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DESIGN FACTOR THE CAPABILITY LEVEL OF INFORMATION TECHNOLOGY GOVERNANCE AND RECOMMENDATIONS FOR IMPROVEMENT USING COBIT 2019: A CASE STUDY AT A PRIVATE UNIVERSITY IN PALEMBANG

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ABSTRACT

Private university in Palembang that has utilized information technology to support its educational processes. This study demonstrates how COBIT 2019 design factors can be operationalized to identify strategically critical governance domains in higher education, shifting IT governance evaluation from generic domain assessment toward contextualized governance design, This study designs an information technology governance system based on COBIT 2019 and applies design factors to align governance objectives with university institutional context and strategic direction, thereby identifying priority domains and capability level targets that are most relevant to the university's digital transformation. The application of these design factors highlights the EDM05 Ensure Stakeholder Engagement and BAI09 Manage Assets domains as the primary focus, as they are closely related to the need to enhance transparency in stakeholder involvement and to optimize IT asset management within the university environment. The study aims to assess the capability level of IT governance in the EDM05 and BAI09 domains, identify gaps between the current conditions and the targeted capability levels, and formulate improvement recommendations that are aligned with institutional needs and strategies. The research adopts a case study approach with a descriptive mixed method design, employing observation, interviews, and questionnaires, which are then analyzed using RACI Chart mapping, COBIT 2019 capability level measurement, and gap analysis to develop proposed process improvements. The findings indicate that the capability levels in both domains are still below the targeted levels, resulting in gaps related to stakeholder engagement, role and responsibility structures, IT performance reporting mechanisms, and IT asset lifecycle management. The implications of this research are the provision of a practical foundation for university in Palembang's management to strengthen IT governance, as well as an academic contribution on the application of COBIT 2019 design factor–based governance in higher education institutions that can serve as a reference for other universities.

Keywords : IT Governance, COBIT 2019, Capability, Recommendation

INTRODUCTION

Information technology (IT) assists organizations in various business processes. IT handles a wide range of tasks, from activities related to processes, acquisition, compilation, storage, and manipulation of data using various methods and procedures, thereby providing high-quality and useful information for decision-making. Every organization needs information to help stakeholders make the right business decisions (Parinduri, 2023).

The university in Palembang is currently facing a number of challenges in managing information technology (IT), which indicate a significant discrepancy between the strategic goals of campus digitization and the actual implementation conditions in the field. Based on initial observations, it was found that several IT service management information systems (MIS), such as blended learning, financial MIS, personnel MIS, academic MIS, asset MIS, and library MIS, are not yet running optimally. Technology in the context of education should be able to become the main enabler in improving the efficiency of academic processes, transparency of services, and data-driven decision making. However, the actual conditions at UM-AD show a gap between these objectives and the reality of IT implementation. Therefore, a comprehensive governance approach is needed to ensure that IT management is aligned with institutional strategies and has a measurable level of capability.

Previous research related to measuring the level of information technology governance capabilities using the COBIT 2019 framework has been conducted in several universities. Research by Marthiawati, et al. (2024) was conducted at Muhammadiyah University Jambi using a quantitative descriptive method, using a questionnaire

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instrument based on the COBIT 2019 process. The focus was on five main processes in the BAI and DSS domains, namely BAI06, BAI09, BAI10, DSS01, and DSS02. The study involved 10 respondents from the IT management unit and university leaders. The results showed that several processes, such as BAI06 and DSS02, were still at capability level 2, while the university's target was level 4. This gap indicates the need for improvement in change and incident response processes through standard procedures and increased technical competence.

Using a Design Factor analysis that is measurable and in line with the COBIT 2019 framework, this study objectively determines that the EDM05 and BAI09 processes are the most relevant, critical, and influential processes for achieving strategic objectives. Therefore, these two processes were selected as the main focus in measuring the level of IT governance capabilities in this study. This study chose EDM05 and BAI09 as the focus of evaluation because they represent the critical needs of institutions in building IT architecture, defining user needs, and developing integrated IT solutions. This is also in line with the Design Factors and Tailored Governance System approaches recommended in COBIT 2019, where organizations are encouraged to select the processes that are most relevant to the institution's strategic objectives without having to evaluate the entire domain comprehensively.

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LITERATURE REVIEW

A literature review provides an overview of various published works discussing the topic of measuring information technology governance capabilities and recommendations for improvement based on COBIT 2019.

Based on Syahputra's (2024) research, IT governance capabilities were measured in a government office using COBIT 2019, while this study focuses on higher education institutions. In Syahputra's research, the processes measured were EDM02, APO10, and BAI11. Meanwhile, this study focuses on the EDM05 (Ensured Stakeholder Engagement) and BAI09 (Manage Assets) domains. Furthermore, Parinduri's (2023) study measured IT governance capabilities at a university with a focus on service risks and security, while at UM-AD, the research focused more on IT governance as a whole, covering aspects of resource and information technology management. Then, in Taha Qureshi's (2024) research, he proposed a new method or approach in conducting maturity assessments of IT governance practices based on the COBIT 2019 framework. Qureshi's research focused on organizations with a government or public sector orientation, while UM-AD is a higher education institution.

Nachrowi's (2020) research uses a quantitative approach with questionnaires distributed to stakeholders. Meanwhile, the research at UM-AD uses mixed methods. Nachrowi's research focused on the higher education sector using COBIT 2019 and ITIL 4, with the domains used being Align, Plan, Organize (APO), Build, Acquire, Implement (BAI), Deliver, Service, Support (DSS). Meanwhile, this study focuses on the EDM05 (Ensured Stakeholder Engagement) and BAI09 (Manage Assets) domains. Table 2.1 can be used to explain the position of this study by comparing several previous studies on measuring the level of information technology governance capabilities and recommendations for improvement based on COBIT 2019.

Information System Audit

An information system audit is a structured evaluation process to ensure that an organization's information systems operate effectively, efficiently, and securely. Kristyawan et al. (2023) conducted an audit of the information system at Dr. Soetomo University using the COBIT 5 framework, specifically in the Deliver, Service, and Support (DSS) domain. The results showed that the system capability level was at level 1, while management expected level 3. These findings highlight the need for improvements in operational standards and system handling documentation to achieve the desired capabilities.

The main objectives of the information system audit included assessing data reliability, the effectiveness of internal controls, and the protection of company information assets. Ayunda et al. (2023) used the COBIT 5.0 framework with a focus on the Deliver, Service, and Support (DSS) and Monitor, Evaluate, and Assess (MEA) domains. The analysis results show that the system capability level is at 2.67, while the expected target is level 4. These findings indicate that there is a gap that needs to be addressed to improve the performance of the academic information system to be more optimal.

IT governance focus areas explain that the issue that top management must address is controlling IT within the company. Top management manages and controls ongoing IT activities through processes. It provides a link between what needs to be prioritized and done by operational managers and what top management wants. To achieve this goal, IT governance focus areas must cover five parts:

1. Strategic Alignment
2. Value Delivery
3. Resource Management

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4. Risk Management
5. Performance Measurement

Previously conducted research includes 20 studies related to this study. In addition, most of the studies were conducted at institutions with well-established IT infrastructure. Meanwhile, no studies have been found that explicitly examine the implementation of COBIT 2019 at new universities such as UM-AD Palembang, which face initial challenges in digitalization. This creates a research gap in terms of both organizational context and the selection of more operational and fundamental evaluation domains such as EDM05 (Ensured Stakeholder Engagement) and BAI09 (Managed Assets). Therefore, this study aims to fill this gap by focusing on the processes that play a role in architecture formation, requirements planning, solution development, and IT performance monitoring, which are highly relevant to the current conditions of the University in Palembang.

IT management focuses on areas that need to be addressed by top management, namely controlling IT on campus. Top management manages and controls ongoing IT activities through processes. To achieve these objectives, IT management must cover five areas, as shown in the following figure

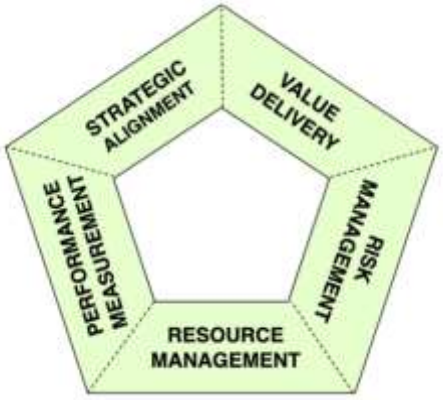


Fig. 1. Focus Area: Information Technology Governance

METHOD

The research design, data collection methods, population, and sample, as well as the stages of research. In this case, the research to be conducted is a case study. Case studies are a useful approach for studying complex phenomena in real contexts. This research provides new insights into complex issues (Lutfiansyah, 2024). Based on the research objectives that have been formulated, namely to measure the level of IT governance capabilities and provide recommendations for improvement accompanied by a roadmap. The results of the research will be applied at the case study site, namely Palembang. Research data processing can be divided into three types, namely qualitative, quantitative, and mixed research. This study will apply a mixed-method approach by combining qualitative and quantitative research.

According to the research objectives that have been formulated, namely to measure the level of IT governance capabilities and provide recommendations for improvement accompanied by a roadmap. The results of the research will be applied at the case study location, namely the University of Palembang. Research data processing can be divided into three types, namely qualitative, quantitative, and mixed research. This study will apply a mixed-method approach by combining qualitative and quantitative research.

Qualitative research is conducted through observation, document study, and interviews with parties responsible for managing IT and related policy makers in order to identify current IT governance constraints so that questionnaire questions can be formulated in accordance with measurement requirements based on the COBIT 2019 framework. Recommendations accompanied by a roadmap for improvement based on the measurement results are then formulated, Quantitative research was conducted to obtain responses to the questions in the questionnaire developed based on the COBIT 2019 framework. The results of the questionnaire responses provided a measurement of IT governance capabilities. The research process began with qualitative research, followed by quantitative research to clarify the qualitative research results. This is part of the mixed methods type, namely exploratory research.

Methodological Framework

The research flow in this study consists of a series of processes that are designed systematically, starting from

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the initial stage to the final stage. This process is arranged based on the implementation of research conducted in Palembang. Figure 1 shows the stages of the research flow that are used as guidelines in this study. in Figure



Fig. 2 Framework of Research Flow

This study uses Fishbone Analysis to identify problems in a community. Fishbone Analysis is a systematic tool that analyzes problems and the factors that cause them. Fishbone Analysis describes a situation by looking at the effects and causes that contribute to those effects (Eviyanti, 2021). Fishbone Analysis is also known as a cause-and-effect diagram. Figure 2 categorizes the many potential causes of problems or issues in a way that correctly identifies the root problems or root causes. Figure 3.

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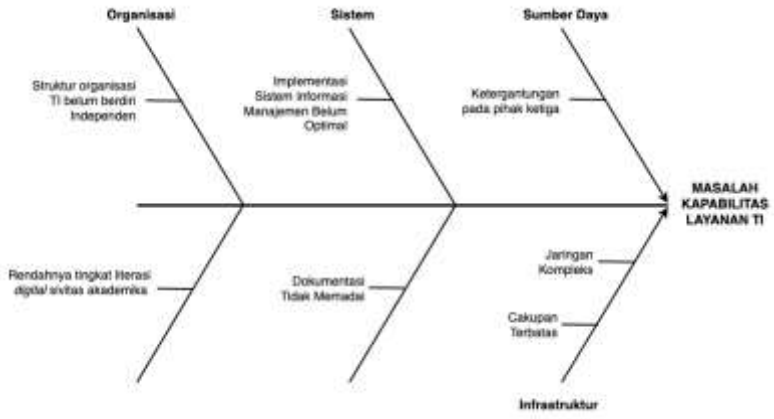


Fig. 3 Fishbone Diagram Design Factors

In the study, the data collection methods used by the researchers were interviews and questionnaires. The data collected was on the current and expected levels of IT process capability. The questionnaires in this study were collected and processed using several methods to obtain maximum results. The method used in this study was the RACI (Responsible, Accountable, Consulted, Informed) Chart. The RACI Chart is a method that utilizes the RACI table in COBIT 2019 to process questionnaire results. This method is used to select IT practice data based on the roles in the questionnaire. IT practice data is selected because an IT practice in the questionnaire can be filled in by more than one role with different assessment scales. Therefore, to obtain the appropriate assessment scale for an IT practice, it is necessary to select the role in the RACI table with the Responsible and Accountable levels of responsibility, which means that the role better understands and masters the IT practice to be studied. This will ensure that the processed data is more valid. Similar to the previous process, data from respondents with an Accountable level of responsibility will only be used if there is no data from respondents with a Responsible level of responsibility that can be processed, or in other words, it is only optional.

RESULT

The university in Palembang prioritizes innovation as its main strategy in supporting improvements in the quality of education, research, and technology-based services, as well as Islamic values. The Client Service strategy is also an important focus, reflected in the university's commitment to providing stable academic and non-academic services oriented towards student and stakeholder satisfaction. Conversely, Growth and Cost Leadership strategies are not a top priority, indicating that Palembang places greater emphasis on strengthening internal quality and sustainable quality development than on aggressive expansion or short-term cost efficiency, as shown in Figure 4

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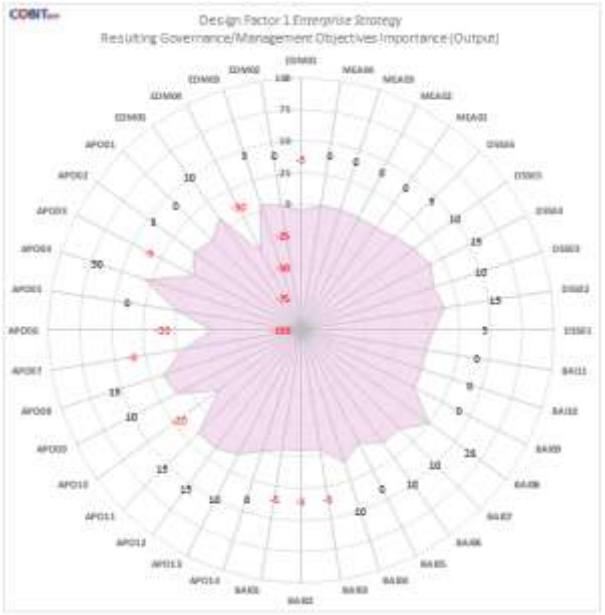


Fig. 4 Result Design Factor Enterprise Strategy

IT Governance Design Result

This stage is carried out after analyzing and determining process objectives through eleven design factors (DF1–DF11) that aim to integrate all input from the previous steps. This process consolidates all information and findings into a comprehensive conclusion regarding the IT governance system design, so that it can be formulated as a comprehensive governance framework that is ready to be used as a basis for evaluation, decision making, and further implementation. Objectives considered to have a target value ≥ 75 with a level of importance up to level 4, objectives with a target value ≥ 50 with a level of importance up to level 3, objectives with a target value ≥ 25 with a level of importance up to level 2, and process objectives with a remaining positive value are considered to have a level of importance reaching level 1, as illustrated in Figure 4., as illustrated in Figure 5.

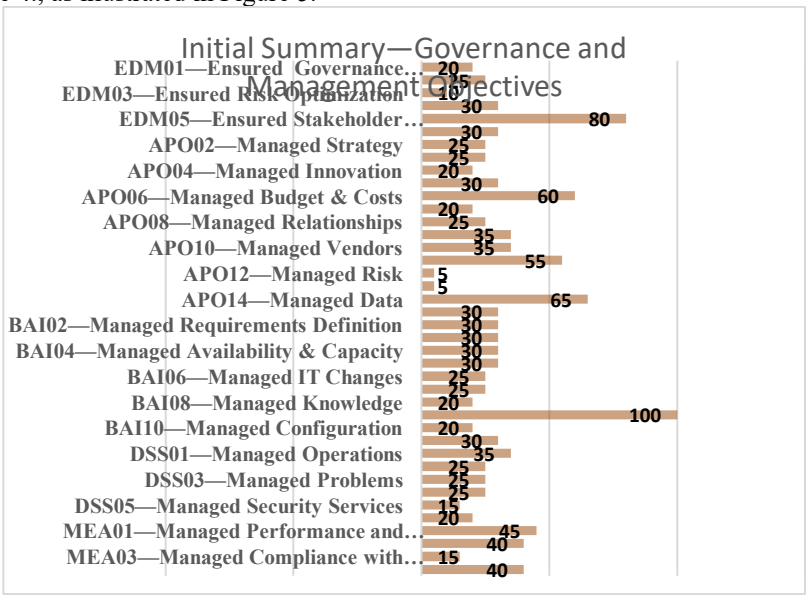


Fig. 5 Governance Design

The implementation of IT governance in Palembang shows that the EDM05 and BAI09 domains require a governance

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strategy. The capability mapping results show that there are two domains that achieve a score of ≥ 75, namely EDM05 with a score of 80 and BAI09 with a score of 100, both of which are at level 4. This shows that the most relevant and significant process objectives to consider are EDM05 and BAI09. In the context of IT governance, EDM05 emphasizes stakeholder involvement, transparent communication, and IT performance reporting to align with business objectives. Meanwhile, BAI09 focuses on optimal IT asset management, including planning, procurement, and maintenance of IT resources to support organizational efficiency and effectiveness. The high scores in these two domains indicate that UM-AD Palembang has sufficient capabilities in managing IT assets and ensuring stakeholder engagement, so that these processes can become a strategic foundation for improving organizational value and performance through the use of IT.

The results of EDM05 and BAI09 in Palembang reflect that the institution has a strategic IT governance foundation and is capable of executing core processes quite well. However, consistency with previous research findings confirms that there is still room for improvement, particularly in strengthening stakeholder engagement, transparency, and IT asset management. The implementation of improvements through formal policies, documentation, ongoing training, and regular capability assessments is expected to drive an increase in capability levels, while strengthening the alignment between IT and business objectives and the effectiveness of IT services on an ongoing basis. Within the COBIT 2019 framework, the EDM05 domain states that stakeholder engagement must be documented, consistent, and measurable. COBIT 2019 emphasizes that the success of IT governance depends on the organization's ability to meet stakeholder needs, ensure support for IT strategy, and provide effective communication and reporting mechanisms (ISACA, 2019). Thus, the optimal implementation of EDM05 in Palembang requires a service performance monitoring system, a stakeholder coordination forum, a reporting dashboard, and a measurable digital feedback system to improve academic quality, administrative services, and institutional quality assurance.

DISCUSSIONS

The results of the capability evaluation in EDM05 achieved Capability Level 3 with a percentage of 78.82%, which is included in the Largely Achieved category. These results indicate that the stakeholder engagement and IT transparency processes are running quite well, but have not yet met the criteria for full achievement at level 3, so EDM05 cannot yet proceed to Level 4. Conversely, BAI09 only achieved Capability Level 2 with a percentage of 78.25%, also included in the Largely Achieved category, which means that IT asset management has been running well but still needs improvement to meet the full criteria at Level 2, so that BAI09 cannot be continued to Level 3.

The achievements of EDM05 and BAI09 in Palembang reflect that the institution has a strategic IT governance foundation and is capable of executing core processes quite well. However, consistency with previous research findings confirms that there is still room for improvement, particularly in strengthening stakeholder engagement, transparency, and IT asset management. The implementation of improvements through formal policies, documentation, ongoing training, and regular capability assessments is expected to drive an increase in capability levels, while strengthening the alignment between IT and business objectives and the effectiveness of IT services on an ongoing basis.

The implementation of EDM05 and BAI09 improvements not only enhances IT governance in Palembang but also drives the institution's sustainable digital transformation, supporting academic quality, administrative services, and overall quality assurance. These findings are also in line with the principles of COBIT 2019 and IT governance theory, which emphasize the importance of structured, documented, and integrated IT process management to achieve organizational goals optimally.

CONCLUSION

Based on the results of the analysis and discussion regarding the The results of the study on Measuring the Level of Information Technology Governance Capability and Recommendations for Improvement Based on Cobit 2019 at Universities in Palembang provide several conclusions, including:

The EDM05 capability level is at Level 2, which means that the stakeholder engagement process has been carried out but is not yet consistent, documented, and standardized, while the BAI09 capability level is at Level 1, which means that IT asset management is still reactive, the inventory is not centralized, and there are no formal policies or asset lifecycle management.

The As-Is analysis shows that EDM05 is at Level 2, indicating that stakeholder engagement has been carried out through coordination forums and regular information gathering, and stakeholder responsibilities have been defined,

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but the process is not yet consistent, documented, or standardized, and performance communication and compliance reporting mechanisms are not yet integrated across all units. while BAI09 is at level 1, indicating that IT asset management is still basic and reactive, the inventory is not centralized or complete, there are no formal policies or asset lifecycle management, maintenance is corrective in nature, cost and depreciation analysis has not been carried out, and there is no asset reserve mechanism to ensure service continuity. The To-Be analysis shows that for EDM05 to reach Level 4, it is expected to be implemented consistently, documented, and standardized across all units through formal SOPs and data-based monitoring systems. For BAI09 to reach Level 4, it is required to have a structured, documented IT asset management process based on asset lifecycle planning.

Recommendations for improvement for EDM05 towards Level 4 are to develop formal SOPs, form a stakeholder coordination committee, develop an IT service performance dashboard, and implement a measurable digital feedback system. while for BAI08 towards Level 4, it is recommended to develop formal IT asset management policies, build a system-based integrated asset inventory, implement asset lifecycle management, preventive maintenance, periodic audits, cost and depreciation analysis, and provide asset backup procedures.

ACKNOWLEDGMENT

Expert Review the recommendations, Researchers are advised to investigate the relationship between IT governance capabilities and institutional performance to see their impact on academic and administrative quality, explore the latest technologies or support systems such as Internet of Things (IoT)-based asset management or interactive stakeholder engagement dashboards, and expand studies to other institutions for benchmarking so that the findings are more applicable and can be used as general recommendations for IT management in higher education institutions.

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