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# Evaluating IT Performance Management in the Faculty of Industrial Engineering at Telkom University Through COBIT 2019 Domain MEA01 in Alignment with LAM-INFOKOM Standards

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**ABSTRACT**

This study examines the application of the COBIT 2019 framework within the Faculty of Industrial Engineering at Telkom University, specifically focusing on the Monitor, Evaluate, and Assess (MEA) domain to assess IT management performance against the standards set by the Independent Accreditation Body for Informatics and Computer Science (LAM-INFOKOM). Through a meticulous analysis, a significant gap was identified in MEA01.04 - Analyze and Report Performance, indicating a lack of proper documentation for change recommendations in objectives and metrics. Recommendations to bridge this gap include the incorporation of a Research Analyst role, clarification of responsibilities, provision of data analysis training, enhancement of inter-team communication, establishment of clear policy guidelines, and the creation of specialized record formats. These suggestions aim at improving the alignment of IT governance with both COBIT and LAM-INFOKOM standards, enhancing IT performance management, and ensuring a strategic fit between IT operations and organizational goals. The findings underscore the critical role of structured IT governance in achieving operational excellence and sustaining competitive advantage in the digital era.

## 1. INTRODUCTION

In the era of digitalization, the role of Information Technology (IT) is pivotal in supporting the operational management and governance of organizations [1]. Universities, as a specific type of organization, heavily rely on IT infrastructure and services to facilitate academic activities, administration, and research. Therefore, it is crucial for universities to ensure that their IT systems and services are functioning optimally and efficiently [2]. One approach to measure and enhance IT performance involves the adoption of appropriate IT management practices. A widely recognized framework in IT management is the Control Objectives for Information and Related Technologies (COBIT) [3]. COBIT is a global guide that assists organizations in designing, implementing, monitoring, and improving their IT management. In 2019, COBIT released its latest version, COBIT 2019, which includes several domains and guidelines for managing various IT aspects. A significant domain within COBIT 2019 is MEA (Monitor, Evaluate, and Assess), focusing on monitoring and assessing the performance and compliance with established policies and procedures [4]. Meanwhile, the Indonesian government has also established the Independent Accreditation Standards for Informatics and Computer Science (LAM-INFOKOM) aimed at enhancing educational services through IT utilization [5]. This standard refers to the COBIT framework for IT management in the education sector.

The Faculty of Industrial Engineering (FRI) at Telkom University serves as an example of an academic organization that is significantly dependent on IT services and systems to support learning and research activities [6]. Therefore, it is vital for FRI to conduct an assessment of its IT performance management, particularly in the context of the MEA01 domain from COBIT 2019 [7]. In this context, this thesis aims to assess the IT management performance at the Faculty of Industrial Engineering, Telkom University, using the COBIT 2019 framework in mapping the LAM-INFOKOM standards. The primary objective of this research is to evaluate the extent to which the Faculty of Industrial Engineering has met the requirements of the LAM-INFOKOM standards and the MEA01 domain of COBIT 2019, and to provide recommendations for improvements and enhancements in IT performance at the Faculty of Industrial Engineering, Telkom University.

## 2. LITERATURE REVIEW

### 2.1 Information Technology (IT)

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Information Technology (IT) constitutes a broad spectrum of elements involved in the electronic processing, storage, retrieval, and transmission of information [8]. This domain encompasses hardware components, including computers, servers, and networking devices, alongside software elements such as operating systems, databases, business applications, and various other software tools [9]. IT plays a pivotal role in enhancing business operations through several avenues: it fosters improved communication and collaboration, enables faster data processing, facilitates better decision-making, improves control and monitoring processes, and drives business innovation. The capacity of a company to adeptly adopt and leverage information technology is often a critical determinant of success across numerous industries. This theoretical foundation underscores the significance of IT in optimizing organizational performance and sustaining competitive advantage in the contemporary digital era [10].

### 2.2 Information Technology (IT) Governance

Information Technology (IT) Governance is the framework or system that organizations employ to control and guide the usage of Information Technology towards fulfilling their business objectives. This framework includes structures for decision-making, processes, and assigned responsibilities that ensure the organization's IT deployment is efficient, effective, and meets the specific needs of the business. Fundamental components of IT Governance involve establishing decision structures to clearly define who is accountable, responsible, and has the authority over IT decisions. It also encompasses the creation of policies and procedures to regulate IT usage, ensure data security, manage performance, and comply with regulations. Another critical aspect is the measurement of performance through relevant metrics and indicators, enabling the monitoring and evaluation of IT effectiveness and its contribution to business goals. Communication and stakeholder engagement are essential, involving key parties in IT-related decision-making processes. Additionally, the formation of committees or organizational structures is crucial for overseeing and managing IT at a strategic level. Proper implementation of IT Governance allows organizations to achieve regulatory compliance, enhance data security, boost operational efficiency, and realize improved business outcomes. This theoretical basis highlights the significance of IT Governance in strategically aligning IT resources with business aims, thereby ensuring organizations thrive and sustain in the evolving digital landscape [11].

### 2.3 Information Technology (IT) Governance Framework

Information Technology (IT) Governance Framework serves as a conceptual blueprint guiding organizations in structuring, implementing, and supervising their IT governance policies. This framework delivers a set of guidelines and principles designed to assist organizations in enhancing their IT performance, optimizing technology investments, increasing IT efficiency, and ensuring adherence to relevant regulations and standards. Central to the IT Governance Framework are several pivotal components: Organizational Structure, which delineates responsibilities, authorities, and the relationships among various IT decision-making stakeholders; Decision-Making Processes, outlining the optimal methodologies for IT-related decisions such as project selection, resource allocation, and implementation oversight; Policies and Procedures, establishing standardized rules, protocols, and guidelines for the secure and effective use and management of IT resources; and Performance Measurement, developing pertinent metrics and indicators to evaluate the impact of IT on achieving organizational objectives and its efficiency in operation. This integrated framework aims at aligning IT strategies with business goals, ensuring operational excellence, and maintaining compliance with regulatory standards, thereby underscoring the importance of a systematic approach to IT Governance in bolstering organizational performance and securing a competitive edge in the digital marketplace.

### 2.4 COBIT 2019

COBIT 2019 (Control Objectives for Information and Related Technologies) is a framework developed by ISACA (Information Systems Audit and Control Association), equipped with a comprehensive guide for the governance and management of information technology. The COBIT 2019 implementation guide provides practical guidelines for deploying this framework within an organization. It aids organizations in planning, designing, adopting, adapting, and monitoring the COBIT 2019 framework. Key phases in this implementation process include assessing the current maturity level, planning and developing an implementation strategy, understanding business objectives and control targets, and measuring performance and follow-up actions to ensure successful implementation. This theoretical foundation highlights the structured approach of COBIT 2019 towards enhancing IT governance and management, emphasizing its role in aligning IT processes with organizational goals and ensuring effective control and oversight of IT resources.

### 2.5 Design Factor

Design Factors (DFs) play a crucial role in the successful deployment of Information Technology (IT) within organizations, affecting both strategic and operational aspects of IT governance and management. These factors range from the overarching enterprise strategy, which dictates the business focus and objectives, to the specific IT risk profiles and compliance requirements that ensure security and regulatory adherence. Additionally, the role of IT, whether as a strategic, supportive, or operational force, and the sourcing model for IT services, significantly impact how IT resources are managed and utilized. Methods of IT implementation, such as Agile, DevOps, Traditional, and Hybrid, along with the organization's approach to technology adoption—be it as a first mover, follower, or slow adopter—further influence the effectiveness of IT strategies. Altogether, these design factors provide a framework for optimizing IT governance and management to better meet business goals, adapt to the digital landscape, and leverage IT as a pivotal element in organizational success.

### 2.6 MEA Domain

Monitor, Evaluate, and Assess (MEA) focuses on the monitoring and assessment of performance and compliance with established policies and procedures. The MEA process section comprises MEA01 - Managed Performance and Conformance Monitoring, MEA02 - Managed System of Internal Control, MEA03 - Managed Compliance With External Requirements, and MEA04 - Managed Assurance [12]. These components collectively ensure that an organization's operations align with its strategic goals and comply with external regulations, while also providing assurance on the effectiveness of its control systems.

### 2.7 IT Performance Management

IT Performance Management is an effective combination of methods, metrics, data, and tools that enable organizations to determine relevant Key Performance Indicators (KPIs) [13], understand the performance flow of the organization towards set goals, and allow the organization to generate insights based on established objectives, initiate improvement activities, achieve IT performance based on business needs, and continuously enhance performance and the set goals of the organization for the overall system. IT Performance Management often represents an aspect of achieving strategic goals and organizational objectives and is also a crucial aspect of organizational control [14]. IT Performance Management can measure the capital and human resource costs for IT projects [15]. This enables organizations to determine how capital and human resource expenditures can enhance the strategic and operational capabilities of the company to design and develop products and services to achieve optimal customer satisfaction, productivity, profitability, and competitiveness.

### 2.8 LAM-INFOKOM

LAM-INFOKOM, an acronym for the Independent Accreditation Body for Informatics and Computer Science, is an institution that grants accreditation to study programs in the fields of informatics and computer science. This accreditation is based on the interaction between standards within the National Standards for Higher Education (SN-DIKTI). In devising the accreditation instruments for study programs, LAM-INFOKOM [16] takes into consideration several key factors. First is compliance with the latest accreditation regulations. Second is the shift in orientation of higher education institutions towards enhancing external efficiency. Third is the necessity for recognition among quality assurance agencies. Fourth, there is a need to improve the quality and accountability of the accreditation process. Lastly, it emphasizes the importance of developing a comprehensive quality assurance framework through the integration of the Internal Quality Assurance System (SPMI) and the External Quality Assurance System (SPME) [17].

## 3 RESEARCH METHODS

The research methodology encompasses the structure or procedure employed to organize and present research findings in a logical and systematic manner. It includes essential components such as the introduction, theoretical framework, research methods, data analysis, and the results and conclusions, facilitating a clear and organized presentation of the research that allows readers to easily follow the researcher's thought process and methodology.

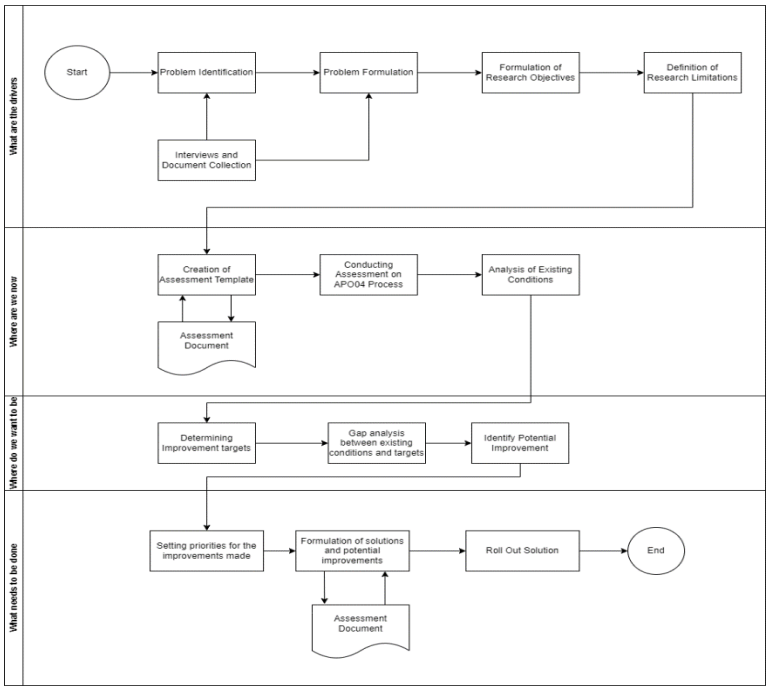


**Figure 1.** Research Flow

This study adopts a methodology based on the COBIT 2019 Implementation Roadmap, comprising four main phases: Phase 1 (What are the drivers?), where the researcher identifies issues through observation and literature review, formulates the research problem, objectives, and scope; Phase 2 (Where are we now?), involves the creation of an assessment document and conducting an assessment in accordance with COBIT 2019 to analyze the existing condition; Phase 3 (Where do we want to be?), the researcher sets improvement targets through gap analysis and identifies potential improvements to achieve these targets; and Phase 4 (What needs to be done?), prioritizing the improvements and developing solutions from the identified potential improvements.

## 4 RESULTS AND DISCUSSIONS

### 4.1 Governance Design Results

Based on the assessment of the design factors of the Faculty of Industrial Engineering at Telkom University, which resulted in identifying APO12 as the most significant domain with a value of 100, this study has selected the MEA01 Managed Performance and Conformance Monitoring domain. The selection of the MEA01 domain is due to its correlation between the evaluation metrics present in COBIT 2019 and those in LAM-INFOKOM.

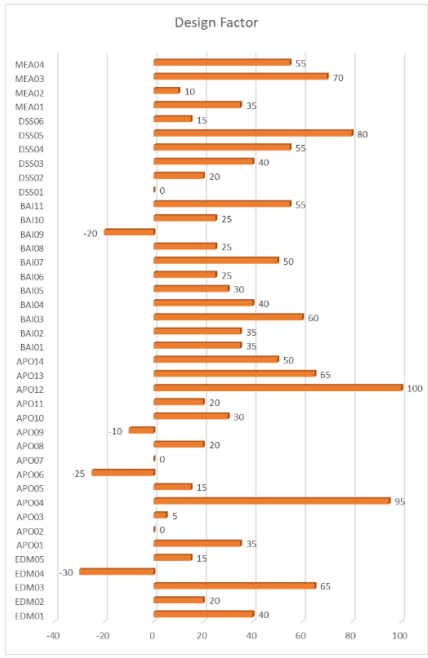


**Figure 2.** Design Factor Result

### 4.2 Balanced Scorecard

In this study, the Balanced Scorecard is limited to the aspects of Customer, Internal Business, and Learning & Growth. Within the Customer aspect, the Key Performance Indicators (KPIs) of Student Satisfaction and Employee Satisfaction will be analyzed with data limited to infrastructure and learning facilities.

**Table 1.** Balance Scorecard

| Vision | Mission | Purpose | Strategic Target |
|---|---|---|---|
| To become a research and entrepreneurial university by 2023, actively participating in the development of technology, science, and arts based on information technology. | To conduct and develop education with international standards based on information technology. | To produce graduates with global competitiveness. | The establishment of Good University Governance. |
| – | Developing, disseminating, and implementing internationally recognized technology, science, and arts. | Creating a multidisciplinary research culture and an international standard cross-cultural academic atmosphere. | Growth and Development of the Organization. |
| – | Utilizing technology, science, and arts for the welfare and advancement of national civilization through the | Achieving trust from all stakeholders. | Financial Independence |

| | | | | |
|---|---|---|---|---|
| | development of entrepreneurial competencies. | | | |
| – | – | Producing innovative products that enhance the quality of life and support national economic development through the development of an entrepreneurial culture. | Increasing the competitiveness of graduates at national and international levels | |
| – | – | – | Realization of Digital Education | |
| – | – | – | Increasing the quality and quantity of lecturers | |
| – | – | – | Developing the internationalization of education | |
| – | – | – | Increasing the quality and quantity of students and graduates | |
| – | – | – | Increasing the quality and quantity of research | |
| – | – | – | Developing diversification of research funding sources | |
| – | – | – | Increasing the quantity of innovations that benefit society | |
| – | – | – | Increasing cooperation with external parties for the development of an entrepreneurial ecosystem | |
| – | – | – | Increasing the commercialization of research findings | |

**Table 2.** KPI Activity

| Objectivity | KPIs | Target | Activity |
|---|---|---|---|
| Customer | Student Numbers | Increase annually | - Increase the number of classes<br>- Introduce new majors<br>- Expand teaching staff<br>- Open university locations in other cities |
| | Student Satisfaction | Satisfaction above 75% | - Enhance student and alumni support services<br>- Improve facilities and infrastructure |
| | Graduate User Satisfaction | Satisfaction above 75% | Improve student quality by providing learning and experiences |
| | Employee Satisfaction | Satisfaction above 75% | - Enhance faculty support services<br>- Increase salaries and bonuses<br>- Improve facilities and infrastructure |
| Internal Business | Indexed Publications in Scopus | Increase annually | - Increase research activities<br>- Add more researchers |
| | Ratio of Doctorate Holders as Principal Researchers | Increase annually | Provide scholarships for faculty pursuing doctoral studies |
| Learning and Growth | Accreditation of Study Programs | More than 50% with Accreditation A | - Conduct program assessments and evaluations in accordance with BAN-PT<br>- Enhance facilities, infrastructure, and the quality of teachers and students |
| | Faculty with Doctoral Education | Ratio above 21% | Provide scholarships for faculty pursuing doctoral studies |
| | Number of Intellectual Property/Patents | Increase annually | - Increase research activities<br>- Add more researchers |

**Table 3.** KPI Achievement

| No | Key Performance Indicator | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | KPI Achievement (2022) |
|---|---|---|---|---|---|---|---|---|
| 1 | Student Enrollment Numbers | 3728 | 3771 | 4814 | 3854 | 3900 | - | Achieved |
| 2 | Student Satisfaction | 84.48% | 80% | 80% | 81% | 81% | 82% | Achieved |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 | Graduate User Satisfaction | 84% | 86% | 86% | 87% | 87% | 87% | Achieved |
| 4 | Employee Satisfaction | 84 | 84% | 84% | 85% | 85% | 85% | Achieved |
| 5 | Indexed Publications in Scopus | 0 | 2 | 2 | 2 | 2 | 2 | Not Achieved |
| 6 | Ratio of Doctorate Holders as Principal Researchers | 1 | 4 | 5 | 6 | 7 | 8 | Achieved |
| 7 | Accreditation of Study Programs | - | - | - | - | 4 (66.6%) | 4 (66.6%) | Achieved |
| 8 | Faculty with Doctoral Education | 25 (20.4%) | 28 (22.9%) | 30 (24.5%) | 32 (26.2%) | 34 (27.8%) | 36 (29.5%) | Achieved |
| 9 | Number of Intellectual Property/Patents | 30 | 12 | 20 | 30 | 40 | 50 | Achieved |

**Table 4.** COBIT 2019 Mapping LAM INFOKOM

| No. | COBIT 2019 Process | Description | Reference UU No. 20 of 2003 |
|---|---|---|---|
| 1 | MEA01.01 Establish a monitoring approach. | Interact with stakeholders to establish and maintain a monitoring approach to set objectives, scope, and methods for measuring business solutions and service delivery and their contribution to corporate goals. Integrate this approach with the company's performance management system. | Pasal 39 |
| 2 | MEA01.02 Set performance and conformance targets. | Work with stakeholders to set, regularly review, update, and approve performance and conformance targets within the performance measurement system. | Pasal 25 |
| 3 | MEA01.03 Collect and process performance and conformance data. | Collect and process timely and accurate data in line with the company's approach. | Pasal 35 |
| 4 | MEA01.04 Analyse and report performance. | Regularly review and report on performance against targets using methods that provide a comprehensive view of Information Technology performance in accordance with the company's monitoring system. | Pasal 45 |
| 5 | MEA01.05 Ensure the implementation of corrective actions. | Assist stakeholders in identifying, initiating, and tracking corrective actions to address abnormalities. | Pasal 39 |

### 4.3 Assessment Capability Result

Following the assessment of capability levels within the previously defined domain, namely MEA01 - Managed Performance and Conformance Monitoring, the results of the capability level assessment were generated through the calculation of capability levels. The outcomes of this capability level assessment are presented to the Faculty of Industrial Engineering at Telkom University as follows:

**Table 5.** Management Practice

| No | Management Practice | Fulfilment | Level |
|---|---|---|---|
| 1 | MEA01.01 Establish a monitoring approach | 100% Fully | 3 |
| 2 | MEA01.02 Set performance and conformance targets | 100% Fully | 2 |
| 3 | MEA01.03 Collect and process performance and conformance data | 100% Largely | 4 |
| 4 | MEA01.04 Analyze and report performance | 0% Not | 5 |
| 5 | MEA01.05 Ensure the implementation of corrective actions | 100% Fully | 2 |

**Table 6.** Management Practice

| No | Management Practice | Level Existing | Level Targeting | Achievement |
|---|---|---|---|---|
| 1 | MEA01.01 Establish a monitoring approach | 3 | 3 | Yes |
| 2 | MEA01.02 Set performance and conformance targets | 2 | 2 | Yes |
| 3 | MEA01.03 Collect and process performance and conformance data | 4 | 4 | Yes |
| 4 | MEA01.04 Analyse and report performance | 4 | 5 | No |
| 5 | MEA01.05 Ensure the implementation of corrective actions | 2 | 2 | Yes |

**Table 7.** Gap Analysis and Potential Improvement

| No. | GAP Analysis Aspect | Aspect | Type | Potential Improvement |
|---|---|---|---|---|
| 1 | Documentation explaining recommendations for changes in objectives and metrics according to precise conditions is not available. | People | Roles | Adding the Role of Research Analyst |
| | | | Responsibility | Clarifying who is responsible for collecting, analyzing, and presenting data supporting change recommendations |

| | | | |
|---|---|---|---|
| | | Skill & awareness | Providing data analysis training to collect and analyze information supporting change recommendations |
| | | Communication | Enhancing communication between the team responsible for objectives and metrics and other relevant stakeholders |
| | Process | Policy | Creating policies that include clear criteria and guidelines on how objectives and metrics should be adjusted under different conditions |
| | | Procedure | Establishing specific steps to identify situations that require adjustments to objectives and metrics |
| | | Record | Developing a special record format to document changes in objectives and metrics, and the reasons behind the changes |
| | Technology | Features | Adding automatic notification features on the dashboard to alert users when changes to objectives and metrics are needed |

**Table 8.** Stakeholder Mapping

| Stakeholder | Function | Resource |
|---|---|---|
| Ministry of Education, Culture, Research, and Technology | Provides educational policies and academic licensing to higher education institutions. | Educational budget, regulations, and research funding assistance. |
| Telkom University Rectorate | Manages resources, university policies, and public resources. | Operational funding, university policies, and strategic support. |
| Lecturers and Teaching Staff | Engage in teaching, research, community service, and curriculum development. | Knowledge, experience, research, and community service. |
| Administrative Staff | Handles administration, schedule management, and administrative support. | Administrative software and organizational capabilities. |
| Industry | Offers internship opportunities, research collaboration, and career opportunities for graduates. | Collaborative projects, industrial data, and financial support. |
| Students | Involved in the learning process, assessment, and academic guidance. | Tuition fees and learning capabilities. |

**Table 9.** Detailing Improvement (People, Process, Technology)

| No | Recommendation |
|---|---|
| 1 | Add the role of Research Analyst. |
| 2 | Clarify who is responsible for collecting, analyzing, and presenting data supporting change recommendations. |
| 3 | Provide data analysis training to collect and analyze information supporting change recommendations. |
| 4 | Enhance communication between the team responsible for objectives and metrics and other relevant stakeholders. |

**Table 10.** Process

| No | Recommendation |
|---|---|
| 1 | Develop policies that include clear criteria and guidelines on how objectives and metrics should be adjusted under different conditions. |
| 2 | Establish specific steps to identify situations that require adjustments to objectives and metrics. |
| 3 | Create a specialized record format to document changes in objectives and metrics, along with the reasons for those changes. |

**Table 11.** Technology

| No | Recommendation |
|---|---|
| 1 | Add an automatic notification feature to the dashboard to alert users when changes to objectives and metrics are needed. |

### 4.4 Roll out Solution

In the Roll of Solution phase, the construction of a roadmap or the mapping of a timeline is recommended by this study for a specific duration, based on predetermined priorities.

**Table 12.** Roll out Solution

| No | Potential Improvement | Recommends | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|---|---|
| | | **People** | | | | |
| 1 | Add the role of Research Analyst. | Establishing the Role of Research Analyst. | V | | | |

| | | | | |
|---|---|---|---|---|
| | | Adding the Role of Research Analyst. | | V |
| | | Designing the Role of Research Analyst. | V | |
| 2 | Clarify who is responsible for collecting, analysing, and presenting data that supports change recommendations. | Establishing responsibility. | V | |
| | | Assigning responsibility. | V | |
| | | Designing the framework for responsibility. | V | |
| 3 | Provide data analysis training to gather and analyse information supporting change recommendations. | Developing data analysis training. | V | |
| | | Conducting data analysis training. | V | |
| | | Designing data analysis training programs. | V | |
| 4 | Improve communication between the team responsible for objectives and metrics and other relevant stakeholders. | Developing enhanced inter-team communication. | V | |
| | | Implementing improvements in inter-team communication. | | V |
| | | Designing strategies for enhancing inter-team communication. | V | |
| | | **Process** | | |
| 5 | Develop policies that include clear criteria and guidelines on how objectives and metrics should be adjusted under different conditions. | Creating policies that encompass clear criteria and guidelines. | V | |
| | | Implementing policies with clear criteria and guidelines. | | V |
| | | Designing policies that include clear criteria and guidelines. | V | |
| 6 | Create specific steps to identify situations that require adjustment of objectives and metrics. | Developing specific steps to identify situations. | V | |
| | | Executing specific steps for situation identification. | | V |
| | | Designing specific steps to identify situations. | V | |
| 7 | Design a special format for recording changes in objectives and metrics, and the reasons behind those changes. | Creating a specialized record format for documenting changes. | V | |
| | | Implementing a specialized record format for capturing changes. | | V |
| | | Designing a specialized record format to document changes. | V | |
| | | **Technology** | | |
| 8 | Introduce an automatic notification feature on the dashboard to alert users when changes to objectives and metrics are needed. | Creating an automatic notification feature on the dashboard to alert users. | V | |
| | | Implementing an automatic notification feature on the dashboard to alert users. | | V |
| | | Designing an automatic notification feature on the dashboard to alert users. | V | |

## 5 CONCLUSSION

Based on the test results and discussion in this study, it can be concluded as follows The COBIT 2019 Framework, particularly within Domain MEA01, spanning from MEA01.01 to MEA01.05, aligns with the criteria of LAM-INFOKOM at criterion 8. In an assessment conducted at the Faculty of Industrial Engineering, Telkom University, focusing on MEA01, a gap was identified in MEA01.04 - Analyze and Report Performance, which scored 0% at capability level 5, indicating a lack of documentation outlining recommendations for changes in objectives and metrics under precise conditions. The potential improvements for MEA01.04 suggest enhancements in the areas of people, processes, and technology. For the people aspect, recommendations include adding the role of Research Analyst; clarifying responsibilities for data collection, analysis, and presentation supporting change recommendations; providing data analysis training for collecting and analyzing information that backs the recommendations for change; and improving communication between the team responsible for objectives and metrics and other related stakeholders.

In terms of processes, it is recommended to establish policies containing clear criteria and guidelines on how objectives and metrics should be adjusted according to varying conditions; devise specific steps to identify situations necessitating adjustments in objectives and metrics; and create a specialized record format for logging changes to objectives and metrics, including the rationale behind these adjustments.

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