Jurnal Informasi dan Teknologi

https://jidt.org/jidt

2024 Vol. 6 No. 2 Hal: 229-237 e-ISSN: 2714-9730

Applying COBIT 2019 to Design a Tailored IT Governance System for PT. Telekomunikasi Seluler Manado Branch

Joe Yuan mambu[1]✉, Toetik Wulyatiningsih[2], Stenly Adam[3]

[1,3]Faculty of Computer Science, Universitas Klabat
[2]Faculty of Economics and Business, Universitas Klabat

joeyuan.mambu@unklab.ac.id

Abstract

This study evaluates IT governance at PT. Telkomsel Manado using the COBIT 2019 framework. The main issue is how to enhance IT performance and manage risks more effectively. The research methodology includes a literature review and stakeholder interviews to gather data on the company's IT strategy, goals, risks, and challenges. The findings indicate that the implementation of COBIT 2019 provides a comprehensive assessment of the company's IT governance. The IT audit revealed several areas needing improvement, particularly in risk management and aligning IT strategy with business objectives. Based on these findings, recommendations are made to optimize IT utilization to improve operational efficiency and effectiveness. The study shows that PT. Telkomsel Manado has 7 core models with capability level 4, including EDM03, APO12, BAI03, BAI06, DSS04, DSS05, and MEA03. In conclusion, adopting the COBIT 2019 framework can enhance IT performance and efficiency, assisting PT. Telkomsel Manado in addressing their technological and business challenges.

Keywords: Information Technology, IT Governance, COBIT, IT Audit, Risk Management.

JIDT is licensed under a Creative Commons 4.0 International License.

1. Introduction

In today's era, Information Technology (IT) is very important because it facilitates communication and helps people achieve their goals. The challenge is to create IT products that can solve various problems in daily life. To achieve this, good IT management is necessary so that its benefits can be felt by organizations.

Many organizations in various industries, trade, and government now rely heavily on effective and implementable IT. IT not only supports business processes but also provides a competitive advantage for organizations. Nowadays, companies are starting to realize that IT plays a crucial role in business operations that generate positive value. To gain value from IT operations, the level of effectiveness and efficiency must be measured.

Effective information technology management often requires an audit process. The purpose of this audit is to assess the IT infrastructure and provide a foundation for correcting any errors or deviations found. In practice, the audit results serve to evaluate the maturity level of the company. Moreover, the results of the IT governance infrastructure audit provide important input for stakeholders and become a reference for improving management and increasing knowledge about the use of the audit framework applied in the assessment of IT governance infrastructure in the organization.

To evaluate the governance of technology in an organization, several tools can be used. One of them is the Control Objective for Information and Related Technology 2019, better known as COBIT 2019, which is a standard guide for information technology management practices. This COBIT standard is issued by IT Governance.

Based on the above description, the author is interested in conducting an Evaluation of Information Technology Governance using the COBIT 2019 framework at PT. Telkomsel in Manado City. This research is based on the assumption that COBIT 2019 can accurately evaluate the information technology governance used by Telkomsel. Furthermore, it is expected that COBIT 2019 can improve the company's information technology performance after the evaluation is carried out using this framework.

Receipt: 30-12-2023 | Revision: 01-07-2024 | Publish: 12-07-2024 | doi: 10.60083/jidt.v6i2.572

2. Research Methods

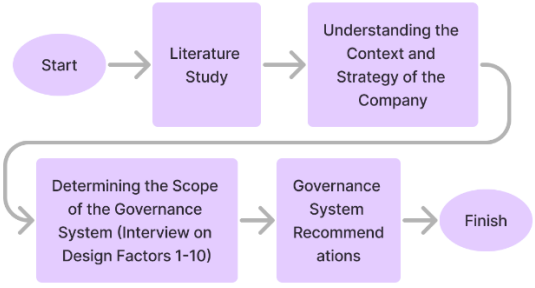


Figure 1. Research Method Flowchart

2.1. Literature Study

The literature study is divided into two parts:

a. Literature Review
   o support the data in this research, a literature review will be conducted by collecting references from various sources such as journals, books, theses, and previous studies related to the development of information systems. This approach is expected to provide significant contributions to the ongoing research.
b. Company Document Study
   The process of studying company documents involves collecting data and information about the company that is the subject of the research. This includes conducting interviews with relevant parties in the company to obtain data regarding the vision and mission, company profile, standard operating procedures (SOP), and the organizational structure of the company.

2.1.1. IT Governance

Information technology has become an important resource for everyone in communicating, sharing information, and supporting various activities. Information technology skills provide a range of services that support various fields of work. One of the areas that greatly requires information technology is organizations or companies. With IT, company operations become a crucial support for the company's sustainability and growth.

Information Technology Governance (ITG) is a process applied by companies to oversee and control decisions related to information technology capabilities. The goal is to ensure that IT delivers maximum value to stakeholders. ITG not only focuses on the performance of IT systems or IT risk management but also on strategic IT decisions that affect the business value of the organization. ITG also plays a role in managing risks, enhancing stakeholder trust, and ensuring effective and efficient use of IT to achieve organizational goals. Furthermore, ITG helps organizations in evaluating, selecting, prioritizing, and funding IT investments so that they can be optimally utilized in business processes.

ITG ensures that IT strategy aligns with the organization's business strategy to achieve company goals. With established methods, organizations can measure IT performance in business processes, taking into account the interests of all stakeholders. The ITG framework must answer key questions such as how the IT department operates as a whole, critical management needs, and the business benefits of IT investments. This ensures that the company stays on track to achieve its goals.

To implement ITG effectively, a standard governance model is required that includes planning, implementation, operation, and monitoring of all IT processes. This IT governance standard offers many benefits for companies. ITG has five main focus areas: performance measurement, resource management, value delivery, risk management, and strategic alignment..

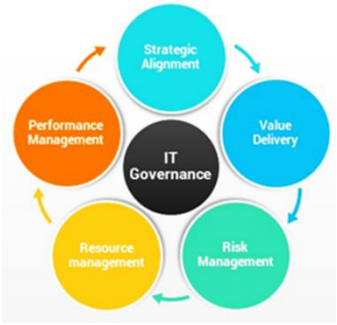


Figure 2. IT Governance

1. Performance Management/Measurement: IT must be periodically assessed to ensure its performance and capacity meet business needs.
2. Resource Management: IT must be supported by adequate resources, and their use must be optimal.
3. Risk Management: IT implementation must include the identification of IT risks so that their impacts can be mitigated.
4. Value Delivery: IT must provide significant added value in achieving the company's mission.
5. Strategic Alignment: IT implementation must support the company's mission by ensuring IT strategy aligns with the company's business strategy.

2.1.2. COBIT 2019

COBIT 2019 provides an integrated approach to IT governance and management, offering best practices relevant in the digital era and new business models. This framework helps companies balance the availability of information systems and strict controls, offering practical solutions to enhance value and competitiveness. COBIT is a standard guide that helps auditors, management, and users address business risks and technical issues, as well as support the management of new digital services. COBIT provides documentation of best practices for IT governance in companies [7].

In this era of rapid change, where new digital services must be offered, COBIT provides significant assistance to companies and professionals. This framework enables companies to manage information technology effectively and remain relevant to new technological developments. Old methods are no longer suitable, so new understanding and innovative information systems are required. COBIT ensures that governance and management practices remain aligned with evolving business needs [8].

COBIT 5, published in 2012, has evolved along with other standards to create a new landscape. With technological trends and new business models using IT as a main driver, COBIT's alignment with these changes is crucial. COBIT 2019 marks the initial step in this alignment, ensuring more frequent and seamless updates. The red arrow in the COBIT 2019 logo symbolizes ongoing evolution. For effective version control, future updates will be aligned with their release year, so COBIT 2019 signifies the version released in 2019 [9].

2.2. Understanding Company Context and Strategy

At this stage, the design process will commence by gaining a comprehensive understanding of PT. Telkomsel in Manado City. This includes understanding the strategy, objectives, IT-related risks, and current IT issues facing the company. All of these will be assessed based on established criteria considering the design factors outlined in COBIT 2019.

2.3. Determining the Scope of the Governance System (Interview on Design Factors 1-10)

At this stage, researchers conduct interviews with stakeholders to formulate initial steps in governance. The interviews consider strategies and various aspects included in design factors 1 through 10. These aspects encompass Company Strategy, Company Objectives, IT Risk Profile, and IT-related Issues at PT. Telkomsel in Manado City.

a. Design Factor 1 (Enterprise Strategy)
   Every organization or company has different strategies. Design factor 1 in COBIT 2019 emphasizes the importance of understanding the company's strategy. Questions to stakeholders relate to the strategies employed by the company. Some companies may prioritize growth, while others focus on product and service innovation. Some emphasize cost leadership by minimizing short-term costs, and others prioritize service stability by focusing on providing stable services to customers [10].
b. Design Factor 2 (Enterprise Goals)
   In COBIT 2019, the organization's goals are shaped using the Balanced Scorecard framework, which includes four perspectives: financial, customer, internal processes, and growth. In the second design factor, researchers interview stakeholders to determine the goals of PT. Telkomsel in Manado City. The second design factor in COBIT 2019 includes 13 types of Enterprise Goals (EG). EG01 relates to a competitive product and service portfolio, EG02 relates to business risk management, EG03 relates to compliance with external laws and regulations, and so on [9].
c. Design Factor 3 (Risk Profile)
   Recognizing the variety of risks associated with information and technology that a company or organization may face is crucial. In the third design factor, the focus is on identifying potential risks that may arise at PT. Telkomsel in Manado City. COBIT 2019 provides 19 categories in the third design factor, such as IT investment decision-making.
d. Design Factor 4 (I&T / Related Issues)
   The aim of this fourth design factor is to discover and identify existing IT issues at the PT. Telkomsel branch in Manado. All aspects related to IT must be clearly explained to determine whether the current situation

aligns with the categories established in the COBIT framework. The goal is to address future IT issues effectively and efficiently in handling processes.

e. Design Factor 5 (Threat Landscape)
The fifth design factor involves questioning respondents about various threats that may arise in the workplace environment. These threats can originate from various factors such as geopolitics, demographics, and others. Threats can be divided into two levels: high-level threats indicate potential disruptions significantly affecting company activities, while normal-level threats are those that do not significantly disrupt company activities.

f. Design Factor 6 (Compliance Requirement)
Design factor 6 involves questioning stakeholders regarding PT. Telkomsel Manado's compliance level with local government regulations. Company compliance can be classified into three levels. First is the low level, which means the company's compliance with government rules is below average. Second is the normal level, indicating compliance comparable to other companies in general. Third is the high level, indicating high compliance, even above the average for companies in general.

g. Design Factor 7 (Role of IT)
In this design factor, questions to informants relate to the role of IT at PT. Telkomsel. The role of IT is divided into four categories. First, IT as a supporter, which merely supports business processes and business innovation. Second, connected IT, which directly relates to business processes, although not related to business innovation. Third, reverse IT, where IT supports business innovation but is not involved in company business processes. Fourth, strategic IT, where IT plays a crucial role in business processes and business innovation. The expected response is to determine the most important category in PT. Telkomsel (assessment scale = 5), the role of IT in Bimoli branch Bitung (assessment scale = 4), and which category is irrelevant to the role of IT at PT. Telkomsel Manado (assessment scale = 1).

h. Design Factor 8 (Sourcing Model of IT)
In this design factor, we inquire about IT resources. Are IT services obtained from third parties (outsourcing), using cloud/internet services (cloud), managed internally by the company (in-source), or using a combination of two or more of these models (hybrid)? We want to know how common each model is used at PT. Telkomsel Manado, so please provide an estimated percentage for each category.

i. Design Factor 9 (IT Implementation Methods)
In this design factor, researchers ask respondents about the methods used for implementing IT development at PT. Telkomsel Manado. There are several ways to do this. First, using agile methods, a gradual software development framework to produce products according to user needs. Second, using DevOps methods, a combination of culture, practices, and tools to enhance the rapid deployment of applications and competitiveness in the market. DevOps does not use the waterfall model. Third, using traditional IT development methods. Fourth, using hybrid methods that combine traditional and modern approaches. Respondents are asked to provide an estimated percentage for each IT implementation method at PT. Telkomsel Manado.

j. Design Factor 10 (Technology Adoption Strategy)
In this design factor, we want to know how quickly PT. Telkomsel Manado adapts to current technology. There are three categories of technology adoption strategies we can observe. First, there is the first mover strategy, meaning they adopt new technology as quickly as possible to gain advantages. Second, there is the follower strategy, meaning they follow other companies that have already used new technology and proven its benefits. Finally, there is the slow adopter strategy, meaning they adopt new technology very slowly, potentially even late. We want to know how much PT. Telkomsel Manado implements each of these three strategies.

2.6. Summarizing the Governance System Design

The final step in verifying COBIT 2019 is the sixth stage. Here, each action taken has been applied within the appropriate tool. This means that each design aspect provides measurable results accurately aligned with the standards of using the COBIT 2019 tool. Subsequently, the results from each design aspect are analyzed to generate insights and useful information in planning the management system for Telkomsel Manado.

3. Results and Discussion

We conducted research by interviewing PT. Telkomsel and studying its official website to identify key factors in designing the company's IT strategy. These interviews focused on 10 diverse factors such as corporate strategy, risks, compliance, and others to prioritize IT management. All of these factors helped us better understand how the company faces IT challenges and achieves its goals.

3.1. Design Factor 1 Enterprise Strategy

The first stage in the design process is to identify the company's business strategy. There are four types of strategies to consider: growth/acquisition, innovation/differentiation, cost leadership, and customer

service/stability. The importance of each strategy is assessed on a scale of 1 to 5: not important, somewhat important, important, very important, and most important.
After interviewing the relevant individuals, we evaluate their responses and document the results in Table 1.

Table 1. Design Factor 1

Value	Importance (1-5)	Baseline
Growth/Acquisition	1	3
Innovation/Differentiation	4	3
Cost Leadership	1	3
Client Service/Stability	5	3
Growth/Acquisition	1	3

Based on the interviews, PT. Telkomsel is highly focused on customer service and stability. They have enhanced their systems to provide a better digital experience for customers, which also helps their business grow while keeping costs in check. However, innovation to improve customer experience remains a top priority for them. For instance, Grapari Telkomsel services demonstrate their commitment to customer service. Therefore, the company's primary strategy is customer service and stability, while innovation and differentiation are secondary strategies.

3.2. Design Factor 2 Enterprise Goals

On design factor 2, there are 13 Enterprise Goals specified by COBIT 2019. The results of design factor 2 can be seen in Table 2.

Table 2. Design Factor 2

Value	Importance (1-5)	Baseline
EG01— A diverse portfolio of competitive products and services	5	3
EG02—Effective management of business risks	5	3
EG03—Adherence to external laws and regulations	5	3
EG04—High-quality financial information	5	3
EG05—Service culture focused on customer satisfaction	5	3
EG06—Continuity and availability of business services	5	3
EG07—High-quality management information	5	3
EG08—Optimization of internal business processes	5	3
EG09—Cost optimization of business processes	5	3
EG10— Skilled, motivated, and productive staff	5	3
EG11—Compliance with internal policies	5	3
EG12—Management of digital transformation programs	5	3
EG13—Innovation in products and business practices	5	3

Based on the questionnaire and interviews, PT. Telkomsel prioritizes its goals within the Enterprise Goals framework. From the survey and interviews with Telkomsel staff, it is revealed that the company has a focus on "growing faster," given the increasingly competitive telecommunications industry. This drives Telkomsel to continually enhance its products and services to maintain a competitive edge. Additionally, Telkomsel is committed to complying with government regulations by fulfilling local tax obligations and utility network levies. In terms of optimizing operational costs, the IT staff stated that Telkomsel has prepared a captivating digital experience for customers by efficiently improving system performance to support business growth and cost control. Telkomsel also offers sustainable business services, such as the MyTelkomsel app for loyal customers, and maintains a well-managed business risk management system through its Internal Audit department.

3.3. Design Factor 3 Risk Profile

Based on interviews with employees of PT. Telkomsel Manado, the company's risk profile is as in Table 3.

Table 3. Design Factor 3

Risk Scenario Category	Impact (1-5)	Likelihood (1-5)	Risk Rating	Baseline
IT Investment Decisions: Defining and maintaining IT portfolios	5	1	5	9
Lifecycle Management: Overseeing IT programs and projects from start to finish.	5	3	15	9
Cost and Oversight: Monitoring IT expenses.	5	3	15	9
Skills and Behavior: Ensuring IT expertise and proper conduct.	5	1	5	9
Architecture: Structuring enterprise and IT systems.	5	3	15	9
Operational Incidents: Handling IT infrastructure issues.	5	4	20	9

Unauthorized Actions: Preventing unapproved activities.	4	4	16	9
Software Issues: Managing adoption and usage problems.	1	1	1	9
Hardware Incidents: Addressing hardware-related issues.	5	4	20	9
Software Failures: Resolving software malfunctions.	5	1	5	9
Security Threats: Defending against hacking and malware.	5	4	20	9
Third-Party Incidents: Managing supplier-related issues.	5	2	10	9
Noncompliance: Ensuring adherence to regulations.	5	5	25	9
Geopolitical Issues: Addressing political risks.	5	5	25	9
Industrial Actions: Responding to strikes and protests.	5	1	5	9
Natural Disasters: Preparing for natural events.	5	5	25	9
Tech Innovation: Implementing technology-based advancements.	1	1	1	9
Environmental Factors: Considering environmental impacts.	1	1	1	9
Data Management: Overseeing data and information handling.	5	5	25	9
Skills and Behavior: Ensuring IT expertise and proper conduct.	5	1	5	9

Based on the interviews, the risk profile includes aspects such as IT investments, decision-making for IT investments, program lifecycle, IT procurement budget, and IT infrastructure. All these aspects are rated low risk because they are managed by the parent company. Therefore, the impact and likelihood of risks in the company are low. Regarding IT expertise, the company currently has only one employee in the IT department. According to staff, if this IT employee is unavailable, IT issues are resolved over the phone. For more serious issues, remote solutions are implemented. Based on this information, it can be concluded that the impact on the company is not significant, and these risks are likely moderate due to the limited IT staff that could trigger such risks. For risks related to IT infrastructure and hardware incidents, they are considered moderate because even though damage to hardware by unauthorized parties can affect business processes, access to sensitive data storage areas is highly restricted by IT staff. Unauthorized actions are also rare because access to sensitive data storage areas is strictly limited to authorized personnel only. So far, such risks have not occurred in the company.

According to the IT staff, risks related to employee software use and old software failures have minimal impact and likelihood. This is because current software usage by employees has been smooth and supports the company's business processes. Additionally, the company uses third-party services like SAP. If there is an incident involving these third parties, its impact on the company's business is small because it's promptly handled by the parent company's IT team, making such incidents highly unlikely.

Non-compliance risks with regulations and geopolitical issues are considered moderate. Direct government regulations affecting the company's business processes would certainly impact operations.

Risks from demonstrations causing access closures or natural disasters have significant impacts on the company. If a major disaster or demonstration closes roads, business processes could halt, making this risk high despite its low likelihood. The risk of the company not adopting new technologies has a minor impact. Information indicates they won't adopt new technologies as long as current ones support business processes. Therefore, it can be concluded that the company is slow in adopting new technologies.

3.4. Design Factor 4 IT Related Issues

Based on the interview results with PT Telkomsel, the company's risk profile is identified as shown in Table 4

Table 4. Design Factor 4

Value	Importance (1-3)	Baseline
Frustration arises among various IT entities within the organization due to perceived low business value.	2	2
Business departments experience frustration with IT due to failed projects or perceived lack of value.	1	2
Significant IT-related issues, such as data loss, security breaches, project failures, and application errors, occur.	1	2
IT outsourcing leads to service delivery problems.	1	2
Failures to comply with IT-related regulatory or contractual requirements.	1	2
Regular audits highlight poor IT performance or quality issues.	2	2
Hidden or unauthorized IT spending outside approved budgets.	1	2
Resource wastage due to duplicated or overlapping initiatives.	1	2
Insufficient IT resources, inadequate skills, or staff burnout.	1	2
IT-enabled projects frequently fail to meet business needs, often delayed or over budget.	1	2
Board members and executives show reluctance to engage with IT or lack commitment.	1	2
Complex IT operating models or unclear decision-making processes.	1	2
Excessively high IT costs.	1	2
Existing IT architecture hinders new initiatives or innovations.	1	2
Disconnect between business and technical knowledge leads to communication gaps.	1	2
Frequent data quality and integration issues.	1	2
High levels of end-user computing lack oversight and quality control.	1	2
Business departments independently implement IT solutions without involving the enterprise IT department.	1	2

Noncompliance with privacy regulations.	1	2

3.5. Design Factor 5 Threat Landscape

In the Design Factor 5 Threat Landscape, it received scores as shown in Figure 3.

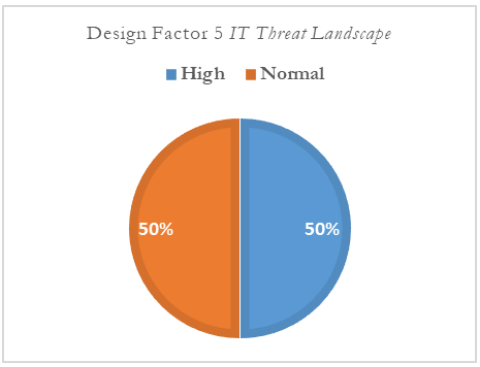


Figure 3. Design Factor 5

The Design Factor 5 stage assesses the threat levels to PT. Telkomsel's buildings. The results show that 50% of the buildings are categorized as high risk (High), and 50% as normal risk (Normal). High-risk factors are due to potential natural disasters such as earthquakes, tsunamis, and volcanic eruptions. Meanwhile, the normal risk category is achieved because PT. Telkomsel consistently complies with regulations to mitigate environmental risks.

3.6. Design Factor 6 Compliance Requirements

On Design Factor 6, Compliance Requirements received a score as shown in Figure 4.

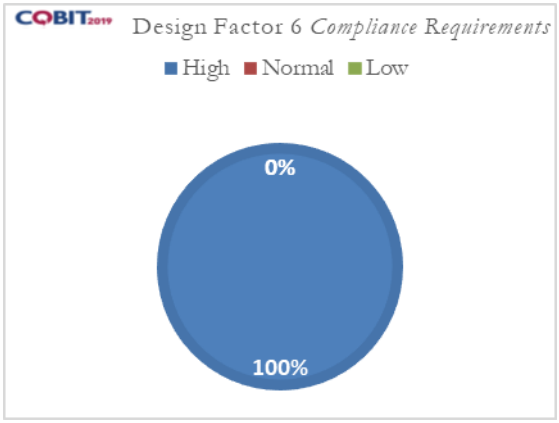


Figure 4. Design Factor 6

In Design Factor 6, PT Telkomsel identifies compliance needs and requirements that must be met. PT Telkomsel maintains a very high compliance level, at 100%, as it is obligated to adhere to all regulations set by the government. For instance, PT Telkomsel executes CSR (Corporate Social Responsibility) programs as part of implementing Good Corporate Governance.

3.7. Design Factor 7 Role of IT

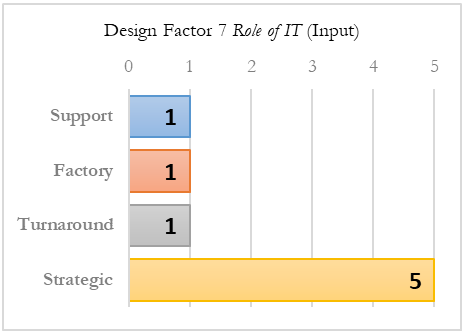


Figure 5. Design Factor 7

Design Factor 7 is the stage to identify the role of IT at PT. Telkomsel. From interviews and questionnaires with IT staff, it is found that PT. Telkomsel scores 5 in the Strategic aspect. This score indicates that PT. Telkomsel heavily relies on IT for their organizational operations and services, including innovation that is highly dependent on IT. If there are issues with IT, the organization's operations, innovation, and services would be directly affected. Therefore, the role of IT at PT. Telkomsel is significant, hence they score 5 in the Service aspect.

3.8. Design Factor 8 Sourcing Model for IT

Design Factor 8, Sourcing Model for IT, received a score as shown in Figure 6.

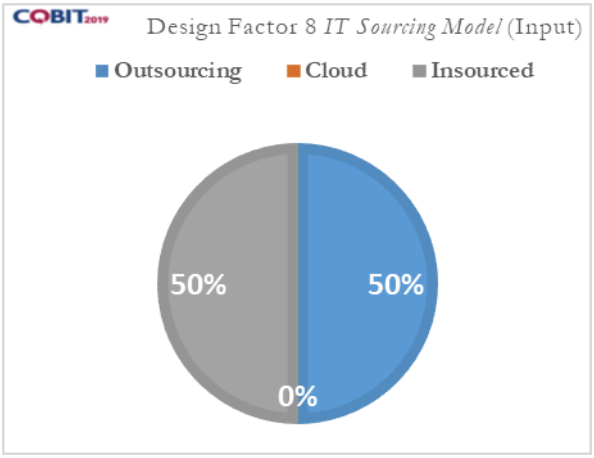
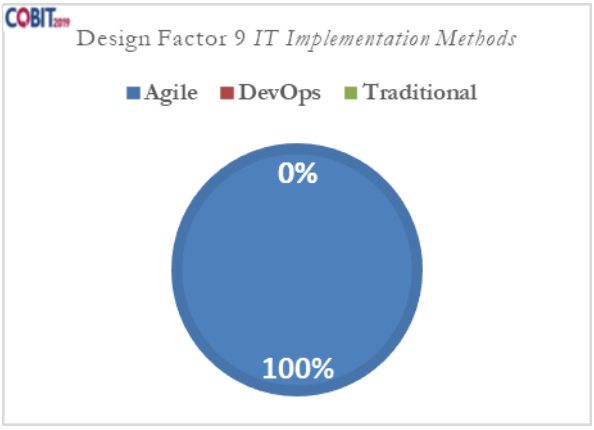


Figure 6. Design Factor 8

Design Factor 8 is a stage to identify the IT sourcing models used by PT Telkomsel. This assessment was conducted through interviews with one of the staff members to obtain information about three types of IT sourcing models used by the company: Outsourcing, where the company requests services from third parties to provide IT services; Cloud, where the company uses cloud technology to provide IT services to its users; and Insourced, where the company provides its own staff and IT services. Through this process, PT Telkomsel can understand and manage the various IT sourcing models used in its operations.

3.9. Design Factor 9 IT Implementation Methods



Gambar 7. Design Factor 9

Stage 9 in the Design process involves identifying the working methods used by PT Telkomsel. The results show that the Agile method is used with a compliance rate of 100%. This was obtained from interviews and questionnaires with IT staff who stated that PT Telkomsel fully implements the Agile Method. This method is used to make changes within their organization both externally and internally.

3.10. Design Factor 10 Technology Adoption Strategy

Design Factor 10, Technology Adoption Strategy, received a score as shown in Figure 8.

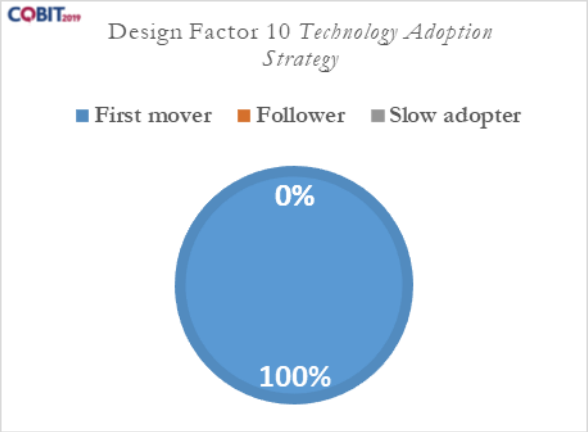


Figure 8. Design Factor 10

In technology adoption strategy, in design factor 10, PT. Telkomsel achieved 100% as a Pioneer Leader because we adopt a Pioneer Leader strategy that forms the foundation for all our strategic steps, including information technology, networks, and infrastructure. We have played a crucial role in ensuring the success of our delivery. We always strive to be the first in various fields to stay ahead of our competitors.

4. Conclusion

Based on the research and data collected, the prioritization of governance systems at PT. Telkomsel assigns processes scoring 75 or higher to Level 4 targets. Processes scoring between 50 and less than 75 are targeted at Level 3. Scores between 25 and less than 50 are set at Level 2. Processes scoring below 25 need improvement to reach Level 1.

There are 7 core models with Level 4 capabilities: EDM03, APO12, BAI03, BAI06, DSS04, DSS05, MEA03. There are 12 core models with Level 3 capabilities: EDM01, EDM05, APO01, APO10, APO13, APO14, BAI02, BAI07, BAI10, BAI11, MEA01, MEA04. There are 12 core models with Level 2 capabilities: APO03, APO07, APO08, APO11, BIA01, BAI04, BAI05, DSS02, DSS03, DSS06, MEA02, MEA04. And there are 9 core models with Level 1 capabilities: EDM04, APO02, APO04, APO05, APO06, APO09, BAI08, BAI09, DSS01.

Based on these findings, it can be concluded that PT. Telkomsel Manado branch prioritizes 4 governance processes found in core models with Level 4 importance.

References

[1] D. Darmawan and A. F. Wijaya, “Analisis dan Desain Tata Kelola Teknologi Informasi Menggunakan Framework COBIT 2019 pada PT. XYZ,” J. Comput. Inf. Syst. Ampera, vol. 3, no. 1, pp. 1–17, 2022, doi: 10.51519/journalcisa.v3i1.139.

[2] M. Saleh, I. Yusuf, and H. Sujaini, “Penerapan Framework COBIT 2019 pada Audit Teknologi Informasi di Politeknik Sambas,” J. Edukasi dan Penelit. Inform., vol. 7, no. 2, p. 204, 2021, doi: 10.26418/jp.v7i2.48228.

[3] W. Rivas-Asanza et al., “Environmental sustainability in information technologies governance,” Sustain., vol. 10, no. 12, 2018, doi: 10.3390/su10124792.

[4] R. S. A. Gusni, K. Kraugusteeliana, and I. W. W. Pradnyana, “Analisis Tata Kelola Keamanan Sistem Informasi Rumah Sakit XYZ Menggunakan Cobit 2019 (Studi Kasus pada Rumah Sakit XYZ),” Konf. Nas. Ilmu Komput. 2021, vol. 2019, no. September, 2021.

[5] CSI, "IT Governance: Aligning Technology to Business Goals," Aug. 2022. [Online]. Available: https://www.csiweb.com/resources/it-governance-aligning-technology-to-business-goals

[6] D. C. K. Chau, E. W. T. Ngai, J. E. Gerow, and J. B. Thatcher, "The Effects of Business–IT Strategic Alignment and IT Governance on Firm Performance: A Moderated Polynomial Regression Analysis," MIS Quarterly, vol. 44, no. 4, pp. 1679-1703, Dec. 2020. [Online]. Available: https://searchworks.stanford.edu/view/13827493

[7] T. M. Insani, Samsudin, and A. Ikhwan, “Implementasi Framework COBIT 2019 Terhadap Tata Kelola Teknologi Informasi Pada Balai Penelitian Sungei Putih,” J. Tek. Inform. Kaputama, vol. 6, no. 1, 2022.

[8] “Perencanaan Tata Kelola Teknologi Informasi Menggunakan Framework Cobit 2019 pada DPMPTSP,” J. Ilm. Komputasi, vol. 20, no. 2, 2021, doi: 10.32409/jikstik.20.2.2750.

[9] A. S. Sukamto, H. Novriando, and A. Reynaldi, “Tata Kelola Teknologi Informasi Menggunakan Framework COBIT 2019 (Studi Kasus: UPT TIK Universitas Tanjungpura Pontianak),” J. Edukasi dan Penelit. Inform., vol. 7, no. 2, 2021, doi: 10.26418/jp.v7i2.47859.

[10] K. Wabang, Y. Rahma, A. P. Widodo, and F. Nugraha, "Tata Kelola Teknologi Informasi Menggunakan Cobit 2019 Pada Psi Universitas Muria Kudus," JURTEKSI (Jurnal Teknologi dan Sistem Informasi), vol. 7, no. 3, pp. 275-282, 2021.