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IT Governance Assessment at City Revenue Agency Using COBIT 5 Framework

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Abstract

This study assesses the IT governance capability level at the Tangerang City Revenue Agency (BAPENDA) using the COBIT 5 framework to identify capability gaps and provide recommendations for improvement. Employing a qualitative descriptive approach, data were collected through interviews and observations to understand the current IT governance conditions against COBIT standards. The capability assessment revealed uneven levels across various processes. EDM04 (Ensure Resource Optimization) and MEA01 (Monitor, Evaluate, and Assess Performance and Conformance) were rated at Level 2, indicating that these processes are managed and controlled effectively. In contrast, APO07 (Manage Human Resources), BAI09 (Manage Assets), and DSS01 (Manage Operations) were assessed at Level 1, reflecting that these processes are operational but require substantial improvements to meet the target Level 3. The analysis highlights an urgent need to enhance IT governance, particularly in processes with lower capability levels. DSS01 (Manage Operations) was identified as the highest priority for improvement, based on the gap values and effort required for enhancement. The prioritization of process capability improvement in this study is guided by the principles of gap value and effort required for each process. Strategic enhancements in IT governance are crucial for the Tangerang City Revenue Agency to align better with best practices and achieve higher capability levels. Recommendations include implementing electronic-based applications, establishing Standard Operating Procedures related to performance targets and compliance, and improving IT human resources to enhance the effectiveness of IT service delivery and governance.

Keywords: Audit, COBIT 5, IT Governance, Capability Level, BAPENDA

1. INTRODUCTION

IT governance is critical for aligning an organization's information technology with its business objectives, functioning as an internal control system to manage risks and achieve goals. Effective IT governance ensures that information systems are not only reliable but also that they contribute directly to business strategy. This involves setting clear objectives, optimizing resource use, integrating IT with

business strategy, and managing IT risks to deliver timely, accurate, and relevant information. Both corporate entities and public sector organizations rely on robust IT governance frameworks to ensure that their IT services adequately support their core functions and activities [1], [2].

The Tangerang City Revenue Agency (Bapenda), established under Tangerang City Regulation Number 8 of 2016, is tasked with regional financial management, particularly in relation to Property Tax (PBB) and Land and Building Rights Acquisition Fee (BPHTB) [3]. To enhance its operations, Bapenda has implemented an Information and Management System and a Local Area Network (LAN). However, despite these initiatives, the agency faces several significant IT challenges. These challenges include risks of data loss, bandwidth issues, and a lack of adequate coordination within its IT functions, which jeopardize the overall efficiency and reliability of its systems [4-8].

The gap between Bapenda's current IT infrastructure and the desired state of its IT governance is evident. While the agency has taken initial steps toward integrating technology into its operations, the existing IT governance framework is not fully developed to meet its operational demands. Issues like poor bandwidth management and insufficient IT coordination are symptoms of broader governance problems that prevent Bapenda from fully leveraging its IT systems to meet its goals. As a result, there is a misalignment between Bapenda's business objectives—efficient financial management—and its current IT capabilities.

The objective of this study is to evaluate the current state of IT governance at Bapenda using the COBIT 5 framework, a globally recognized model for IT governance and management. COBIT 5 provides a comprehensive approach to IT governance, focusing on the management and control of information and technology. By utilizing this framework, the study will assess the current and target capability levels of Bapenda's IT governance, identifying the gaps that exist between these levels. The aim is to pinpoint specific areas where improvements are necessary and propose actionable recommendations to enhance Bapenda's IT governance and resource management practices [9-14].

This research will offer practical insights to address the identified IT governance gaps at Bapenda. By applying the COBIT 5 framework, the study will help improve IT service quality, ensuring that information systems better support the agency's financial management functions. Ultimately, the findings and recommendations will enable Bapenda to improve its decision-making processes, optimize resource use, and enhance public service outcomes, contributing to more effective and reliable IT governance in the public sector [15], [16].

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2. METHODS

The reason for choosing COBIT 5 as the framework for this research is its ability to provide a comprehensive structure that helps organizations achieve optimal IT value by balancing benefits, minimizing risks, and utilizing resources effectively. COBIT 5 manages and governs IT in a holistic manner, addressing the needs of the entire organization. Unlike other frameworks such as ITIL, AS8015, COSO, and TOGAF, COBIT 5 encompasses broader areas of IT auditing and offers principles that ensure stakeholder needs are met, the enterprise is covered end-to-end, an integrated framework is applied, a holistic approach is enabled, and governance is distinguished from management. This makes COBIT 5 particularly suitable for assessing and evaluating IT governance practices.

COBIT 5 processes were selected to align with the Tangerang City Revenue Agency's (Bapenda) objectives and challenges by ensuring that IT governance and management support the agency's mission of effective financial management and public service delivery. The alignment is critical for addressing the specific issues faced by Bapenda, such as data security, infrastructure efficiency, and overall IT management as illustrated in Figure 1.

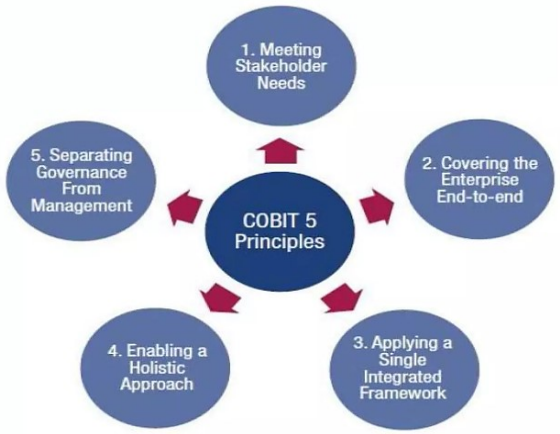

Figure 1 COBIT 5 Principles

COBIT 5 introduces a comprehensive set of enablers designed to aid in the implementation of robust IT governance and management within enterprises. These enablers are categorized into seven distinct areas, as shown in Figure 2. The enablers include principles, policies, frameworks, processes, organizational structures, culture, ethics, behavior, information, services, infrastructure, applications, people, skills, and competencies. These elements serve as vital tools that help organizations align their IT objectives with business goals and effectively manage IT resources [17], [18].

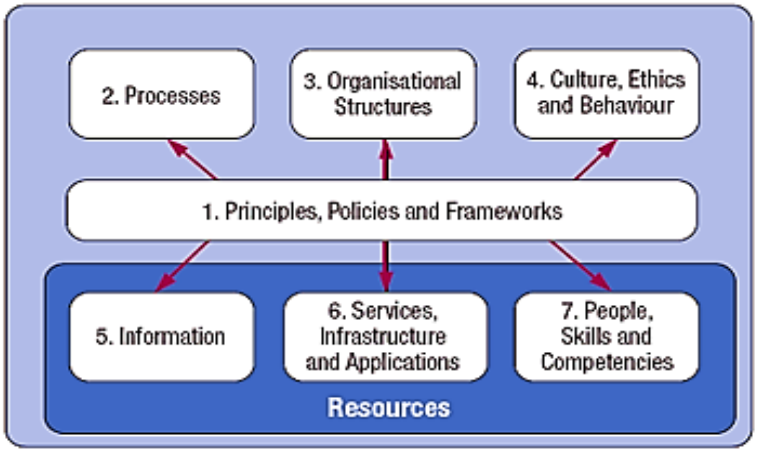

Figure 2 The Seven Enablers in COBIT 5

Additionally, COBIT 5 outlines six levels of process capability, each reflecting varying degrees of process maturity, as depicted in Figure 3. These levels range from "Incomplete Process" (Level 0), where the process lacks proper definition, to "Optimizing Process" (Level 5), where the process is continuously improved to meet business objectives. Between these two extremes are the "Performed Process" (Level 1), which meets its specific targets; "Managed Process" (Level 2), which is orderly and achieves predetermined results; "Established Process" (Level 3), which is consistently managed according to predefined procedures; and "Predictable Process" (Level 4), where outcomes are reliably achieved within set parameters [19], [20].

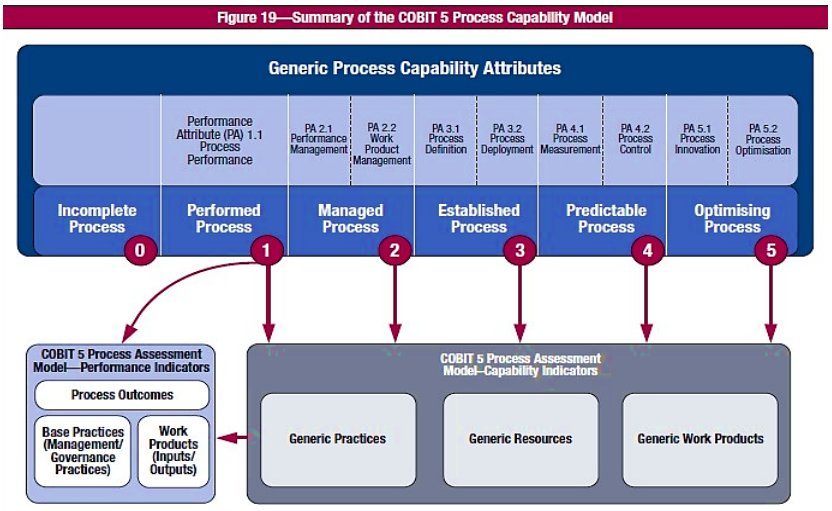

Figure 3 Capability Level COBIT 5

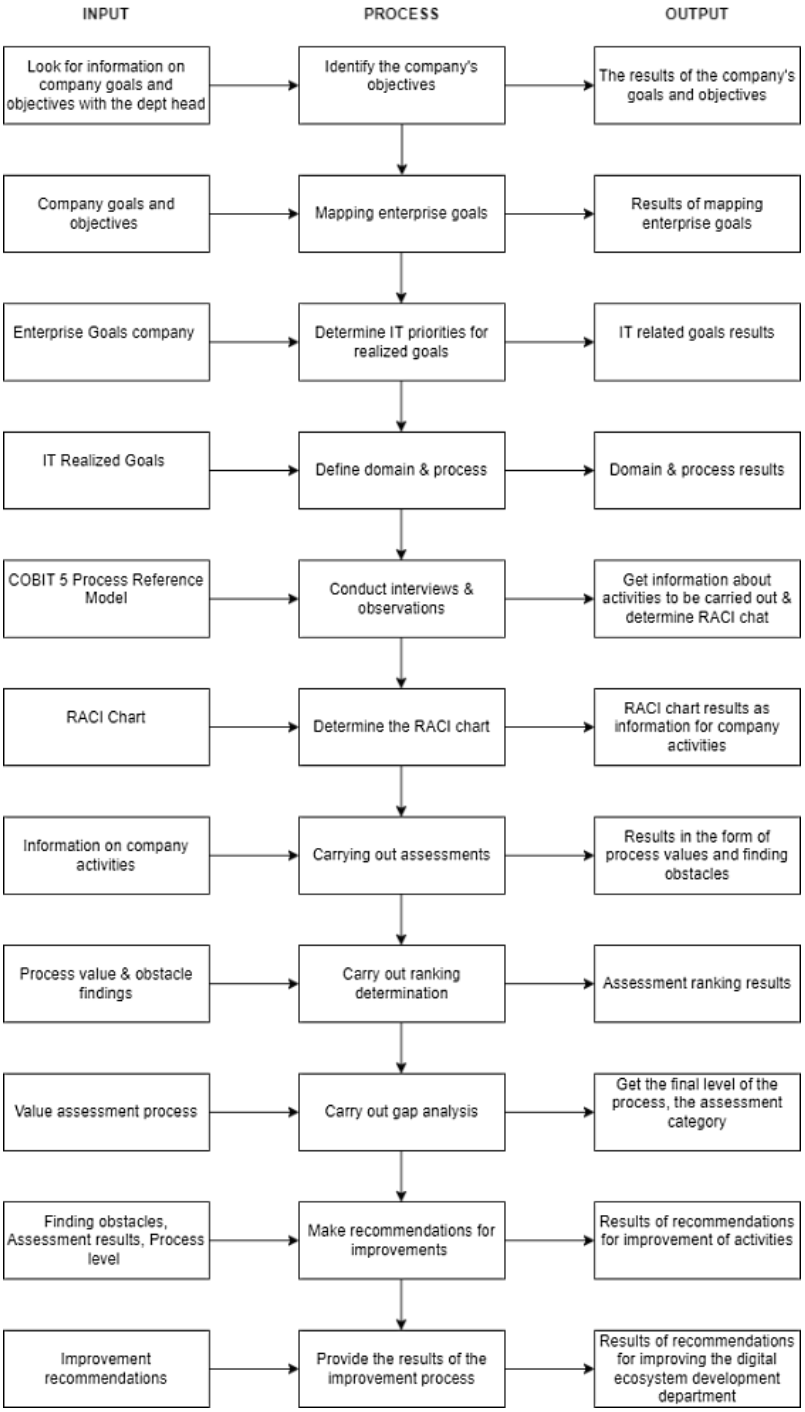

Figure 4 Conceptual Framework

In this study, data collection focused on identifying inputs, processes, and outputs for each priority process within the COBIT 5 framework. This ensured that the evaluation of the Tangerang City Revenue Agency's (Bapenda) IT governance was grounded in practical, operational needs. Interviews were conducted with key stakeholders and IT personnel to gather insights into existing IT practices, challenges, and performance levels. These interviews provided a detailed understanding of how Bapenda's IT processes align with COBIT 5 standards and highlighted areas for improvement.

In addition to the interviews, observations of Bapenda's IT infrastructure and daily operations were conducted to validate the interview data and identify real-world issues affecting IT performance. These observations revealed inefficiencies in IT coordination and resource allocation, which hindered the agency's IT governance objectives. A RACI (Responsible, Accountable, Consulted, and Informed) chart was developed to map roles and responsibilities within IT processes, ensuring that relevant stakeholders were involved and that all aspects of IT governance were thoroughly evaluated.

The findings from the interviews and observations were analyzed to determine the current capability levels of Bapenda's IT processes, according to the COBIT 5 framework. The analysis identified several gaps in the agency's IT governance, which were addressed through actionable recommendations aimed at improving their governance practices. The research framework, as illustrated in Figure 4, details a structured approach to evaluating IT governance, from aligning business objectives to enterprise goals, selecting relevant IT goals, and conducting assessments based on the COBIT 5 domains. These steps culminated in delivering recommendations to enhance future IT governance efforts at Bapenda [17], [19], [20].

3. RESULTS AND DISCUSSION

3.1 Planning

The selection of COBIT 5 processes in this study directly addresses the challenges faced by the Tangerang City Revenue Agency (Bapenda) in achieving its business objectives. During the initial phase of the COBIT 5 implementation lifecycle, critical issues were identified within Bapenda's IT operations. These issues were then mapped to relevant COBIT 5 processes to target areas needing improvement. Table 1 provides a clear mapping of the problems encountered and the corresponding COBIT 5 processes selected for evaluation.

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Table 1. Mapping Issues to Relevant COBIT 5 Processes

No.	Problem	Relevant COBIT 5 Processes for the Problem
1	Suboptimal distribution of bandwidth from third-party service providers	DSS01 Manage Operations
2	Risk of data loss from source code due to inadequate backup server management	DSS02 Manage Service Requests and Incidents
3	Poor coordination within IT units; financially autonomous units create their own applications	DSS03 Manage Problems

The three COBIT 5 processes outlined in Table 1 were selected based on observations of IT operations and the specific issues affecting Bapenda. These processes, critical to IT operations management and problem resolution, will be evaluated for their capability levels. The evaluation aims to identify gaps and offer recommendations for improving Bapenda's IT governance framework.

3.2 Field Work

Fieldwork included comprehensive data collection through interviews and observations to assess Bapenda's current IT governance practices. Interviews were conducted using the RACI (Responsible, Accountable, Consulted, and Informed) Chart to ensure that the correct individuals were interviewed based on their roles in the organization. The participants represented key departments across Bapenda's IT and administrative functions, which ensured a holistic understanding of the issues at hand. The following four main representatives participated in the interviews:

1) Head of Bapenda Kota Tangerang City – Chief Executive Officer, Business Process Owner, Chief Risk Officer
2) Administration Department – Chief Financial Officer, Value Management Office, Head of IT Administration, Head of Human Resources, Service Manager, Business Continuity Manager, Steering Committee, Chief Operating Officer
3) IT Management Department – Business Executive, Strategy Executive Committee, Head of IT Operations
4) Information Systems Development Department – Chief Information Officer, Project Management Office, Head Architect, Head of Development, Information Security Manager, Privacy Officer, Auditor

During these interviews, five COBIT processes were identified as priorities for evaluation, as listed follow:

1) EDM04 Ensure Resource Optimization
2) APO07 Manage Human Resources
3) BAI09 Manage Assets
4) DSS01 Manage Operations
5) MEA01 Monitor, Evaluate, and Assess Performance and Conformance

These processes represent critical areas for Bapenda's IT governance, with the goal of improving the agency's resource optimization, human resource management, and IT asset management.

3.3 Process Attribute Rating: EDM04 Ensure Resource Optimization

The evaluation of the EDM04 Ensure Resource Optimization process was conducted through a detailed review of the available documentation. This process was measured against COBIT 5's capability levels to determine the current performance. Table 2 presents the ratings based on the documentary evidence collected for each subprocess of EDM04.

Table 2. Process Attribute Rating for EDM04

Sub Process	Documentary Evidence	Exist	Score
EDM04.01 Evaluate resource management	Guiding principles for resource allocation, Enterprise architecture, Approved resources plan	√	100%
EDM04.02 Direct resource management	Communication of resourcing strategies, Assigned responsibilities, Safeguarding resources principles	√	66.67%
EDM04.03 Monitor resource management	Feedback on resource allocation, Remedial actions for management deviations	√	100%
Average Score			**88.89%**

The EDM04 process achieved a Level 1 capability, as shown by the average score of 88.89%. This indicates that while resource management practices are implemented and documented, certain aspects such as communication strategies (scored 66.67%) still need improvement to reach higher capability levels.

3.4 Performance and Work Product Management for EDM04

In addition to the overall process rating, the assessment also examined two specific aspects of the EDM04 process: Performance Management and Work Product Management. These two areas were critical in determining how well resources were managed and optimized within Bapenda's IT governance framework.

Table 3. Performance Management for EDM04

Generic Practices	General Work Product	Exist	Output
Identify the objectives	Employee Work Targets	√	Employee Work Targets
Plan and monitor the performance	SKP Assessment (Employee Work Targets)	√	SKP Assessment
Adjust the performance if not meeting targets	Job Performance Evaluation Form	√	Job Performance Evaluation
Define responsibilities and authorities	Employee Work Targets	√	Employee Work Targets
Provide resources	Recap of Position Workload	√	Recap of Position Workload
Manage related party interfaces	No related document	-	None
Average Score			**83.33%**

Table 4. Work Product Management for EDM04

Generic Practices	General Work Product	Exist	Output
Define requirements for work products	Recap of Position Workload	√	Recap of Position Workload
Define documentation and control requirements	Employee Work Targets	√	Employee Work Targets
Identify, document, and control work results	SKP Assessment (Employee Work Targets)	√	SKP Assessment
Review and adjust work products	No related document	-	None
Average Score			**75%**

As shown in Tables 3 and 4, the Performance Management aspect received an average score of 83.33%, while Work Product Management scored 75%. Although these scores are close to the threshold for Level 2 capability, the overall EDM04 process remains at Level 1, with an average score of 79.16%. The results indicate that while the process is implemented and operational, more effort is required to elevate it to higher maturity levels.

3.5 Process Attribute Ratings for Other Processes

In addition to EDM04, the processes APO07 Manage Human Resources**,** BAI09 Manage Assets, and DSS01 Manage Operations were also evaluated. These processes, similar to EDM04, were found to be operating at Level 1 capability. This indicates that while the processes have been implemented and are functioning, they require further development and improvement to achieve higher capability levels. However, the process MEA01 Monitor, Evaluate, and Assess Performance and Conformance exhibited excellent performance. It achieved consistent scores of 100% across all criteria, reflecting a strong and well-structured monitoring and evaluation mechanism within Bapenda. This high level of performance suggests that Bapenda has established a reliable system for assessing IT performance, which can serve as a foundation for improving other processes.

The evaluation of COBIT 5 processes at the Tangerang City Revenue Agency revealed that while certain processes, like MEA01, are performing at an optimal level, others, such as EDM04, APO07, BAI09, and DSS01, are still at early stages of capability development. These processes need targeted improvements in communication, resource management, and performance evaluation to reach higher maturity levels. The insights gained from this evaluation will be used to develop actionable recommendations to enhance Bapenda's overall IT governance framework, ensuring better alignment with its business goals and more effective resource management.

3.6 Discussion

The results of the COBIT 5 process evaluation at the Tangerang City Revenue Agency (Bapenda) highlight both strengths and weaknesses in their IT governance practices. The evaluation, which focused on key processes such as EDM04 Ensure Resource Optimization, APO07 Manage Human Resources, BAI09 Manage Assets, DSS01 Manage Operations, and MEA01 Monitor, Evaluate, and Assess Performance and Conformance, reveals that while some processes are functioning effectively, others require significant improvement to reach higher capability levels. This discussion will analyze the implications of these findings, addressing both the areas of concern and opportunities for enhancement.

First, the EDM04 Ensure Resource Optimization process, which achieved an average score of 88.89% and reached Level 1 capability, illustrates that Bapenda is beginning to implement resource management processes but has not yet fully optimized them. The fact that EDM04.02 Direct Resource Management scored only 66.67% suggests that while resources are being allocated, the communication and strategic direction of these resources are inadequate. This gap highlights a critical area where Bapenda must focus on improving its resourcing strategies,

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especially in the communication and documentation of these strategies. Improving this aspect would enable the agency to make more efficient use of its resources and potentially elevate this process to a higher capability level.

In contrast, the MEA01 Monitor, Evaluate, and Assess Performance and Conformance process demonstrated exemplary performance, with a consistent score of 100%. This indicates that Bapenda has a strong framework in place for monitoring and evaluating IT governance activities. This level of maturity in monitoring suggests that Bapenda has effectively implemented mechanisms to assess and ensure that IT processes align with their business objectives. The robust performance of this process provides a foundation upon which the agency can build improvements in other areas. The ability to monitor and assess IT performance accurately is critical to identifying inefficiencies and areas for growth across all IT governance processes.

Despite these strengths, the evaluations of APO07 Manage Human Resources, BAI09 Manage Assets, and DSS01 Manage Operations show that these processes remain at Level 1 capability. These processes are operational but lack the maturity necessary for consistent, optimized performance. For example, APO07 Manage Human Resources is crucial for ensuring that the right people with the right skills are in place to manage IT operations effectively. The current low capability level suggests that Bapenda may face challenges in staffing, skill development, or resource allocation within its IT workforce. Addressing these gaps through structured human resource management practices, including training, development, and strategic workforce planning, could help elevate this process to a higher capability level.

Similarly, the BAI09 Manage Assets process, which is essential for the efficient management of IT assets, also requires attention. At Level 1 capability, this process is not yet fully established, suggesting that Bapenda may face challenges in tracking, maintaining, and optimizing the use of its IT assets. Effective asset management is crucial to ensuring that IT resources, including hardware and software, are used optimally and remain aligned with the agency's operational needs. Improving the asset management process would not only help Bapenda avoid unnecessary costs associated with mismanaged resources but also ensure that IT assets are effectively supporting its business objectives.

The DSS01 Manage Operations process, which addresses the suboptimal distribution of bandwidth and other operational inefficiencies, similarly remains at an early stage of development. This process is critical to ensuring that IT services are delivered efficiently and reliably. The suboptimal distribution of bandwidth, as highlighted in the results, can lead to performance bottlenecks and disruptions in service delivery, which directly affect the agency's ability to meet its business goals.

By improving operational processes and optimizing bandwidth distribution, Bapenda can enhance the overall reliability and performance of its IT services.
In summary, while Bapenda has made significant strides in IT governance, particularly in the MEA01 process, the evaluations of other processes, such as EDM04, APO07, BAI09, and DSS01, reveal several areas requiring improvement. The agency needs to focus on enhancing its resource management, human resource development, asset management, and operational efficiency to move these processes to higher capability levels. By addressing these gaps, Bapenda can ensure that its IT governance framework not only aligns with COBIT 5 standards but also supports its broader business objectives more effectively. The findings provide a roadmap for Bapenda to strengthen its IT governance practices and achieve a higher level of operational excellence.

4. CONCLUSION

The evaluation of COBIT 5 processes at the Tangerang City Revenue Agency (Bapenda) has provided critical insights into the current state of its IT governance framework. While the agency has demonstrated strong capabilities in monitoring and assessing IT performance through the MEA01 process, other key areas such as EDM04 Ensure Resource Optimization, APO07 Manage Human Resources, BAI09 Manage Assets, and DSS01 Manage Operations remain at early stages of maturity. These processes require further development to ensure they effectively support Bapenda's business objectives. By addressing identified gaps in resource management, human resources, asset management, and IT operations, Bapenda can enhance its overall IT governance and align more closely with COBIT 5 standards. The findings offer a clear direction for future improvements, enabling the agency to optimize its IT capabilities and achieve greater efficiency and effectiveness in its operations.

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