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Enhancing Public Sector IT Governance through COBIT 2019: A Case Study on Service Continuity and Data Management in the Central Lombok

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Abstract

This study evaluates the IT governance maturity of the Central Lombok Civil Service Police Unit (Satpol PP) using the COBIT 2019 framework, focusing on improving service continuity and data security in a resource-constrained public sector context. The assessment, conducted across key domains such as service delivery, data security, and compliance, revealed that Satpol PP operates at Level 3 (Defined) maturity. While processes are documented and standardized, significant gaps remain in automation, proactive risk management, and real-time monitoring. These limitations hinder the organization's ability to optimize service continuity and safeguard sensitive data effectively. The study emphasizes the innovative application of COBIT 2019 in a resource-limited environment, demonstrating how the framework can be adapted to prioritize immediate needs while progressively advancing IT governance maturity. Key recommendations include automating monitoring systems, enhancing data security protocols, and implementing proactive risk management strategies. These findings contribute valuable insights into the challenges and solutions for IT governance in public institutions, providing a replicable model for similar organizations. Future research should explore the long-term impacts of these recommendations on IT governance maturity and service efficiency in other public sector contexts.

Keywords: IT Governance, COBIT 2019, Public Sector, Service Continuity, Data Security.

1. INTRODUCTION

The rapid advancement of Information Technology (IT) has compelled organizations across sectors to adopt digital systems to enhance operational efficiency, improve data management, and deliver competitive services. In the public sector, the demand for consistent, secure, and high-quality services is particularly critical. However, public institutions face unique challenges, such as resource constraints, complex regulatory requirements, and high-stakes service

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delivery, necessitating robust IT governance frameworks [1],[2]. Among these, COBIT 2019 (Control Objectives for Information and Related Technologies) has gained recognition as a comprehensive tool for IT governance. It offers structured processes and measurable objectives that align IT operations with organizational goals while ensuring service continuity and data security [3].

The COBIT 2019 is particularly valuable in the public sector, where resource constraints, regulatory requirements, and high-stakes service delivery create a complex environment for IT management. Studies have shown that COBIT 2019 enhances IT governance by providing standardized processes that align IT functions with organizational goals and support efficient resource allocation [4]. In public institutions, sernment agencies and law enforcement organizations, the ability to achieve IT governance maturity is critical for ensuring data security and service continuity, which directly impacts public trust and operational resilience[5]. The Central Lombok Civil Service (Satpol PP) serves as a representative case in this context, as its mission to enforce public order necessitates reliable IT systems to handle sensitive data, respond to public demands, and maintain operational continuity[6],[7].

This study focuses on the Central Lombok Civil Service Police Unit (Satpol PP), a public institution tasked with maintaining public order and security. Given its role, reliable IT systems are crucial for handling sensitive data, responding to public needs, and ensuring operational continuity. Despite these demands, Satpol PP operates within a resource-constrained environment, which limits its capacity to adopt advanced IT governance practices. The study employs COBIT 2019 to evaluate the organization's IT governance maturity, identifying key gaps in service continuity and data management and proposing actionable solutions to address these challenges.

Despite its benefits, implementing COBIT 20the public sector is often challenging due to limited financial resources, technical expertise, and organizational readiness. Public institutions frequently operate under budgetary constraints that hinder the adoption of comprehensive IT governance practices and advanced monitoring tools [8]. Additionally, there is a tendency in such organizatiot reactive rather than proactive approaches to IT governance, meaning that issues are often addressed only after they have impacted services or security. This reactive approach can create vulnerabilities in data management and service delivery, which are exacerbated in environments where regulatory compliance and security are paramount [2],[9]. To address these challenges, a structured IT governance framews COBIT 2019 provides a roadmap for public institutions to incrementally improve IT processes, establish proactive governance practices, and achieve higher maturity levels in managing IT resources [10],[11].

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To frame this investigation, it is essential to consider the relevance of IT governance organizational objectives within the public sector. COBIT 2019 supports the alignment of IT goals with business objectives, ensuring that IT investments contribute directly to operational efficiency, data security, and service continuity [12]. Previous research in both private and public sectors has demonstrated that structured IT governance educe operational risks and improve the quality of service delivery by promoting consistency and reliability in IT processes[13]. However, these benefits are contingent upon the organization's ability to implement COBIT 2019 systematically,n requires initial investments in training, technology, and policy development that may challenge resource-limited public institutions[14],[15].

Furthermore, empirical studies indicate that COBIT 2019's domain-specific guidance, such as its focus on service delive security, is particularly beneficial in public sector settings where compliance with external regulations and internal policies is crucial[16]. For example, a case study in a government agency highlighted that COBIT 2019 facilitated better documentation and auditing of IT pelping the organization meet regulatory requirements and secure sensitive data[17]. Additionally, COBIT 2019's adaptability allows public institutions to customize the framework according to their specific needs, making it aolution for varying levels of IT governance maturity [18]. This adaptability is a significant advantage for Satpol PP, as it enables the organization to prioritize immediate needs, such as service continuity aurity, while progressively advancing toward higher levels of IT governance maturity[19],[20].

The current investigation is structured to assess the IT governance maturity of Satpol PP using COBIT 2019's maturity levels, with an emphasis on identifying strengths and weaknesses in key areas. By examining Satpol PP's practices in domains such as service continuity, data security, and compliance, this study aims to generate actionable insights that address Satpol PP's specific IT governance challenges[3]. These insights contribute to the broader field of IT governance in the public sector, where resource limitations and regulatory demands often constrain organizaachieving optimal IT maturity [21]. Additionally, by providing a detailed roadmap for improvement based on COBIT 2019, the study offers a replicable model for similar institutions aiming to strengthen IT goile managing resource constraints.

The need for effective IT governance in the public sector is more pressing than ever, as digital transformation and data security challenges intensify. COBIT 2019 offers a well-established framework that equips public institutions with the tools to enhance IT processes, align with organizational goals, and manage risks effectively [22]. This study's findings not only aim to enhance Satpol PP's IT governance maturity but also contribute valuable insights for other public

institutions seeking to implement COBIT 2019 ource constrained environments. By examining the impact of COBIT 2019 on IT governance at Satpol PP, this research underscores the potential for structured frameworks to facilitate sustainable improvements in public sector IT management, ultimately supporting more secure, efficient, and resilient public services.

2. METHODS

This study employs the COBIT 2019 framework to evaluate the IT governance maturity level within the Central Lombok Civil Service Police Unit (Satpol PP), with a focus on enhancing service continuity, data security, and alignment with organizational goals. The methodology is structured in a stepwise approach, ensuring systematic data collection, analysis, and assessment based on COBIT 2019 standards. This structured methodology provides a replicable pathway for analyzing IT governance maturity within public sector organizations, particularly in resource-limited environments. A visual representation of the methodology is suggested in Figure 1.

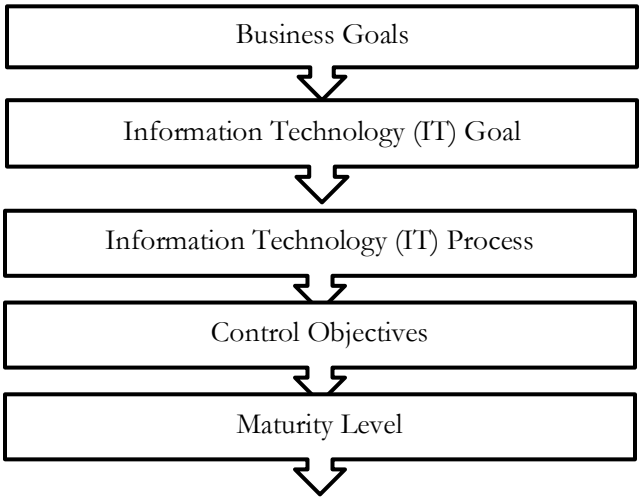

Figure 1. COBIT 4.1 Framework

2.1 Data Collection

Data collection was conducted through a combination of primary and secondary sources, enabling triangulation and strengthening the validity of the findings. This two-pronged approach ensures a thorough examination of both qualitative and quantitative aspects of IT governance within the organization. Primary data were collected through two main techniques: observation and interviews. Observational data provided insights into the daily IT processes and governance practices within the organization, allowing for an assessment of the practical application of IT governance principles [23]. Structured observations were conducted, with a focus

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on identifying discrepancies between documented policies and actual practices. Interviews were conducted with key personnel involved in IT governance, including IT managers, administrators, and business strategists. The interviews were semi-structured, allowing for flexibility in exploring relevant topics while ensuring consistency in the questions asked across participants. This approach aligns with best practices in qualitative research, as it facilitates a deeper understanding of the organization's IT governance goals, practices, and challenges [4].

Secondary data were gathered through literature review and analysis of existing organizational documents. The literature review focused on prior studies related to COBIT 4.1 and its application in various organizational settings, providing a theoretical foundation for the study. Additionally, internal documents such as IT governance policies, operational manuals, and performance reports were analyzed to identify existing frameworks and protocols, as well as any gaps in alignment with COBIT 4.1 standards [2].

2.2 Data Analysis

The data analysis phase involved the structured application of the COBIT 4.1 framework to assess IT governance maturity. This analysis was divided into multiple stages, each focusing on different aspects of IT governance as outlined by COBIT. The COBIT 4.1 framework guides the analysis by categorizing IT governance into several key domains: Business Goals, IT Goals, IT Processes, Domains, Questionnaires, Maturity Levels, and Recommendations. Each category is systematically analyzed to determine its current maturity level and its alignment with both IT and business objectives. This structured approach ensures that all relevant aspects of IT governance are evaluated comprehensively, offering a clear overview of the organization's IT capabilities and areas for improvement[23].

2.2.1 Mapping Business Goals to IT Goals

The initial step in the analysis process was mapping business goals to IT goals, ensuring that the organization's IT strategies support overall business objectives. This alignment is essential in organizations where IT functions play a significant role in strategic operations[3]. By defining clear IT goals that correspond with business goals, the organization can improve the relevance and effectiveness of its IT governance efforts.

2.2.2 Identification of Key IT Processes

Based on the mapped goals, key IT processes were identified that are critical for achieving both business and IT objectives. The COBIT 4.1 framework outlines specific processes that are essential for maintaining effective IT governance. These processes include those related to risk management, data security, and continuity

of operations. Identifying these processes provides a basis for targeted improvements and resource allocation within the IT governance structure [24].

2.2.3 Domain-Specific Analysis

The COBIT 4.1 framework is organized into various domains, each addressing different aspects of IT governance. These domains were analyzed to assess the current state of IT governance practices within the organization. Key domains, such as service delivery and information security, were evaluated to identify strengths and areas requiring improvement. This domain-specific approach allows for a focused analysis, ensuring that each area of IT governance is thoroughly examined [11].

2.3 Maturity Level Assessment

The maturity level assessment is a central component of this study, as it quantifies the organization's IT governance capabilities. Maturity levels in COBIT 4.1 range from Level 1 (Initial) to Level 5 (Optimized), with each level representing a progressively advanced state of governance maturity. The organization's current maturity level was determined by evaluating the effectiveness of its IT processes, as well as its adherence to documented governance protocols.

Each domain and IT process was assessed using a structured questionnaire, based on the COBIT 4.1 maturity model. The questionnaire provided standardized criteria for evaluating each governance element, ensuring consistency across different domains and processes. Responses were collected from stakeholders within the organization, providing insights into both operational practices and strategic alignment. The results from these questionnaires were analyzed to determine an average maturity level for each domain, offering a comprehensive picture of the organization's IT governance status [25].

Table 1. COBIT 4.1 Maturity Levels and Corresponding Criteria

Maturity Level	Maturity Level Description	Criteria
Level 0	Non-existent	No formal processes are implemented. IT activities are performed in an ad-hoc manner and are undocumented. There is no systematic approach to IT governance.
Level 1	Initial / Ad-hoc	Some IT activities are performed sporadically. Processes are undocumented, and activities are performed based on immediate needs.
Level 2	Repeatable but Intuitive	There are repeatable processes but they are informal. Processes depend on the individuals managing them, and documentation is limited.

Maturity Level	Maturity Level Description	Criteria
Level 3	Defined	IT processes are well-documented and standardized. Implementation follows established procedures, though monitoring and evaluation are minimal.
Level 4	Managed and Measurable	IT processes are effectively managed and measurable. Performance metrics are used to monitor, evaluate, and improve process quality.
Level 5	Optimized	IT processes are optimized through continuous improvement. Automated technologies and best practices are applied to achieve maximum efficiency.

2.4 Recommendations

Based on the maturity assessment and domain-specific analysis, recommendations were developed to enhance IT governance within the organization. These recommendations are intended to address identified gaps and support the organization's progression to a higher maturity level. The recommendations cover various aspects, including alignment with business goals, process optimization, and risk management enhancements.

Each recommendation is tailored to the organization's specific needs, taking into account resource constraints and operational priorities. For instance, improvements in data security protocols were recommended to align with COBIT standards for risk management, which is particularly relevant for organizations handling sensitive information[8]. Additionally, the adoption of automated monitoring tools for key IT processes was suggested to support real-time tracking and timely response to system issues, thereby enhancing overall operational resilience.

3. RESULTS AND DISCUSSION

3.1 Overview of IT Governance Maturity Assessment Using COBIT 4.1

The study revealed that the Central Lombok Civil Service Police Unit (Satpol PP) operates at a moderate level of IT governance maturity, corresponding to Level 3 (Defined) within the COBIT 2019 framework. This level indicates that IT processes are documented and standardized but lack advanced mechanisms for evaluation and optimization. Key gaps identified include limited automation, a lack of proactive risk management, and insufficient real-time monitoring systems. These limitations hinder the organization's ability to respond promptly to emerging threats and optimize service continuity and data security.

The findings align with previous studies in the public sector that highlight common challenges such as budget constraints, limited technical expertise, and reactive

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governance practices. For instance, a study conducted in a government agency in Indonesia found similar limitations in automation and monitoring capabilities, which directly impacted the efficiency of their IT operations (Afdhani & Soewito, 2024). However, this study contributes uniquely by showcasing how COBIT 2019 can be adapted in a resource-constrained context to address service continuity and data management challenges.

Table 2. IT Governance Maturity Assessment Results According to COBIT 4.1 Framework

Domain	Maturity Level	Key Observations
Business Goals	Level 3	Moderate alignment with organizational objectives; requires enhanced integration for operational effectiveness.
IT Goals	Level 3	Basic frameworks for security and continuity are in place but lack advanced monitoring and risk assessment.
IT Processes	Level 3	Documented and standardized processes; however, lacks proactive evaluation and integration for optimal performance.
Service Delivery	Level 2	Basic documentation of processes exists, but lacks adaptability and proactive response capabilities.
Data Security	Level 2	Security protocols are intuitive, largely dependent on individual efforts rather than formalized processes.
Overall Maturity	Level 3	Organizational IT governance is moderately mature but not fully optimized, with gaps in evaluation and real-time monitoring.

These findings reflect a pattern observed in similar public sector organizations where resource constraints and a lack of advanced technical capabilities limit IT governance advancement [2].

3.2 Analysis of Business and IT Goals Alignment

Alignment between business and IT goals is critical to ensuring that technology investments support organizational objectives. In the case of Satpol PP, this alignment is at a moderate level (Level 3), indicating that there is foundational integration between business and IT goals but room for strategic improvement.

3.2.1 Business Goals

The primary business goals of Satpol PP include enhancing public service delivery, improving operational efficiency, and ensuring data security. However, the maturity assessment suggests that IT activities are often reactive, addressing issues as they arise rather than proactively preventing them. This approach aligns with findings from Afdhani and Soewito (2024)[26], who observed that public institutions frequently face challenges in establishing proactive IT governance due

to budget and resource limitations. For Satpol PP, implementing a more proactive governance model would allow for more efficient resource allocation and enhance their ability to meet public service demands effectively.

3.2.2 IT Goals

The IT goals of Satpol PP focus on operational resilience, data security, and service continuity. Although foundational practices are in place, the current maturity level suggests an absence of advanced monitoring and evaluation mechanisms essential for continuous improvement. Similar limitations in public institutions, where reliance on basic frameworks limits governance capabilities, have been noted in previous studies [4]. Establishing a robust monitoring system and integrating regular performance evaluations could strengthen Satpol PP's ability to meet its IT objectives sustainably.

			Cobit Inormation Criteria						
	Business Goals	**IT Goals**	*Effectiveness*	*Efficiency*	*Confidentiality*	*Integrity*	*Availability*	*Compliancereliability*	*Effectiveness*
Financial Perspective	1. Provide a good return on investment of IT-enabled business investments	24, 2, 4, 18, 17, 19, 20, 21, 22		√					
	2. Manage IT-related business risk	2, 4, 18, 17, 19, 21, 20, 22			√	√	√		
	3. Improve corporate governance and transparency	2, 18							√
	4. Improve customer orientation and service	3, 18	√						
Customer Perspective	5. Offer competitive products and services	24, 15, 5	√	√					
	6. Establish service continuity and availability	6, 22, 23	√				√		
	7. Create agility in responding to changing business requirements	15, 6, 25	√	√					
	8. Achieve cost optimization of service delivery	6, 10, 12, 20		√					
	9. Obtain reliable and useful information for strategic decision making	6, 12, 20, 26	√			√			
Internal Perspective	10. Improve and maintain business process functionality	7, 11, 13, 14, 5	√	√					
	11. Lower process costs	8, 13		√					
	12. Provide compliance with external laws, regulations, and contracts	2, 10, 11, 13, 26, 27			√			√	
	13. Provide compliance with internal policies	10, 11, 13, 6			√			√	
	14. Manage business change	6, 11	√	√					
Learning & Growth Perspective	15. Improve and maintain operational and staff productivity	6, 11, 21	√	√					
	16. Manage product and business innovation	6, 21, 28	√	√					
	17. Acquire and maintain skilled and motivated people	9	√	√					

Figure 2. Relationship Between Business Goals and IT Goals Based on COBIT 4.1 Framework

3.3 Domain Specific Maturity Findings

According to the COBIT 4.1 framework, IT governance covers multiple domains, each targeting essential elements of IT management, including security, service delivery, compliance, and risk management. This assessment evaluates Satpol PP's IT processes across these domains, as summarized in Table 3.

Table 3. Domain-Specific IT Governance Maturity Assessment Based on COBIT 4.1

Domain	Maturity Level	Observations
Service Delivery	Level 3	Well-documented processes, but lacks adaptability for demand fluctuations and unforeseen challenges.
Data Security	Level 2	Basic security protocols exist; lacks real-time data encryption and automated threat detection.
Compliance	Level 3	Compliance practices are followed, but audit mechanisms require enhancement for consistency and adherence to best practices.

The results reveal that, while Satpol PP's IT governance is functional, technical and budgetary constraints hinder further development in certain domains, such as incident response and data security. Similar findings are noted in comparable public sector organizations, where financial limitations restrict the adoption of advanced IT governance practices [11],[8].

3.4 Evaluation of Maturity Levels and Recommendations for Process Optimization

The COBIT 4.1 maturity model defines Level 3 as "Defined," which indicates that IT processes are standardized and documented but lack continuous evaluation or optimization. For Satpol PP to progress to Level 4 (Managed and Measurable), the organization would need to implement more comprehensive monitoring metrics, automated tools, and additional training for IT personnel. Several challenges were identified in advancing Satpol PP's IT governance maturity:

1. Resource Limitations, limited funding constrains the acquisition of advanced IT tools and professional development programs.
2. Lack of Automated Tools, the absence of automated monitoring and real-time data analytics limits proactive governance.
3. Training Gaps, insufficient training for IT staff hinders the effective implementation of advanced COBIT principles.

These challenges are consistent with other studies showing that public sector organizations often struggle to advance IT governance maturity due to similar obstacles [8],[11].

Table 3. Identified Challenges and Proposed Solutions for Advancing IT Governance Maturity Levels

Challenge	Proposed Solution
Resource Limitations	Seek strategic partnerships or grants for technology upgrades and professional training.
Lack of Automated Tools	Invest in essential automated monitoring tools to facilitate continuous tracking and rapid response.
Training Gaps	Conduct regular COBIT-based training to enhance IT governance expertise among staff.

3.5 Recommendations for IT Governance Enhancement

To bridge the gaps identified in the COBIT 4.1 maturity assessment, the following recommendations are proposed for Satpol PP:

1. Implement Automated Monitoring and Reporting Tools, Introducing automated monitoring tools will enable real-time tracking of system performance, allowing the IT department to respond proactively to emerging issues. This step is crucial for achieving a "Managed and Measurable" state, as defined by COBIT.
2. Enhance Data Security Protocols, To address deficiencies in data protection, Satpol PP should invest in additional security measures, such as data encryption and multi-factor authentication, to better protect against cybersecurity threats [27].
3. Introduce Regular Audits and Define Performance Metrics, Establishing formal auditing processes and clear performance metrics will support compliance with COBIT standards and promote continuous improvement in IT governance.
4. Provide Regular COBIT Training for IT Staff, Training programs focused on advanced COBIT principles and best practices would equip IT staff with the skills necessary to implement and sustain improvements in IT governance.

Table 4. Proposed Roadmap for Enhancing IT Governance Maturity

Phase	Objectives	Key Actions/Recommendations	Expected Outcome
Phase 1: Foundation	Establish baseline for IT governance processes	• Conduct initial assessments of current IT maturity levels	• Clear understanding of current IT governance maturity
		• Define performance metrics and align with COBIT 4.1 criteria	• Foundational KPIs established for ongoing monitoring
Phase 2: Process Formalization	Standardize and formalize IT governance processes	• Document all key processes (e.g., service continuity, data security, compliance)	• Consistent application of documented processes
		• Implement basic audit procedures for compliance	• Improved regulatory compliance
Phase 3: Technology Enhancement	Introduce automated tools and	• Invest in automated monitoring tools for real-time tracking and data analysis	• Enhanced real-time system monitoring

Phase	Objectives	Key Actions/Recommendations	Expected Outcome
	monitoring systems		
		• Integrate automated reporting tools for system performance	• Proactive management of system issues
Phase 4: Advanced Security Implementation	Strengthen data protection measures	• Apply data encryption and multi-factor authentication	• Reduced risk of data breaches and unauthorized access
		• Conduct regular security audits and vulnerability assessments	• Increased data security and confidentiality
Phase 5: Continuous Improvement and Training	Embed continuous improvement and staff training	• Conduct regular training on COBIT principles for IT staff	• Improved expertise in IT governance
		• Establish feedback loops and review processes for iterative improvements	• Enhanced adaptability and ongoing process refinement

3.6 Implications for IT Governance in the Public Sector

The findings from this study have broader implications for IT governance in the public sector. Public organizations often face challenges similar to those identified at Satpol PP, such as limited funding, lack of automated tools, and skill gaps, which hinder their ability to fully leverage frameworks like COBIT 4.1. The results highlight the importance of a phased approach to IT governance, beginning with foundational improvements and gradually progressing to advanced practices. This aligns with existing literature suggesting that incremental enhancements are often more feasible and sustainable for resource-constrained organizations [4].

4. CONCLUSION

This study provides a comprehensive evaluation of the IT governance maturity of the Central Lombok Civil Service Police Unit (Satpol PP) using the COBIT 2019 framework. The findings indicate that Satpol PP operates at Level 3 (Defined), with processes that are documented and standardized but lack advanced mechanisms for real-time evaluation, automation, and proactive risk management. Key gaps were identified in service continuity and data security, which hinder the

organization's ability to meet public service demands effectively. The adoption of COBIT 2019 in the public sector has the potential to significantly enhance sustainable IT governance, particularly in resource-limited environments. The structured approach offered by this framework aligns IT objectives with organizational needs, strengthens data security, and improves operational efficiency. These findings not only provide actionable insights for Satpol PP but also offer a replicable model for other public institutions facing similar resource constraints. Highlighting the broader implications, this research demonstrates how structured frameworks like COBIT 2019 can contribute to the development of secure, efficient, and resilient IT systems in the public sector. Future research should focus on implementing the recommendations proposed in this study across other public institutions to assess their broader applicability. Longitudinal studies could measure the long-term impacts of these improvements on IT governance maturity, service efficiency, and data security. By building on these insights, this research underscores the importance of strategic IT governance as a critical factor in supporting sustainable public service delivery in the digital era.

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