as provide recommendations aimed at improving Corporate IT governance has guidelines that can help the company's IT processes and business processes run in harmony.

2. RESEARCH METHODS

The research method used to measure the level of information technology governance capability in companies in this research is as follows [20]:

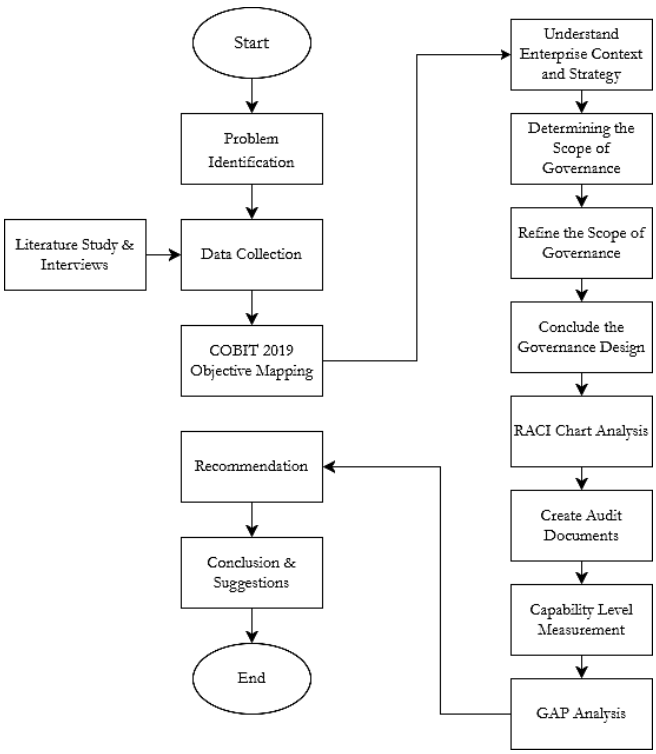

Figure 1. Research Method Workflow

Figure 1 is the workflow of the method used in this research which can be explained as follows:

1) Problem Identification
Problem identification is carried out to find out problems in companies related to corporate information technology governance, which is carried out through interviews with the company. The problems that occur are problems related to inaccurate stock data.
2) Data Collection
Data collection was carried out by collecting data through literature studies and interviews with the company. The literature study was carried out by understanding COBIT 2019 articles, journals and books provided by ISACA, focusing on issues related to data integrity[21]. Interviews were conducted with representatives from the company's IT and operational divisions.
3) COBIT 2019 Objective Mapping
The mapping process is carried out by adjusting the problems to the objectives contained in the five COBIT 2019 domains using COBIT 2019 Design Toolkit. The mapping process start with understand enterprise context and strategy which done by identify problems through interviews which aim to find out problems in the company related to corporate information technology governance[22]. Determining the scope of governance which done by determining the scope of governance by measuring design factors 1-4, with the aim of identifying strategies, objectives and IT problems in the company[23]. Refine the scope of governance which carried out using design factors 5-11, with the aim of knowing threats, technology used, sources, implementation methods, and the role of company IT, as well as the enterprise size of the company[24]. Conclude the governance design which done by concluding a governance design based on previous findings, and obtaining a process that meets the requirements of the company's capability level[25]. RACI chart analysis, create audit document, capability level measurement which done by measuring the level of capability from predetermined process objectives which aims to determine the level of corporate governance capability[26]. Lastly, GAP analysis which done by analyze the gap between the company's current level of capability and what the company expects[27].
4) Recommendation
Suggestions and recommendations are provided following the analysis conducted during the mapping stage. These recommendations aim to enhance the company's capabilities and address issues pertaining to data accuracy.
5) Conclusion & Suggestions
The conclusions and suggestions are presented as recommendations, which the company will initially assess to determine their suitability and relevance in addressing the challenges encountered by the organization.

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3. RESULTS AND DISCUSSION

3.1 Problem Identification

After conducting interviews with the IT Manager and Business Operations Manager of the company, it was identified that the organization is grappling with issues concerning inaccurate inventory data. This problem is attributed to input errors made by employees, and the current system lacks the capability to automatically validate inventory data. This problem has an impact on delays in processing customer orders and potential financial losses due to inaccurate data.

3.2 COBIT 2019 Objective Mapping

This mapping process was carried out using the COBIT 2019 Design Toolkit.

1) Understand the Enterprise Context and Strategy. The company's enterprise strategy focuses on providing services to customers and company growth. The enterprise goals that the company wants to achieve are optimizing the functionality of internal business processes, as well as managing the company's business risks. The IT risk profile that can occur is problems with the company's data management and IT skills. IT related issues experienced by companies are problems related to staff capabilities and data integrity.
2) Determine the Initial Scope of the Governance System. The company determines the initial scope of the governance system by filling in design factors 1-4 to determine enterprise strategy, enterprise objectives, risk profile, and IT related issues.
3) Refine the Scope of the Governance System. In this stage, the initial scope of the governance system is increased by filling in design factors 5-11 to determine the IT Threat Landscape, Compliance Requirements, Role of IT, IT Sourcing Model, IT Implementation Methods, Technology Adoption Strategy, and Enterprise Size.
4) Conclude the Governance System Design
   Objectives achieving a score of 75 or higher are deemed high priority, striving for a capability level of 4. Ultimately, considering the design factor results, the key objectives surpassing the 75 benchmarks comprise APO11 (Managed Quality), BAI08 (Managed Knowledge), and DSS06 (Managed Business Process Controls). Figure 2 summarizes the comprehensive assessment of prior design factors.

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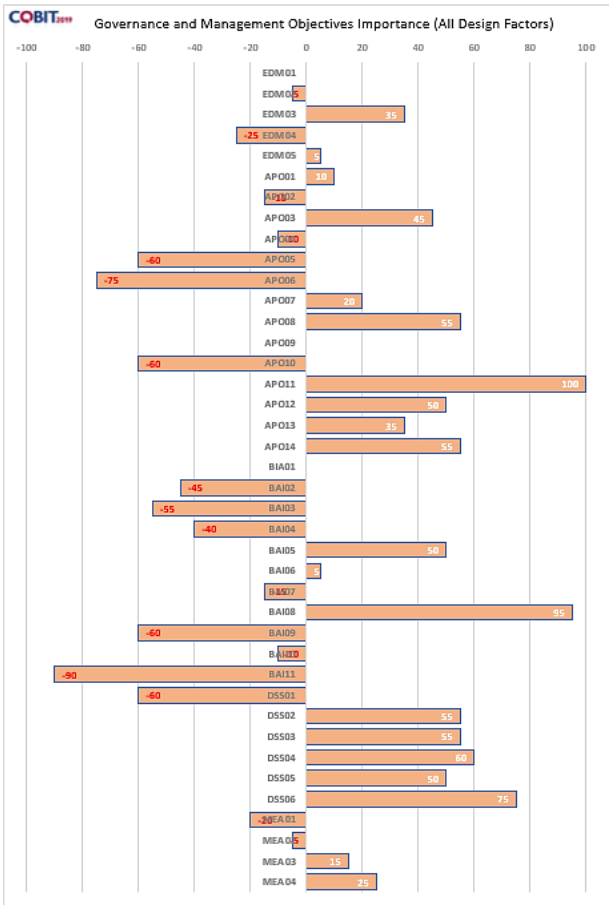

Figure 2. Design Factors Conclusion Result

Figure 2 is the conclusion of all design factors that have been assessed in the previous stage. Process objectives that have a value equal to or more than 75 are indicated as top priority with a capability level target of level 4. Based on the results of the factor design conclusions, the priority process objectives with a score of 75 or more are APO11 (Managed Quality), BAI08 (Managed Knowledge), and DSS06 (Managed Business Process Controls).

3.3 Measuring Capability Level

The results of measuring the capability level are obtained from the final average calculation results for the value of each process objective activity that has been determined based on previous mapping, namely the APO11, BAI08, and DSS06 process objectives.

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Table 1. Capability Level Measurement Result

Objective Process	Percentage	Category	Level
APO11	62,18%	Largely Achieved	Level 3
BAI08	50%	Partially Achieved	Level 2
DSS06	69,1%	Partially Achieved	Level 2

Table 1 is the result of measuring the capability level of the APO11, BAI08 and DSS06 process objectives. The results of the measurements show that APO11 obtained a result of 62.18% with the L (Largely Achieved) category at level 3, while BAI08 obtained a 50% result with the P (Partially Achieved) category at level 2, and DSS06 obtained a result of 69.1% with the P (Partially Achieved) at level 2.

3.4 Gap Analysis

The process of gap analysis involves comparing the expected level of capability with the current level of capability within the company to identify discrepancies.

Table 2. Gap Analysis Result

Objective Process	Current Capability Level	Expected Capability Level	Gap
APO11	3	4	1
BAI08	2	4	2
DSS06	2	4	2

Table 2 is the result of a gap analysis which shows that for each process objective the company has not yet achieved the level of capability expected by the company. In the APO11 process objective there is a gap of 1 level, while for BAI08 and DSS06 the gap is 2 levels. This shows that the company's current IT governance capability level has not yet reached the expected level of capability.

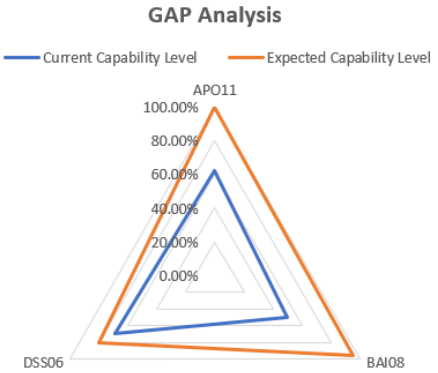

Figure 3. Radar Chart Gap Analysis Results

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Figure 3 is the result of a gap analysis made in the form of a radar chart to show a comparison between the current level of capability and the expected level of capability. The analysis results were obtained based on the capability level results of the APO11 process, namely 62.18%, BAI08, namely 50% and DSS06, namely 69.1%.

3.5 Findings and Impacts

The findings and impacts of measuring capability levels are obtained based on an assessment of the process objectives that have been carried out in the audit document. In this assessment, it was found that there were activities that had a value less than or equal to 50, so they became priorities for improvement.

Table 3. Findings and Impacts of Process Objectives

Sub Process	Findings	Impacts
APO11.02	Lack of management and identification regarding business needs and expectations in business processes and IT operational services, so the company's quality requirements cannot be met.	Companies have not been able to meet quality management requirements, due to a lack of management regarding the needs and expectations of business processes and IT operational services.
APO11.03	The company does not yet have a special program aimed at quality management training.	The company's quality management requirements cannot be met.
BAI08.01	There are no documents, procedures or structured information related to information technology knowledge management (IT knowledge management) in companies, especially in the management and use of IT.	Companies experience difficulties in managing and using IT, because there are no structured information documents or procedures related to knowledge management.
BAI08.03	Lack of employee and company awareness regarding the use and need for knowledge management related to IT governance and company management.	Companies experience problems in managing knowledge related to IT governance and company management, due to a lack of awareness regarding knowledge management.

Table 3 is the result of findings and impacts based on process objectives which have a value below or equal to 50 based on the assessment of the audit documents that have been carried out. There are four process objectives that are priorities in this research, which will then be given recommendations based on activities at COBIT 2019.

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3.6 Recommendations

Recommendations for improvement are made with the aim of providing a reference for the company concerned. Recommendations for improvement are made with the aim of providing a reference for the company regarding process objective activities that have a value equal to or less than 50. The process objectives for which recommendations for improvement are given are APO11 and BAI08.

Table 4. Improvement Recommendations

Objective Process	Recommendations
APO11.02	Manage and identify business needs and expectations so that company quality requirements can be met.
APO11.03	Create procedures or programs for training on quality management so that company quality requirements can be met.
BAI08.01	There are no documents, procedures or structured information related to knowledge management in companies, especially in the management and use of IT.
BAI08.03	Increase awareness regarding the usefulness and need for managing knowledge related to IT governance by conducting training on IT governance approaches in companies.

3.7 Enterprise Feedback

Upon accepting and endorsing the provided recommendations, the company will gradually implement the results through internal discussions. This process includes analyzing the creation of structured informational documents or procedures related to IT knowledge management for the effective administration and utilization of IT within the company. The results of the recommendations will also be used by the company as a guide in overcoming problems related to IT governance in the company.

4. CONCLUSION

The analysis conducted through the COBIT 2019 framework in this study underscores three pivotal process objectives: APO11 at capability level 3, and BAI08 alongside DSS06 at capability level 2. Gap analysis reveals APO11 with a remaining one-level gap, while BAI08 and DSS06 exhibit a two-level gap from the company's anticipated levels. Despite assessment, these objectives haven't reached the desired level 4. The identified company issues—stemming from erroneous stock data entry and the absence of automatic data validation—call for strategic recommendations. Priorities include training for enhanced quality management, fostering employee comprehension of IT usage through knowledge management, and reinforcing business process controls. These proposed measures aim to

address existing shortcomings, ensuring alignment with company quality standards and bolstering IT-related procedures for enhanced efficiency.

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