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Application of COBIT 2019 Design Factors in Strengthening IT Governance in the Palm Oil Plantation Sector

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ABSTRACT

PT Tunas Sawa Erma focuses on growth as its primary strategy and innovation/differentiation as a secondary strategy, aiming to expand market reach and stay aligned with technological developments. Its enterprise goals include compliance with external regulations (EG03), business continuity (EG06), and adherence to internal policies (EG11). The company faces significant risks related to IT expertise, with a very high-risk rating for IT skills and behavior. Additionally, it encounters one serious IT-related issue—challenges in implementing innovation due to system architecture. Its risk profile is balanced, with 50% high risk and 50% normal risk. PT Tunas Sawa Erma also demonstrates 100% compliance with regulations. The IT role is strategic, with a sourcing model that consists of 34% insourced, 33% outsourced, and 33% cloud. In terms of implementation methods, it uses 35% agile, 55% DevOps, and 10% traditional approaches. Technology adoption is split, with 45% as a first mover and 55% as a follower. After evaluating priority objectives APO12, BAI05, and BAI11, the company achieved capability levels of 2, 5, and 3, respectively, all rated as fully achieved.

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1. Introduction

Tata IT Governance is one of the key elements in achieving good corporate governance. It ensures that steps are taken to improve the effectiveness and efficiency of business processes through information technology structures in order to achieve the company's strategic objectives [1][2][3]. IT governance is a part of business, corporate, educational, and government governance within management systems and information technology, offering opportunities for performance control and risk mitigation [4]. IT governance refers to the use of technology in creating, storing, modifying, distributing, and communicating information [5]. With the rapid development of technology, IT plays a significant role in improving company efficiency and effectiveness [6]. Information technology must adapt to the development of internal and external data or information needs. To achieve this, IT management must be carried out in a structured manner [7].

IT governance is a management practice developed to address the increasing complexity of managing and regulating IT. It applies to all types of organizations (public or private) that utilize IT to support their business operations [8][9]. IT governance concerns how IT is managed and structured within a company, providing practices that align business and IT needs to enhance performance. IT governance is essential for evaluating existing IT within an organization. Its goal

is to maximize the use of IT while managing information technology risks [10]. Poorly implemented IT governance can negatively affect company performance, potentially leading to critical issues such as poor decision-making, budget overruns, inefficient asset use, and other operational problems [11].

To implement IT governance effectively, the adoption of an appropriate framework can support sound decision-making. Control Objectives for Information and Related Technology (COBIT) is one such framework that can be used to evaluate IT governance. COBIT 2019, published by the Information Systems Audit and Control Association (ISACA), is the latest version, developed from its predecessor, COBIT 5. COBIT 2019 aims to enhance the value and trust in information systems by integrating organizational governance and management in a transparent and analytical manner [12].

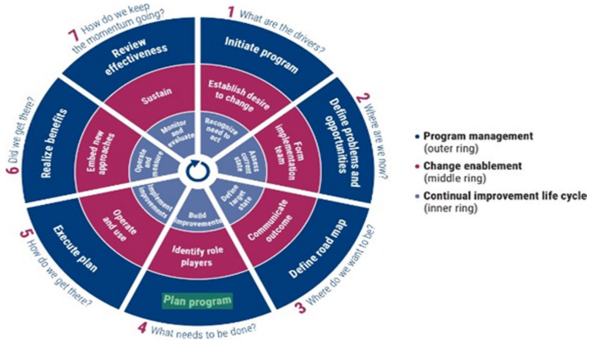
PT Tunas Sawa Erma is a company engaged in the cultivation and processing of palm oil, managing over 133,000 hectares of plantations and plasma farms, and operating mills with a capacity of 75 tons per hour. The company significantly contributes to economic and social development, making it one of the most successful palm oil processors and the largest exporters of cooking oil. As a plantation-focused enterprise, PT Tunas Sawa Erma integrates technology into its palm oil plantation development processes. The company uses the Visible Infrared Imaging Radiometer Suite (VIIRS) system to support environmentally friendly land expansion without burning [13]. Additionally, the company incorporates IT into daily business and operational processes such as document creation, production data management, and email systems. The IT department actively innovates to support the company's business and operations. However, the department often encounters obstacles in implementing new technologies, leading to wasted IT resources due to overlapping IT projects.

This research conducts an IT governance audit of PT Tunas Sawa Erma using the COBIT 2019 framework. The results may serve as a reference or guideline for the company, providing direction, structure, and tools to achieve the desired level of maturity in IT processes aligned with business needs based on the COBIT 2019 framework.

In this study, the researcher uses the COBIT 2019 framework to analyze PT Tunas Sawa Erma. COBIT 2019 includes the concept of Design Factors, allowing more detailed identification of processes or domains. This framework was selected because it offers recognized global practices, principles, tools, and models to improve IT trust and value, while also being flexible and open to various references, making it easier for users to expand their information technology management focus areas [14].

2. Research Method

In this study, a framework will be used as a reference for the research. In COBIT 2019, the goal cascade represents the needs of stakeholders or company owners, with the main objective of aligning IT goals with business goals [15]. As shown in the image below, the goal cascade aims to prioritize enterprise goals to ensure proper alignment [16].



Gambar 1 Implementasi Cobit 2019 [16]

There are seven phases that make up the COBIT implementation approach:

1. What are the drivers?
   In Phase 1, the approach focuses on identifying the factors driving current changes. These change drivers may include events, conditions, or key internal and external issues that act as stimuli for change—such as trends (industry, market, or technology), declining performance, software implementation, or business objectives—all of which can serve as catalysts for change [17][18].
2. Where are we now?
   Phase 2 aligns Information & Technology (I&T) objectives with enterprise strategy and risk, and prioritizes the most important enterprise goals, alignment goals, and processes.[19] The organization must identify the critical governance and management objectives, as well as foundational processes that have sufficient capability to ensure successful outcomes [20].
3. Where do we want to be?
   Phase 3 involves setting targets for desired improvements, followed by a gap analysis to identify potential solutions. In determining priorities, projects that are easier to achieve and offer the greatest benefits should receive the highest attention [21].
4. What needs to be done?
   Phase 4 addresses how to plan adequate and realistic solutions by defining accountable projects and change plans for implementation. Based on the available solutions, the core set of tasks will be determined [22].
5. How do we get there?
   Phase 5 involves implementing the proposed solutions into daily practice, along with establishing steps and monitoring systems. During this phase, the previously developed plan is executed [23].
6. Did we get there?
   Phase 6 focuses on the long-term transition of improved governance and management practices into normal business operations. It also emphasizes monitoring the achievement of improvements using performance metrics and expected benefits [25].
7. How do we keep the momentum going?
   Phase 7 reviews the success of the initiatives by evaluating overall measurement results to ensure continuous improvement and sustainability in the future [25].

3. Result and Discussion

The prioritization of processes at PT Tunas Sawa Erma was carried out through interviews covering Design Factors 1 to 10 with representatives from the company's IT department. Based on the results of these interviews, two management objectives were identified from the ten design factors. These objectives were determined using the COBIT 2019 Design Factor Toolkit.

3.1 Design Factor 1 Enterprise Strategy

The company's primary strategic priority is Growth/Acquisition, while the secondary priority is Innovation/Differentiation.

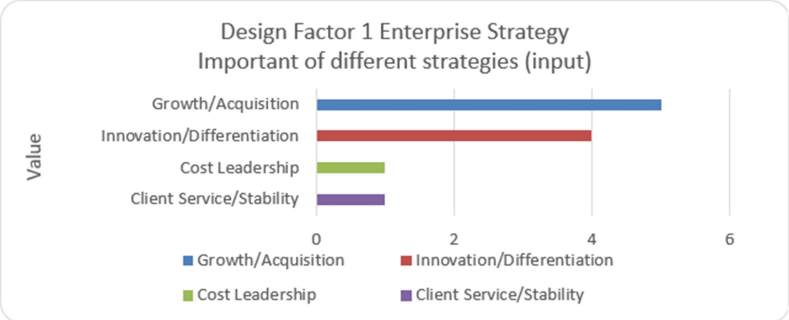


Figure 2 Design Factor 1 Enterprise Strategy Importance of Different Strategies

Based on the interview results with the IT staff at the company, the strategic priority for PT Tunas Sawa Erma is Growth/Acquisition as the primary focus, where the company aims to expand its market reach to gain a competitive advantage. The secondary priority is Innovation/Differentiation, particularly in the IT sector, where the company strives to keep up with and adapt to ongoing technological developments.

3.2 Design Factor 2 Enterprise Goals

The next design factor is Enterprise Goals, which reflect the objectives of PT Tunas Sawa Erma and support the company's strategy as identified in the previous design factor. Figure 3 presents the results of the interview conducted with the company's IT staff.

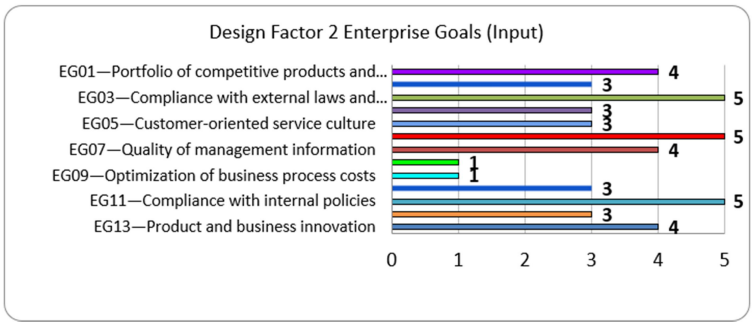


Figure 3. Design Factor 2 Enterprise Goals

PT Tunas Sawa Erma has identified three main enterprise goals as priorities to support its strategic direction. The first is EG03 – Compliance with External Laws and Regulations, where the company ensures that its business operations align with government regulations and mandatory compliance standards, as stated by the IT staff. The second is EG06 – Business Service Continuity and Availability, which reflects the company's commitment to maintaining uninterrupted business operations to continuously deliver services to its customers. Lastly, the third priority is EG11 – Compliance with Internal Policies. In addition to external regulations, the company also emphasizes adherence to internal rules and policies that guide daily operations. These goals collectively demonstrate PT Tunas Sawa Erma's dedication to regulatory compliance, operational resilience, and internal governance.

3.3 Design Factor 3 Risk Profile

Design Factor 3 refers to the IT Risk Profile at PT Tunas Sawa Erma. The results of the interview with the IT staff are presented in Figure 4 below.

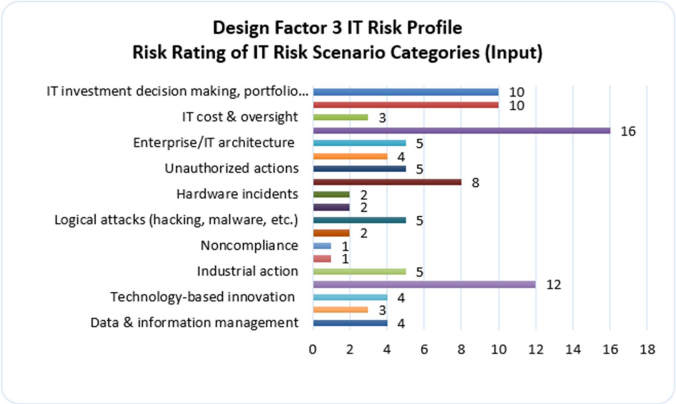


Figure 4. Design Factor 3 IT Risk Profile Risk Rating of IT Risk Scenario Categories

Design Factor 3 focuses on the IT Risk Profile at PT Tunas Sawa Erma, which identifies the various IT-related risks the company is currently facing. These risks are categorized into four levels: low risk, normal risk, high risk, and very high risk. Based on the interview results, there are 14 types of risks categorized under low risk, with none at the normal risk level. The low-risk categories include IT costs and oversight, IT architecture, operational infrastructure incidents, unauthorized actions, hardware incidents, software failures, cyberattacks (such as hacking and malware), third-party/supplier incidents, non-compliance, geopolitical issues, industry actions, technology-based innovation, environmental factors, and data and information management. Three risks were identified at the highrisk level: IT investment decision-making, portfolio definition, and maintenance; program and project lifecycle management; and natural disasters. Lastly, the very highrisk category includes a critical risk related to IT expertise, skills, and behavior, where a lack of productivity from the IT team can have a significant impact on the company, regardless of the quality of the software used.

3.4 Design Factor 4 I&T-Related Issues

The results of the interview for Design Factor 4 with the IT staff are presented in the image below.

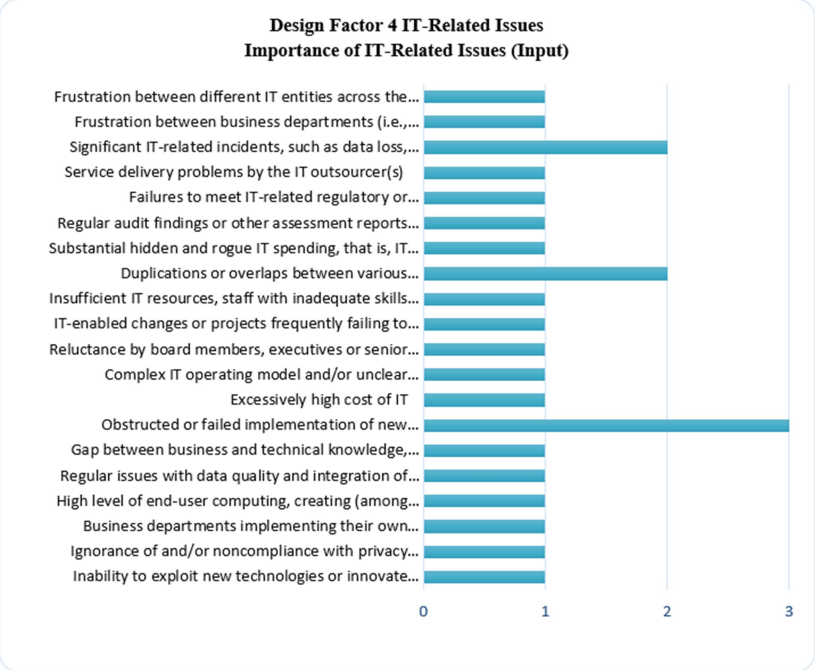


Figure 5 Design Factor 4 I&T-Related Issues

Design Factor 4 categorizes IT issues into three types: no issue (no issues/problems), normal issue (issues that have occurred but have no significant impact on the company), and serious issue (issues that, if they occur, have a significant impact on the company).

Based on the interview results with the IT staff, seventeen issues were identified under the no issue category. These include: dissatisfaction within the IT department due to low contribution to the company's business value, ongoing concerns about the IT department's effectiveness, outsourcing IT service failures, failure to meet contract or regulatory requirements, poor audit reports on IT performance, hidden or fraudulent IT expenditures, insufficient IT resources or skills, IT-supported projects failing to meet business needs and exceeding budgets, lack of executive involvement with IT, complexity in IT models leading to unclear decision-making, excessive IT costs, communication difficulties between IT and non-IT staff, recurring data quality and integration issues, inadequate oversight and quality control on developing or operating applications, business departments implementing their own information systems with little to no IT

involvement, ignorance or non-compliance with security and privacy regulations, and inability to innovate or utilize IT effectively.

In the normal issue category, two issues were identified: significant incidents related to IT such as data loss, security breaches, project failures, application errors, and others; and overlapping projects leading to resource wastage. In the serious issue category, there was one critical issue: the failure or hindrance of implementing innovations or new initiatives caused by the company's architecture or systems.

3.5 Design Factor 5 Threat Landscape

Based on the interview results, the environmental threat level at PT Tunas Sawa Erma is assessed as 50% normal and 50% high, as shown in Figure 5 Through interviews and the researcher's analysis, it was found that this result is influenced by the company's location in Merauke. The interview findings can be seen in Figure 4.5

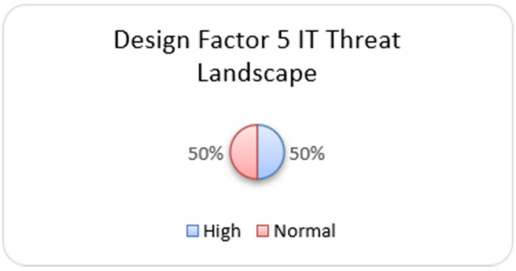


Figure 6. Design Factor 5 Threat Landscape

3.6 Design Factor 6 Complience Requirements

Based on the interview results, PT Tunas Sawa Erma's compliance with all existing regulations is rated at 100%, which is categorized as high, as shown in Figure 7.

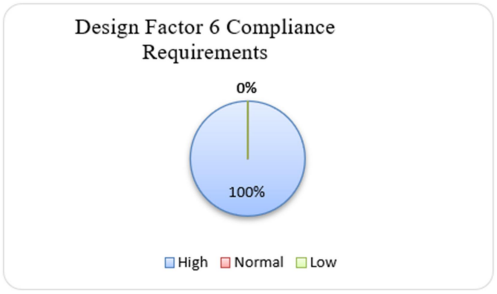


Figure 7. Design Factor 6 Compliance Requirements

3.7 Design Factor 7 Role of IT

Based on the interview results with the respondents, the role of IT at PT Tunas Sawa Erma is categorized as strategic, with a rating of 5. The interview results can be seen in Figure 8.

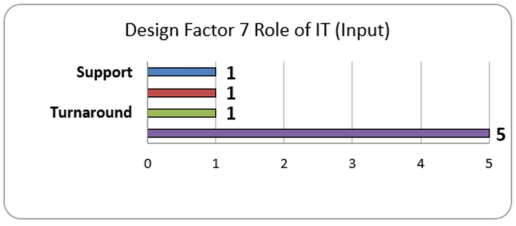


Figure 8. Design Factor 7 Role of IT

3.8 Design Factor 8 Sourcing Model for IT

Based on the interview results with the respondents, the Sourcing Model for IT at PT Tunas Sawa Erma is comprised of 33% outsourcing, 33% cloud, and 34% insourced, as shown in Figure 9 Through the interviews conducted, it was found that PT Tunas Sawa Erma utilizes all sources, including outsourcing from vendors, cloud usage, and in-house ownership by the company.

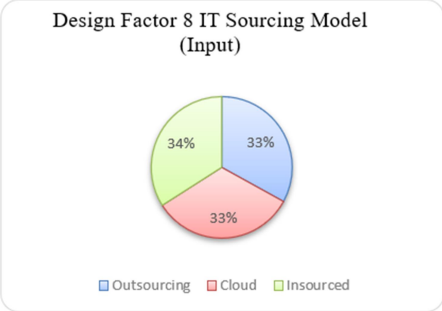


Figure 9. Design Factor 8 IT Sourcing Model

3.9 Design Factor 9 Importance of IT Implementation Methods

Based on the interview results with the respondents, PT Tunas Sawa Erma uses all available methods, with 35% Agile, 55% DevOps, and 10% Traditional methods, as shown in Figure 10 The choice of method for each project is tailored to meet the company's specific needs.

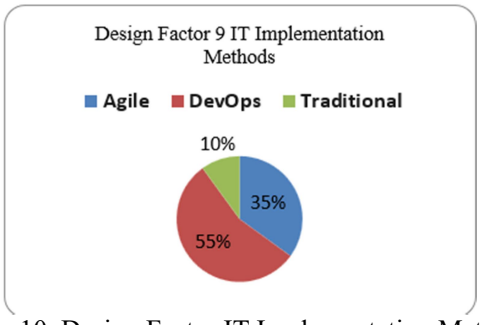


Figure 10. Design Factor IT Implementation Methods

3.10 Design Factor 10 Technology Adoption Strategy

Based on the interview results with the respondents, the percentage of technology adoption strategy at PT Tunas Sawa Erma is 45% as a first mover and 55% as a follower, as shown in Figure 10.

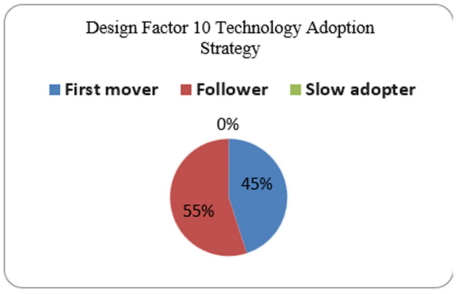


Figure 11. Design Factor 10 Technology Adaption Strategy result

3.11 Determination of Priority Objectives

The results from filling out the 10 design factors revealed 3 priority objectives with a score of 80, based on the interview results and adjusted to the company’s conditions. These three priority

objectives are APO12 - Managed Risk, BAI05 - Managed Organizational Change, and BAI11 - Managed Projects. With these results, the next step will proceed to the core stage.

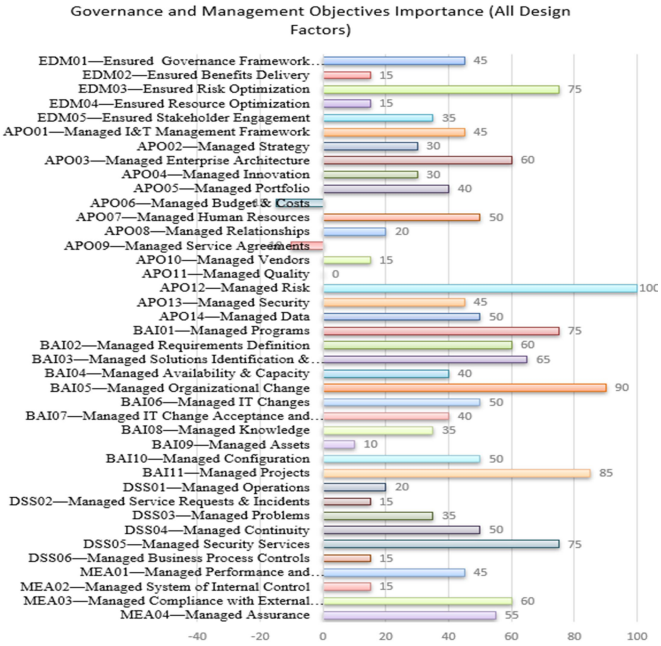


Figure 12. All Design Factor Result

3.12 Interview Results for Priority Objectives

After obtaining the results from the design factors and respondent selection, interviews were conducted with the respondents as outlined in the RACI Chart. Based on the interview results, calculations were made to determine the capability level for each priority objective, categorized according to the NPLF method. If the capability level results for the priority objectives do not reach an F (Fully) level, the capability level calculation stops at that level. Each priority objective was calculated starting from capability level 2, as specified in the COBIT 2019 Governance and Management Objectives book.

The interviews with the respondents discussed the activities associated with the APO12 objective, and based on these activities, measurements were made to determine the capability level PT Tunas Sawa Erma has reached. For the BAI05 priority objective, which focuses on organizational change management within the company, the aim was to assess whether the changes implemented were structured and executed effectively by the company. Table 4.6 shows the capability level 2 activities for the BAI05 priority objective, used to measure if PT Tunas Sawa Erma has reached capability levels 2, 3, 4, and 5.

For the BAI11 priority objective, which focuses on project management related to development, procurement, and implementation of IT solutions, Table 4.9 presents the capability level 2 activities for the BAI11 objective, which measure whether PT Tunas Sawa Erma has achieved capability levels 2 and 3.

In the case of BAI11 Level 2, there are twenty-seven activities, and according to the interview results, all activities have been carried out by PT Tunas Sawa Erma.

$$\frac{\text{Number of Activities Done (in Checklist)}}{\text{Number of Activities}} \times 100\% = \ldots\%$$

$$\frac{27}{31} \times 100\% = 87\%$$

The result showed a percentage of 87% after calculating the capability level 2 for the BAI11 priority objective. Based on this result, BAI11 level 2 is rated as Fully Achieved, meaning the evaluation can proceed to the next stage, which is the capability level 3 assessment.

For BAI11 Level 3, there are eight activities, and according to the interview results with the respondents, all of these activities have been carried out by PT Tunas Sawa Erma.

$$\frac{\text{Number of Activities Done (in checklist)}}{\text{Number of Activities}} \times 100\% = \ldots\%$$

$$\frac{8}{15} \times 100\% = 53\%$$

After calculating the capability level 3 for the APO12 priority objective, a result of 53% was obtained. This means, based on the NPLF method, BAI11 level 3 is rated as Partially Achieved. Consequently, it is determined that the evaluation cannot proceed to capability level 4.

3.13 Capability Level Gap

The results obtained from each priority objective, based on the current capability level calculation compared to the expected capability level as derived from the design toolkit analysis, can be seen in the table.

Table 1 Capabilities Level Gap

No	Priority Objectives	Capability Expected level	Current Capability Level	The Gap
1	APO12	5	2	3
2	BAI05	5	5	-
3	BAI11	4	3	1

3.14 Recommendations for Priority Objectives Activities

Based on the COBIT 2019 recommendations, activities that have not yet been implemented at PT Tunas Sawa Erma are highlighted. In the capability level calculation results for PT Tunas Sawa Erma, it is found that the APO12 priority objective has not reached the expected capability level, while BAI05 and BAI11 have already met the expected capability target. Therefore, the recommendations provided will be aligned with each priority objective.

For the APO12 priority objective, the calculation results show that it has not reached capability level 2, and the current result is far from meeting the expected level of 5. Regarding the BAI05 priority objective, the calculation indicates that BAI05 has achieved capability level 5, but in the sub-objective BAI05.04, the company has yet to perform two activities that would support or improve the organizational change processes. The recommendations to address this can be found in Table 1. Lastly, for the BAI11 priority objective, the calculation reveals that it has not reached capability level 3, and the current result has not met the expected level of 4. The recommendations for improving this can be found in Table 1.

4. Conclusion

Based on the company's strategy, PT Tunas Sawa Erma is focused on growth as its primary strategy, followed by innovation and differentiation as its secondary focus. Therefore, the primary and secondary strategies of the company are growth/acquisition and innovation/differentiation. In terms of enterprise goals, three key goals with a score of 5 were identified, namely EG03 regarding compliance with external laws and regulations, EG06 concerning business continuity and service availability, and EG11 about compliance with internal policies. These goals reflect the company's emphasis on legal compliance, operational sustainability, and internal policies.

Regarding the risk profile, one risk was categorized as very high risk, specifically related to IT skills, expertise, and behavior. This indicates that if the IT department's staff are not productive, even with high-quality software, it could pose a significant risk to the company. In terms of IT-related issues, one serious issue was identified, which is the failure or hindrance of implementing innovation or new initiatives due to the company's architecture or systems. Regarding

environmental threats, the company's risk level is evenly split, with 50% categorized as high risk and 50% as normal risk. Meanwhile, the company's compliance with regulations is 100%, indicating very high compliance.

The role of IT in the company is predominantly strategic, with a sourcing model consisting of 34% insourced, 33% outsourced, and 33% cloud. Regarding IT implementation methods, the company uses 35% agile, 55% DevOps, and 10% traditional methods. For technology adoption strategies, 45% of the company adopts a first-mover approach, while 55% adopts a follower role.

After filling out the ten design factors in the COBIT 2019 toolkit, seven priority objectives were identified, namely APO12 – Managed Risk, BAI05 – Managed Organizational Change, and BAI11 – Managed Project. Based on the interviews and calculations of the capability levels for each priority objective, it was found that APO12 – Managed Risk achieved capability level 2 with a "fully achieved" rating, BAI05 – Managed Organizational Change achieved capability level 5 with a "fully achieved" rating, and BAI11 – Managed Project achieved capability level 3 with a "fully achieved" rating.

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