



Information Technology Governance Analysis Using COBIT 2019 Framework at Bank Mandiri Girian Bitung Branch

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Abstract

The advancement of information technology (IT) has become essential for organizations, including Bank Mandiri, where IT underpins critical business functions and supports operational stability. This study focuses on evaluating the implementation of IT governance at Bank Mandiri's Girian branch, using the COBIT 2019 framework. COBIT is a comprehensive tool for managing IT processes and ensuring they align with organizational goals. A qualitative case study approach, including interviews with key stakeholders, was used to assess 40 IT processes across 11 design factors. Each of these processes was assigned a score ranging from 75 to 100 to help prioritize their importance to the business process. The results revealed several high-priority processes, including Managed Solutions Identification and Build (BAI03), Managed Requirements Definition (BAI02), Managed IT Changes (BAI06), and Managed Projects (BAI11). These processes were identified as critical to maintaining operational stability, ensuring customer satisfaction, and aligning IT with Bank Mandiri's strategic objectives. By efficiently allocating resources, these processes help to streamline IT operations and improve customer service. Based on the findings, the study recommends that lower-scoring processes be deprioritized, allowing resources and focus to be directed towards high-priority areas. This approach ensures that IT governance is strategically aligned with organizational goals while optimizing resource usage. The study highlights the crucial role of IT in supporting business continuity, noting that any IT disruption could severely impact operations and customer satisfaction. Overall, it underscores the importance of robust IT governance practices in achieving better business outcomes and enhancing customer service at Bank Mandiri's Girian branch, ensuring long-term success.

Keywords: Information Technology, COBIT 2019, Bank Mandiri, Design Factor, Organizations.

1. Introduction

With the development of today's era, the role of information technology has also experienced very rapid development and has become very important, so that we as users can use information technology with just one click. The development of this information technology can help carry out daily tasks, both to obtain information and to disseminate information [1]. This aims to make it easier for users to carry out an activity or work, to find solutions to problems faced by users, and to open creativity and efficiency when doing work. The role of information technology is also useful in the field of business management which can have a very big impact on employees and especially for their companies. [2] Work tasks that used to be difficult, time-consuming, and error-prone can now be completed easily, quickly, and accurately using technology. Information technology governance is a job whose task is to ensure that information technology supports and is consistent with business techniques. [3] [4] There is a need for information technology governance to support business methodology in achieving a company's business goals through the proper use of information technology. This function is directly related to how a company determines the right technology, applications, and management arrangements through information systems or information technology. [5] Implementing information technology governance in line with organizational goals. There will be many companies that are getting bigger because they can utilize information technology well. The influence of information technology is felt in increasing the speed and accuracy of business processes and becomes an important element in company decision-making. [6] The demand for better company performance continues to increase over time. Therefore, the utilization of information technology resources is the right strategy for companies to maintain their competitive advantage in the industry. We often experience that the use of information technology wastes resources, without achieving the desired results. Therefore, effective information



management and efficient use of technology are needed. This has been discussed and emphasized repeatedly. [7] From this discussion, the importance of "IT Governance" is increasingly realized.

One of those who need this is financial institutions such as banks, which certainly need to face significant challenges to increase productivity and more efficient operational processes and customer service due to the lack of system integration so it requires adequate and even reliable information technology system that can be easily accessed by its customers, who will rely on this online information technology to help. [8][9] Banking is one of the industries with a fairly high level of dependence on Industrial Technology. [10]

Information technology governance that is suitable for helping, companies, organizations, or institutions such as banks that have different competitors, then by using the COBIT 2019 structure will have a significant impact in supporting its goals. [11] In addition to the implementation of information technology through separate events, COBIT 2019 is one of the achievements of COBIT which aims to implement and make the information technology governance framework effective under the life cycle approach (existence cycle). [12] COBIT (Control Goals for Data and Related Advances) 2019 is a monitoring system intended to oversee information technology that can be applied by various types of organizations. [13] The COBIT Framework was developed by the IT Governance Institute (ITGI) which is part of the Information System Audit and Control Association (ISACA) to conduct a study on the IT management model based in the United States. With this, it can help to measure and evaluate the adequacy of IT infrastructure governance in an organization and obtain value from the gap between technical issues, risks, and controls. [14][15]

COBIT has a business-oriented focus and is designed and implemented not only by users and auditors but also as a comprehensive guide for management and business owners of related processes. COBIT provides a Maturity Process for managing IT processes, allowing management to assess the company's position concerning industry class or international standards, identify critical success factors that lead to IT management priorities that must be prioritized and implemented or controlled, and establish key performance indicators and key performance indicators as a reference for measuring IT success in achieving goals and complying with organizational policies. [16] COBIT also prioritizes areas of change for improvement in the maturity level of information technology processes. In addition, COBIT can define the elements needed to build and maintain a management system involving processes, organizational structures, policies and procedures, information flows, behavioral culture, skills and also infrastructure.[17]

2. Research Method

The research method used in designing the IT governance system refers to a series of stages adapted as the workflow for governance design in COBIT 2019 [10]. This is illustrated in the image below:



Fig 1. Governance System Design

The level of IT governance maturity at Bank Mandiri Girian will be analyzed along with applicable recommendations for improvement. In the design process of the governance system, there are ten design factors to consider, including:

1. The section explains the strategy and information technology management system in more detail, starting from current problems to business objectives, especially in the IT Department of Bank Mandiri Girian branch office using COBIT Design Elements 2019. Steps that determine the initial scope of the governance system by considering four design elements. This relates to the Bank Mandiri branch office business strategy, company objectives, IT risk profile, and problems.[18] Steps that determine the initial scope of the governance system by considering four design elements. This relates to how Bank Mandiri's branch office business strategy, company objectives and IT risk profile and issues.[19] DF 1 known as Enterprise Strategy is an important stage in determining the strategic approach of the independent branch office business. This includes four main strategic directions. First, growth/acquisition, which targets the expansion and development of the company. Second, innovation/differentiation, which emphasizes innovation and the implementation of new ideas. Third, cost leadership, which aims to reduce short-term operational costs. Fourth, service/stability, which prioritizes the provision of consistent services and focuses on customer needs.[20] DF2 contains information about the objectives of the Bank Mandiri branch office that it wants to achieve. The COBIT 2019 Framework, DF2 has 13 types of enterprise goals. [21] This is done with a rating scale, where a score of 5 indicates the highest level of importance, a score of 4 indicates a very important level, a score of 3 indicates an important level, a score of 2 indicates a fairly important level, and a score of 1 indicates an unimportant level. This approach helps stakeholders make clearer decisions in setting the objectives of the Bank Mandiri branch office. Design Factor 3 (Risk Profile). Understanding the company's risk profile means understanding which risk scenarios may impact the company and how to assess all types of impacts and their possible realization. Therefore, it is necessary to conduct a comprehensive company risk analysis, including identifying the associated risks.[21] Design Factor 4 (IT Related Issue) IT issues can be identified or reported by risk management, audit, senior management, or external parties. IT classification issues need to be clearly distinguished to provide the information needed to set governance design priorities.
2. Improving the Scope of the Governance System (Design Factor 5-10) At this stage, the analysis conducted focuses on how to improve the scope of the governance system based on Design Factor 5 - 11, namely questions related to the work environment and also the adjustment of Bank Mandiri branch office values to ensure that they can identify, measure and categorize risks from existing IT. Design Factor 5 (Threat Landscape) Common threats faced by the business world are also factors in designing the right governance system. There are 2 types of threats, namely ordinary threats and advanced threats. Design Factor 6 (Compliance Requirement) The compliance needs and requirements that must be met by the company, for example, regarding regulations from the local government. At this stage, there are three types of compliance needs/requirements: low, normal, and high. Design Factor 7 (Role of IT) The role of information technology (IT) in the company is also significant. Evaluation is done to determine whether IT

is placed as strategic, supporting, or just as part of production. Design Factor 8 (Sourcing Model of IT) At this stage, companies can apply various IT resource management models, which involve the use of IT services such as outsourcing, cloud computing, insource, or a combination of the two (Hybrid). Design Factor 9 (IT Implementation Methods) there are several types of IT implementation methods such as Agile, DevOps, Traditional and Hybrid. This is the most widely used and considered too complex. Design Factor 10 (Technology Adoption Strategy) There are several types of strategies for adopting new technology in a company, namely the first, there are those called pioneers (first movers), companies always try to adopt new technology as soon as possible. Next, there is a group called followers, where companies wait for the implementation of technology by others before they follow. There are also those called slow adopters, where companies are very slow in adopting new technology.

3. Conclude the Governance System Design. This is the final stage in the audit process using COBIT 2019. Each response has been implemented into the available tools and each Design Factor produces a value that will then be measured according to the COBIT 2019 standard. The results of each Design Factor are then analyzed to produce information and knowledge related to the governance system of Bank Mandiri branch offices. Thus, with a governance design that is in accordance with needs, the office can make more appropriate decisions regarding the implementation of IT Governance to achieve alignment between information technology and the company's business objectives

3. Results and Discussion

This chapter will explain the results of the Design Factor that we obtained from the interview process with IT personnel at the Bank Mandiri Branch Office. There are ten factors that must be evaluated to obtain results and priorities in IT governance at the Bank Mandiri branch office. The ten design factors that we will assess include corporate strategy, corporate objectives, corporate risk, IT-related issues, landscape threats, compliance, IT roles, IT resources, IT implementation methods, technology adoption strategies, and company size.

3.1. Enterprise Strategy

In this initial design element, the resource person will respond to the company's strategic approach through four options: growth/acquisition, innovation/differentiation, cost leadership, and customer service/stability. The resource person will outline the importance of each of these goals to be the company's priority focus. The following are the results of the assessment of the Bank Mandiri Girian branch of the company's strategy design factor 1.

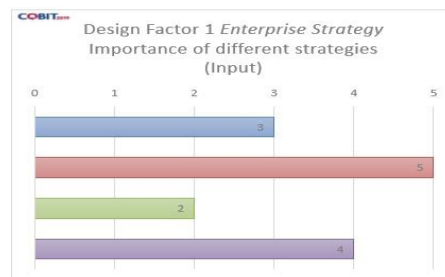


Fig 2. Design Factor 1

Based on the interview results as follows:

1. Growth/Acquisition: This strategy revolves around expansion through acquisition or internal growth, where Bank Mandiri focuses on increasing service coverage and capacity. This includes efforts to enter new markets and untapped customer segments. The score given is 3, indicating a selective and measured approach to expansion.
2. Innovation/Differentiation: Bank Mandiri Girian branch prioritizes innovation as a way to differentiate itself from competitors. A score of 5 indicates a strong focus on developing new products and unique services that provide added value to customers. Initiatives such as innovative digital banking services and financial solutions tailored to specific customer needs are some examples of the implementation of this strategy.
3. Cost Leadership: With a score of 2, this indicates that although important, the strategy to become a cost leader is not a top priority. The bank is more likely to allocate resources to innovation and improving customer service rather than simply reducing operational costs.
4. Customer Service/Stability: A score of 4 indicates Bank Mandiri's strong commitment to customer service quality and operational stability. This involves increasing interactions with customers and ensuring that bank services are stable and reliable, which is important to maintaining customer trust and satisfaction.

3.2. Enterprise Goals

Based on the interview results obtained at the Girian Bitung branch of Bank Mandiri, namely:

Table 1. Design Factor 2

Value	Importance	Baseline
EG01 — Portfolio of competitive products and services	5	3
EG02 — Managed business risk	5	3
EG03 — Compliance with external laws and regulations	4	3
EG04 — Quality of financial information	5	3
EG05 — Customer-oriented service culture	5	3
EG06 — Business-service continuity and availability	5	3
EG07 — Quality of management information	4	5
EG08 — Optimization of internal business process functionality	4	3
EG09 — Optimization of business process costs	4	3
EG10 — Staff skills, motivation, and productivity	5	3
EG11 — Compliance with internal policies	5	3
EG12 — Managed digital transformation programs	5	3
EG13 — Product and business innovation	5	3

Bank Mandiri Girian branch demonstrates a strong commitment to “EG01 — Portfolio of competitive products and services” by consistently adapting their services and incorporating the latest technology tailored to customer needs, ensuring their products and services remain competitive. For “EG02 — Managed business risk”, they strengthen their security systems to protect customer data from unauthorized access, reflecting robust risk management. Compliance with “EG03 — Compliance with external laws and regulations” is also evident through their commitment to maintaining data confidentiality and legal security.

Their centralized and integrated IT system supports” EG04 — Quality of financial information”, enabling access to high-quality and accurate information to aid in decision-making. Additionally, Bank Mandiri adopts a “EG05 — Customer-oriented service culture” by prioritizing customer needs, listening to their feedback, and adjusting services accordingly. Service continuity and availability are maintained through “EG06 — Business-service continuity and availability”, with a dedicated IT team prepared to address any disruptions.

For “EG10 — Staff skills, motivation, and productivity”, Bank Mandiri Girian thoroughly trains its staff, enhancing their skills and readiness to assist customers effectively. Their strict internal policy controls regarding security and transactions demonstrate” EG11 — Compliance with internal policies”. Moreover, the branch shows a commitment to “EG12 — Managed digital transformation programs” by continuously developing their application based on customer input, and fulfills “EG13 — Product and business innovation” by creating relevant new features to enhance customer satisfaction.

3.3. Risk Profil

The following are the assessment results from the Design Factor 3 interview which are shown in figure 2:

Table 2. Design Factor 3

Risk Scenario Category	Impact (1-5)	Likelihood (1-5)	Risk Rating	Baseline
IT investment decision making, portfolio definition & maintenance	2	1	2	9
Program & projects life cycle management	5	2	10	9
IT cost & oversight	5	1	5	9
IT expertise, skills & behavior	5	2	6	9
Enterprise/IT architecture	3	3	9	9
IT operational infrastructure incidents	3	5	15	9
Unauthorized actions	5	1	5	9
Software adoption/usage problems	2	2	4	9
Hardware incidents	3	2	6	9
Software failures	3	2	6	9
Logical attacks (hacking, malware, etc.)	5	1	10	9
Third-party/supplier incidents	5	2	10	9
Noncompliance	3	1	2	9
Geopolitical issues	1	1	1	9
Industrial action	5	1	5	9
Acts of nature	1	2	5	9
Technology-based innovation	2	3	6	9
Environmental	1	2	2	9
Data & information management	1	2	2	9

Based on the risk scenario categories, each category’s impact and likelihood are as follows. For IT investment decision making, portfolio definition, and maintenance, the impact score is 2 and the likelihood score is 1, leading to a risk rating of 2. The branch does not initiate direct IT projects; however, if an IT project failure occurs, such as an issue with the "Livin" app, the impact is limited to

customer complaints. In the area of program and projects life cycle management, with an impact score of 5 and likelihood score of 2, giving a risk rating of 10, failures in program management are infrequent, but when they do happen, such as a server downtime, they have a significant impact and often require temporary closure of the branch until the server is back online. Regarding IT cost and oversight, with an impact score of 5 and likelihood score of 1, leading to a risk rating of 5, inefficient spending has not occurred, but if costly application innovations with minimal returns were to happen, it would have a substantial financial impact due to the high costs of IT development and implementation.

In terms of IT expertise, skills, and behavior, which has an impact score of 3 and likelihood score of 2, resulting in a risk rating of 6, there was an instance when an IT staff member was slow to respond to customer complaints during a server outage, which could have a significant impact as it may require the branch to close temporarily. Issues in enterprise and IT architecture, with an impact score of 3 and likelihood score of 3, leading to a risk rating of 9, such as network disruptions, have occurred frequently, causing delays in customer service; however, this problem was resolved by upgrading to newer hardware. IT operational infrastructure incidents, with an impact score of 3 and likelihood score of 5, giving a risk rating of 15, especially network issues, happen frequently and can lead to customer dissatisfaction if not promptly reported. For unauthorized actions, with an impact score of 5 and likelihood score of 1, resulting in a risk rating of 5, none have been reported at the branch level, but if they did occur, they could result in severe consequences such as dismissal for the individuals involved.

In the area of software adoption and usage problems, which has an impact score of 2 and likelihood score of 2, giving a risk rating of 4, the branch's internal systems are relatively outdated, leading to occasional minor issues like data display errors, but these are manageable. Hardware incidents, with an impact score of 3 and likelihood score of 2, resulting in a risk rating of 6, are impactful when they occur, as repairs are needed to maintain functionality. Software failures, also with an impact score of 3 and likelihood score of 2, giving a risk rating of 6, such as crashes due to hardware issues, require immediate repairs but are not frequent. Logical attacks, with an impact score of 5 and likelihood score of 1, leading to a risk rating of 5, have not occurred at this branch, but if they did, the branch would likely close temporarily for investigation. Occasional third-party or supplier incidents, with an impact score of 5 and likelihood score of 2, resulting in a risk rating of 10, prevent transactions, affecting customer service.

Noncompliance, with an impact score of 2 and likelihood score of 1, giving a risk rating of 2, has not been an issue, but if a violation occurred, it would result in a warning and subsequent evaluation. Geopolitical issues, with an impact score of 1 and likelihood score of 1, resulting in a risk rating of 1, are unlikely to affect the branch, as it is state-owned and has not encountered such challenges. Industrial action, with an impact score of 5 and likelihood score of 1, leading to a risk rating of 5, is also unlikely, as the branch uses a whistleblower system to manage employee complaints, and no protests have occurred.

Acts of nature, with an impact score of 5 and likelihood score of 1, giving a risk rating of 5, such as earthquakes, have happened, but safety measures are in place, allowing the branch to remain open without significant disruptions. Technology-based innovation, with an impact score of 2 and likelihood score of 3, leading to a risk rating of 6, can be challenging, as each new technology implementation often faces obstacles; however, the branch consistently finds solutions. Environmental factors, with an impact score of 1 and likelihood score of 2, resulting in a risk rating of 2, such as volcanic ash from nearby eruptions, have minimal impact on branch operations, allowing business to continue as usual. Finally, data and information management, also with an impact score of 1 and likelihood score of 2, giving a risk rating of 2, has rarely been an issue, as the branch maintains secure data management practices to support seamless operations.

3.5. Threat Landscape

Table 3. Design Factor 5

Value	Importance (100%)	Baseline
High	20%	33%
Normal	80%	67%

From the assessment results based on the information from the sources, it was found that the bank or office operates at a threat level that tends to be normal, challenges or threats that affect business processes in branch offices at a higher level such as the influence of the industrial sector or geopolitical conditions do not have much influence because the company has been recognized and is also under the auspices of the government.

3.6. Compliance Requirements

Table 4. Design Factor 6

Value	Importance (100%)	Baseline
High	10%	0%
Normal	60%	100%
Low	30%	0%

Based on the interview results, the compliance requirements of Bank Mandiri, Girian branch, tend to be at a normal level, where there are also several compliance requirements made at a low level, but at a high level where the branch applies high compliance requirements because environmental and geopolitical conditions are not given much attention or are made considering the company which is a state-owned company.

3.7. Sourcing Model of IT

Table 6. Design Factor 8

Value	Importance (100%)	Baseline
Outsourcing	20%	33%
Cloud	20%	33%
Insourced	60%	34%

The Bank Mandiri Girian branch relies on third-party support for IT services, particularly in network management, using Telkom services and occasionally bringing in external technicians for more complex issues. Each employee at the branch has a personal account and individual cloud backup, ensuring secure access and data storage for all users. Additionally, the branch employs skilled and competent IT staff, providing strong in-house support to maintain and troubleshoot the systems effectively.

3.8. IT Implementation Methods

Table 7. Design Factor 9

Value	Importance (100%)	Baseline
Agile	80%	15%
DevOps	20%	10%
Traditional	0%	75%

IT implementation in Bank Mandiri tends to use agile methods according to sources, this is because the company needs fast adaptation to changes in customer desires and work in the IT environment also tends to involve flexible teamwork, several DevOps principles are also applied, such as fast distribution of results to consumers.

3.9. Technology Adoption Strategy

Table 7. Design Factor 10

Value	Importance (100%)	Baseline
First mover	50%	15%
Follower	40%	70%
Slow adopter	10%	15%

In adopting technology, Bank Mandiri, according to the information obtained, tends to adopt new technology (50%), such as the Livin application adopting a more up-to-date interface design and other features. For technology that has been tested and implemented by other banks, Bank Mandiri will usually also implement this because of consumer needs. Companies also tend not to adopt new technology if it is not really needed.

3.10. Discussion on Results

Based on the graph taken from the COBIT 2019 toolkit as shown on figure 3, there are 40 processes evaluated based on 11 different design factors and the value has been calculated from design factor 1 to design factor 10. With a score between 100 and 75. This evaluation is important to determine the priority of these processes in IT management and governance in an organization. Processes that receive positive scores are considered top priority and are critical to supporting the IT governance framework. However, processes with negative scores are less prioritized and may receive less attention in resource allocation or strategic decision making in the organization. This kind of evaluation is crucial to ensure that resources are organized and used efficiently to support the processes that have the most impact in achieving the organization's overall goals. The objectives with scores above 70 are considered high-priority and critical to IT governance and management. Here is a detailed explanation of each of these high-impact objectives:

1. **BAI03 (Managed Solutions Identification and Build)** with a score of 85 emphasizes the importance of systematically identifying and building IT solutions that meet specific business needs. This objective is central to ensuring that the organization's IT projects directly support its goals and deliver tangible value. By effectively managing solution identification and build, the organization can avoid wasted resources and misaligned projects, ensuring that IT developments align with business strategy and contribute to long-term growth and success.
2. **BAI02 (Managed Requirements Definition)** with a score of 75 highlights the necessity of well-defined and structured requirements management. This process ensures that IT solutions are developed based on a clear understanding of business needs, maximizing relevance and effectiveness. Proper requirements definition minimizes the risk of scope creep, misunderstandings, and project delays. By capturing and clarifying requirements early, the organization can reduce the likelihood of rework and additional costs, ultimately supporting projects that are efficient, timely, and aligned with business objectives.
3. **BAI06 (Managed IT Changes)** with a score of 70 underscores the critical role of managing changes within IT systems. Effective change management helps minimize disruptions and ensures that system modifications support rather than hinder organizational processes. This objective includes assessing potential impacts, gaining stakeholder approval, and implementing changes in a controlled manner. By managing IT changes carefully, the organization maintains system stability, avoids unplanned downtime, and ensures that IT infrastructure can evolve in a way that supports continuous improvement and agility.
4. **BAI11 (Managed Projects)** with a perfect score of 100 reflects the utmost importance of project management within the

organization's IT governance framework. This objective focuses on executing IT projects efficiently and reliably, meeting the highest standards of quality and performance. Effective project management involves planning, resource allocation, risk assessment, and monitoring, all aimed at ensuring that projects deliver intended outcomes on time and within budget. By prioritizing project management, the organization can achieve greater consistency in project success, optimize resource use, and support strategic goals through reliable IT project execution.

This prioritization framework ensures that resources are focused on these critical areas, reinforcing IT governance and helping the organization achieve its overall objectives effectively.

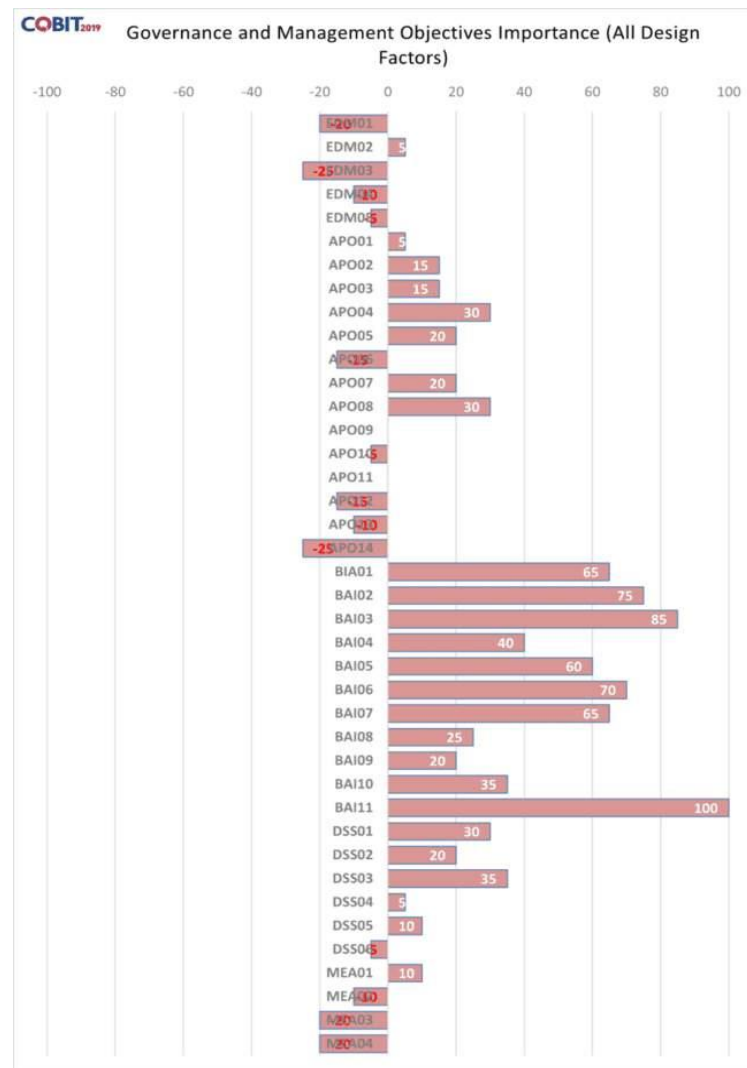


Fig 3. All 40 Governance/Management Objectives

4. Conclusion

The IT governance analysis for Bank Mandiri's Girian branch office underscores the branch's commitment to aligning IT initiatives with its broader corporate strategy and customer-centric focus. Through the evaluation of ten design factors—including corporate strategy, risk management, IT roles, and technology adoption—the branch seeks to establish priorities that enhance the effectiveness of IT governance. The primary focus areas identified include growth through innovation and differentiation, ensuring high customer service quality, and stable operations. Cost leadership is recognized but takes a lower priority, indicating that resources are directed toward service quality and innovation rather than cost-cutting alone.

Customer feedback plays a pivotal role in the branch's service improvement efforts. Regular input allows the branch to address emerging customer needs and security concerns, particularly in protecting customer data and adhering to regulatory requirements. The branch demonstrates a strong commitment to compliance by continuously upgrading its security systems and educating customers on safe usage practices. This customer-oriented approach ensures that the branch's services remain relevant, trustworthy, and secure, especially as digital services expand.

IT operational stability and resource management are both crucial and challenging for the branch. Server outages and network issues have been occasional disruptions, but a well-coordinated IT team, coupled with support from third-party providers like Telkom, helps mitigate these incidents. For instance, a temporary service halt is used as a preventive measure during system issues to ensure minimal customer

impact. Additionally, the branch's IT team employs a mix of Agile and DevOps methodologies to adapt quickly to changes, while traditional methods are less favored, reflecting a focus on flexibility and responsiveness. In accordance with COBIT 2019 guidelines, the Girian branch has assessed 40 processes based on 11 design factors to determine their significance for IT governance. This evaluation prioritizes high-impact processes, such as Managed Solutions Identification and Build (BAI03), Managed Requirements Definition (BAI02), Managed IT Changes (BAI06), and Managed Projects (BAI11), each contributing directly to operational efficiency, customer satisfaction, and strategic alignment. By focusing resources on these critical areas, the branch ensures that IT governance efforts are aligned with its core objectives, driving excellence in customer service, operational stability, and sustainable growth. Processes with lower scores are deprioritized, allowing for strategic resource allocation that maximizes the branch's capacity to meet its goals effectively. This approach reinforces the branch's commitment to achieving reliable, agile, and customer-focused IT management.

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