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Information System Governance Evaluation at Diskominfo Central Java Using COBIT 2019 Framework

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Abstract.
Purpose: To evaluate the governance of the LaporGub Central Java service portal information system using the COBIT 2019 framework to obtain a comprehensive overview of the implemented capability levels.
Methods: This study employs a qualitative method using the COBIT 2019 framework to assess capability levels, which is further combined with CMMI to provide improvement recommendations. The method produces valid and accurate results as respondents are selected using the RACI model, and the assessment is conducted at the subdomain level. Consequently, each domain yields valid outcomes, enabling precise and well-targeted recommendations.
Results: This study successfully determined the level of LaporGub service capability using COBIT 2019 and showed that most domains have achieved, and in some cases even exceeded, the set targets. However, several areas still require improvement, especially in services security and business process control, as well as problem management. These findings indicate that the Central Java Provincial Communication and Information Office has a strong foundation in operational management and service sustainability. With proper improvements in IT governance, LaporGub is expected to serve as a model for adaptive and accountable digital public services that can be replicated in other regions across Indonesia.
Novelty: This study introduces innovation by integrating COBIT 2019 with CMMI, an uncommon combination in capability level assessments within government institutions. Innovative techniques such as text development, respondent questionnaires based on the RACI model, and interviews are used to avoid redundancy in the research findings. By utilizing questionnaires, interviews, and document reviews, this approach enhances the validity of the study results.

Keywords: COBIT 2019, IT governance, CMMI, Importance performance analysis, Capability level
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INTRODUCTION

The advancement of information technology (IT) has become a key driver in enhancing efficiency and effectiveness across various sectors, including government. The utilization of IT in the public sector plays a vital role in supporting more responsive and transparent public services [1]. In line with the increasing demands of the digital era, government institutions are required to optimally manage information systems to uphold the principles of good governance. One crucial aspect of effective governance is the proper management of data and information, particularly in handling public complaints. Complaint handling services serve as strategic instruments for fostering two-way communication between the government and the public, which ultimately contributes to improving the quality of public services and strengthening governmental accountability [2].

As the agency responsible for managing information and communication at the provincial level, the Department of Communication and Informatics (Diskominfo) of Central Java Province holds a strategic role in ensuring the effectiveness of government information systems, particularly in administering public complaint services. To promote transparency and enhance public participation, Diskominfo has developed various information systems, one of which is the Central Java Province Online Complaint Reporting Portal (LaporGub). This system is designed as a communication bridge between the public and the government to ensure responsiveness and effectiveness in complaint handling. In 2024, from January to December, the LaporGub service received a total of 10,294 complaints through various platforms such as the website, mobile application, WhatsApp, Instagram, and other available channels, with 5,998 of these complaints successfully addressed. These complaints ranged across diverse sectors, including infrastructure, social welfare, education, environment, and more. Through LaporGub, the system is expected to foster more open, participatory, and accountable governance, thereby supporting the principles of good governance [3].

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In line with the strategic role of the Diskominfo of Central Java Province in managing government information systems, the LaporGub service has undergone various changes and updates since its launch in 2018. However, in managing this service, Diskominfo still faces challenges in optimization due to the absence of an academic study specifically evaluating the capability and maturity level of its governance using the COBIT 2019 framework [4]. Governance evaluation becomes crucial to ensure the optimization of service benefits as well as the management of IT-related risks. In this context, the governance capability measurement of LaporGub will be conducted using the COBIT 2019 framework to assess how well this system supports the principles of Good Governance. Without a systematic evaluation, LaporGub risks experiencing performance decline, which could negatively impact public satisfaction with the public service [5].

Although the urgency of evaluating the governance of LaporGub has been recognized, to date, no comprehensive assessment has been conducted, leaving the achievements of this service unanalyzable in an objective manner. This situation results in a lack of information that could serve as recommendations for decision-making, ultimately impacting the overall effectiveness of public services. To optimize the value and benefits of LaporGub while minimizing emerging barriers, the development of good governance through evaluation and capability measurement of the system is essential. Therefore, it is necessary to conduct a capability measurement and governance assessment of LaporGub to improve service quality. Based on the above explanation, the main issue in this research is the lack of knowledge regarding the extent of the capability and effectiveness of LaporGub's governance, necessitating a comprehensive evaluation using the COBIT 2019 framework to identify gaps and formulate improvement recommendations [6].

The implementation of Control Objectives for Information and Related Technology (COBIT) provides benefits for organizations in measuring and improving IT governance systematically. This framework focuses on aspects such as risk management, regulatory compliance, and enhancing IT service effectiveness. COBIT offers a more flexible approach to aligning IT strategy with business objectives [7]. After measuring capability levels, Capability Maturity Model Integration (CMMI) is used as an evaluation tool to analyze the maturity of processes in domains that are not yet optimal for improvement, making them more effective and efficient in supporting the organization's services. This evaluation allows organizations to identify weaknesses and design more targeted improvement strategies. With the combination of COBIT 2019 and CMMI, organizations can ensure that their IT governance processes evolve sustainably and align with dynamic business needs [8]. Previous research has shown that the COBIT framework, supported by CMMI, is effective in improving IT governance. However, studies specifically addressing public complaint services in local government are still limited [9]. By applying evaluation using COBIT 2019 on LaporGub, this research is expected to identify gaps or weaknesses in governance that have not been detected before, enabling more accurate and relevant improvement recommendations. This is crucial because, without adequate evaluation, the management of LaporGub may become inefficient and fail to support efforts in realizing good and responsive governance.

The study was conducted by [10]. Utilized COBIT 2019 as a framework for evaluating IT governance. This framework is well-known for its excellence in analyzing the alignment of IT with business objectives. The research involved stages such as identifying business needs, collecting data through observations, interviews, and questionnaires, and analyzing the data using COBIT 2019 design factors. This systematic approach is relevant to assist this study in conducting a comprehensive evaluation, including mapping domains that align with the needs of the government organization. This approach can be applied to evaluate the information systems at the Diskominfo of Central Java to enhance IT efficiency and alignment with organizational goals, particularly on the online complaint reporting portal.

This study encompasses the application of the COBIT 2019 method to evaluate the governance of the information system and assess the process capabilities of the LaporGub information system, managed by the Communication and Informatics Office (Diskominfo) of Central Java. The scope of the research is limited to the DSS (Deliver, Service, and Support) domain, specifically from DSS01 to DSS06, to evaluate the management of IT services. The main objective of the research is to identify the gap between the current governance condition and the ideal potential that can be achieved, thereby improving the quality and effectiveness of information technology-based public services in the digital era. The evaluation process includes determining the relevant COBIT 2019 domains, conducting gap analysis, and formulating

recommendations based on the findings. With this approach, the study is expected to support the creation of good governance, strengthening the principles of good governance. With proper IT governance improvements, it is hoped that LaporGub can become an adaptive and accountable digital service model that can be replicated by other regions in Indonesia.

METHODS

This study uses a qualitative method with several stages, starting from planning, followed by problem identification, observation, interviews, and literature review to understand the LaporGub system and the relevant IT governance framework. The next stage involves determining the scope by defining domains based on the COBIT 2019 design factors, selecting respondents using the RACI Chart, and setting capability level targets. Data collection is carried out through COBIT 2019 activity-based questionnaires with the selected domains determined from the design factor results, interviews with system managers, and document review, with measurement and validity in this method using data triangulation. In the analysis stage, capability levels are measured, and the gap between the current condition and the expected target is calculated, which then forms the basis for formulating improvement recommendations. Finally, the conclusion stage presents the results of capability evaluation, gap identification, and recommendations to improve LaporGub governance. The research procedure for evaluating the LaporGub Information System of Central Java Province using the COBIT 2019 framework is systematically depicted in Figure 1.

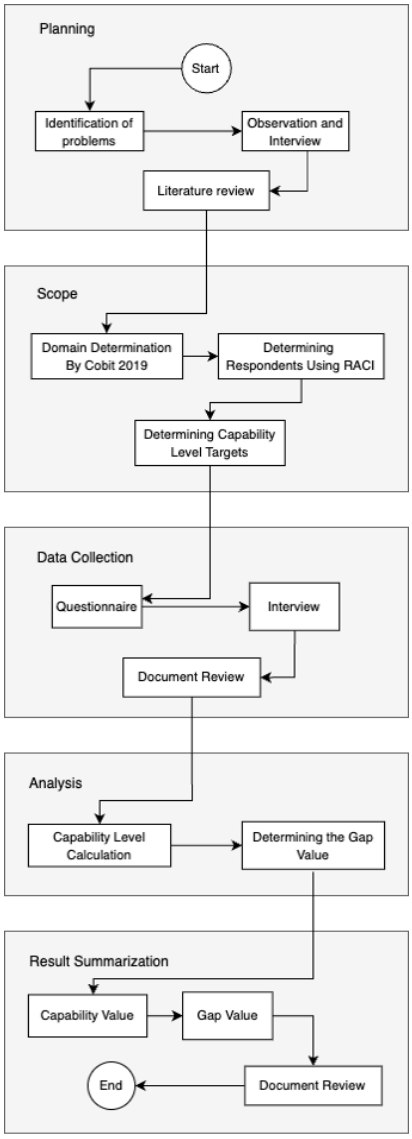

Figure 1. Research procedure

Planning
In the initial stage, problem identification is conducted to formulate and find solutions to the existing issues. This process involves observation and interviews with system managers to obtain additional information. Next, a literature review is carried out, referencing books, journals, regulations, and other sources relevant to IT governance and the LaporGub system. This stage concludes with the identification of objectives to determine the targets of the LaporGub system, which then forms the basis for mapping the COBIT 2019 framework [11].

Scope Determination
The analysis is conducted to establish the scope of the research audit through three main steps. First, the domains are determined using the design factors from COBIT 2019 to calculate capability levels, analyze gaps, and provide recommendations. Second, respondent selection is carried out through the RACI Chart to gather information regarding the historical and current conditions of the LaporGub system. Finally, the targeted capability levels are set as a benchmark to identify the governance level of LaporGub and evaluate the expected level [12].

Data Collection
Data collection is carried out through questionnaires, interviews, and document review. The questionnaires are designed based on selected activities in the COBIT 2019 domains, specifically DSS01 to DSS06, with a total of six questionnaire items reflecting the number of subdomains. Interviews are conducted with seven informants, consisting of five individuals from the Communication and Informatics Office of Central Java Province and two LaporGub managers, to obtain more in-depth data and support the questionnaire results. Document review includes examining regulations, policy documents, and related reports as a form of data validation. Validation is conducted through document review of LaporGub and Focus Group Discussions (FGD) to verify the data before recommendations for IT management improvements are formulated based on the research findings to verify the assessed capability levels, so that the findings can be used as the basis for evaluation [13].

Analysis
In the analysis stage, capability levels are calculated, and the gap value is determined. Capability levels are based on the questionnaires, reflecting the proficiency level of activities. If the target is achieved, the management of LaporGub is considered successful; otherwise, the results form the basis for improvement recommendations. Gap analysis aims to facilitate the identification of governance areas that need improvement. This analysis is derived from a comparison between the current achievement level and the expected level. From this, the processes with gaps requiring improvement will be identified. If gaps are found, recommendations are provided based on the findings, and validation of each domain is carried out by reviewing documents to strengthen the findings obtained during the capability level calculation [14].

Results and Conclusion
This stage represents the final phase of the research, summarizing capability levels, gaps, and recommendations. In the capability assessment phase, the management of LaporGub by the Communication and Informatics Office is evaluated by identifying activities that have and have not been achieved through domain determination, which are then measured using the capability assessment model from Level 1 to Level 5. The final value of each level is calculated based on the process attribute scale using the Guttman Scale formula [15]. The formula can be shown in Equation (1).

$$CC = \frac{\Sigma Cla}{\Sigma Po} \; x \; 100 \; \% \tag{1}$$

CC is the value of achieving the level of governance and management capability; Σ *CLa* is the total value of governance and management; Σ *Po* is the total number of governance and management activities. Then to assess the level of capability is assessed in Equation (2).

$$CLi = \frac{\Sigma CC}{\Sigma R} \; x \; 100 \; \% \tag{2}$$

Where:
CLi = the domain capability level value of the respondents
ΣCC = the total number of values in each process domain
ΣR = the number of respondents in each process domain

COBIT 2019 uses a CMMI-based process capability scheme, where each process in governance can operate at a capability level of 0 to 5. These levels measure how effectively the process is executed. Assessment of process activities in determining the capability level of each process using the assessment scale based on ISO/IEC 33000 can be seen in Table 1.

Table 1. Capability level value

Scale	Description	Achievement (%)
N	Not Achieved	< 15
P	Partially Achieved	> 15 – 50
L	Largely Achieved	> 50 – 85
F	Fully Achieved	> 85 – 100

COBIT 2019 capability evaluation uses levels ranging from 0 to 5, without intermediate levels. The proposed measurement procedure [16] involves capability assessment by assigning ratings (N, P, L, F) to each activity at each level. At level 2, if all activities receive ratings of L or F, the process is considered to have met that level; however, if there are ratings of N or P, further evaluation is required to determine whether the process remains at level 1 or even level 0. For processes that have met level 2, activities at level 3 are evaluated with the same criteria, where L or F ratings indicate fulfillment of level 3, while the presence of N or P means the process remains at level 2. Similarly, processes that have reached level 3 are evaluated for level 4, and those at level 4 are assessed for level 5. The gap value is calculated as the difference between the expected target level and the current capability level, which is then used to identify areas for improvement and forms the basis for providing recommendations [17].

RESULTS AND DISCUSSIONS

This study aims to evaluate the information technology governance of the LaporGub service portal by employing the COBIT 2019 framework, specifically through the mapping of Design Factors. Respondents were selected based on a RACI diagram, which serves to identify stakeholders or business process owners relevant to the evaluation. Domain determination was analyzed using the COBIT 2019 toolkit through a design factor approach, which facilitates the assessment of activities based on the highest level of relevance to the achievement of organizational objectives [18].

The Design Factors in COBIT 2019 consist of 11 elements divided into two categories: governance scope determination (factors 1–4) and governance scope refinement (factors 5–11). The process begins with an understanding of the organizational context and strategy, which serves as the basis for determining the value of each factor. The outcome of this design process is the IT Governance Design Result, which identifies priority domains that become the main focus in achieving IT governance objectives for the LaporGub platform.

Domain mapping is carried out using the Design Factor approach within the COBIT 2019 framework. This method involves an analysis of the eleven design factors, including organizational strategy, risk profile, IT-related issues, and the threat landscape. Each factor is weighted based on its relevance to the organization's context and strategic needs. The result of this mapping provides a recommendation of priority domains most relevant for evaluating IT governance. In this study, six domains from the deliver, service, and support (DSS01–DSS06) area were selected due to their highest significance in supporting organizational objectives and enhancing the effectiveness of public services in the LaporGub system.

Based on the mapping results using the eleven Design Factors in the COBIT 2019 framework, several priority domains were identified as having the most significant impact on achieving IT governance objectives in the LaporGub system. This process involved evaluating each factor in the organizational context, business strategy, and risk levels, resulting in an IT Governance Design Result that recommended domains within the deliver, service, and support (DSS) area as the focus of the evaluation. The result of factor design can be shown in Figure 2.

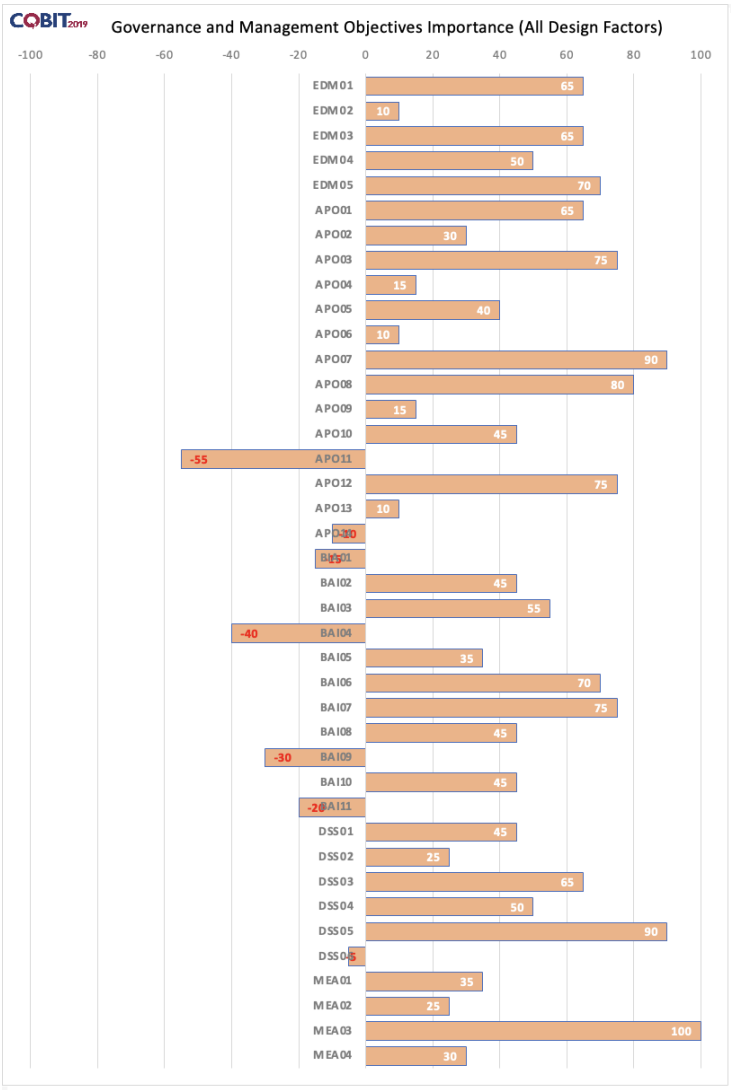

Figure 2. Factor design results

To ensure alignment with field conditions, the mapping results were subsequently validated through discussions with the LaporGub management team. This confirmation process was carried out to ensure that the selected domains are not only theoretically relevant but also aligned with operational priorities and practically actionable. As a result, six domains, namely DSS01 to DSS06, were established as the scope of IT governance evaluation in this study. These selected domains focus on the delivery of high-quality IT services and the provision of optimal support to system users, can be seen in Table 2.

Table 2. Selected domains

Domain	Domain Name	Purpose
DSS01	Managed Operations.	Define, maintain, and perform management to ensure that LaporGub can respond to any incidents and adapt quickly to any disruptions that may occur.
DSS02	Managed Service Requests and Incidents	Providing timely and effective responses to user requests and the resolution of all types of incidents on LaporGub services.
DSS03	Managed Problem	Manage all changes in LaporGub in a controlled manner, including standard changes and maintenance related to business processes, applications, and infrastructure.
DSS04	Managed Continuity.	To adapt quickly, maintain the availability of resources and information if the is a significant disruption to LaporGub services.

*continue (Table 2)

Domain	Domain Name	Purpose
DSS05	Managed Security Services	Maintaining the integrity of information and the security of information assets in the LaporGub business process.
DSS06	Managed Business Process Controls	Establish and maintain appropriate business process controls to ensure that information related to and processed by internal/outsourced business processes meets all relevant information control requirements.

The assessment of Domain DSS01 reveals that the Department of Communication and Informatics of Central Java Province (Diskominfo) has attained a Capability Level of F at Level 4 (Predictable), with a Capability Level Index (CLi) of 88.66%. This result reflects the institution's ability to define, maintain, and manage incident responses while demonstrating adaptability in the face of service disruptions. Domain DSS02 emphasizes the establishment of classification schemes, documentation, categorization, and prioritization of incidents and service requests. The analysis indicates a CLi score of 93.57%, corresponding to Level 4 (Predictable) with a status of F (Fully Achieved), signifying a high degree of maturity in service operations. In contrast, Domain DSS03, which focuses on the identification, classification, analysis, and diagnosis of root causes, including proactive problem resolution and management, yielded a CLi of 76.67%. This performance is classified as L (Largely Achieved) at Level 3 (Established), indicating that while the processes are in place, further refinement is needed to reach a higher level of maturity. Domain DSS04 pertains to the management of service continuity, operational resilience, and the implementation of sustainable response strategies, particularly in the context of the LaporGub system. The domain achieved a perfect CLi score of 100%, which places it at Level 5 (Optimizing) with a classification of F (Fully Achieved), highlighting a proactive and fully institutionalized approach.Domain DSS05 focuses on safeguarding the LaporGub system against malware threats, managing network security, and ensuring endpoint protection. The analysis produced a CLi of 81.58%, categorized as L (Largely Achieved) at Level 3 (Established), suggesting that foundational security controls are well established but could benefit from further optimization. Lastly, Domain DSS06 is concerned with aligning control activities within business processes to organizational objectives, in order to ensure both effectiveness and efficiency in operations. The analysis across its subdomains shows a CLi of 84.03%, which is classified as L (Largely Achieved) at Level 3 (Established). The assessment results across the selected domains demonstrate varying levels of capability maturity. Notably, a gap remains between the targeted capability levels and the levels currently achieved, indicating areas where strategic improvements are necessary to enhance overall IT governance performance, as summarized in Table 3.

Table 3. LaporGub Capability Level Results

Domain	Domain Name	Target Capability Level	Current Capability Level	Gap
DSS01	Managing Operations	4	4	0
DSS02	Managing Service Requests and Incidents	4	5	0
DSS03	Managing IT Change	4	3	1
DSS04	Managing Continuity	4	5	0
DSS05	Managing Service Security	4	3	1
DSS06	Managing Business Process Controls	4	3	1

Based on the evaluation results presented in Table 2, the analysis of the capability levels of the LaporGub service indicates that out of the six domains analyzed, three have met the targets set by the Department of Communication and Informatics of Central Java Province (Diskominfo). Specifically, DSS01 Manage Operations has reached Capability Level 4, indicating that the operational management processes within LaporGub are systematically documented and consistently executed in accordance with established standards. This reflects the organization's readiness to respond to incidents swiftly and effectively. Likewise, DSS02 Manage Service Requests and Incidents has also achieved Capability Level 5, meeting the expected target and demonstrating that the mechanisms for managing service requests and resolving incidents have been optimized, resulting in a more responsive and efficient system. DSS03 Manage

Problems is at Capability Level 3, which indicates that IT problem management is well implemented, but there are still gaps in managing problems especially in the mechanisms for evaluation and improvement of sustainability, improvements are needed by completing comprehensive documentation and standard procedures. DSS04 Manage Continuity has reached Capability Level 5, which shows that strategies to ensure operational continuity have been effectively implemented, including personnel training, disruption scenario testing, and regular reviews of recovery plans to enhance preparedness for potential disruptions. DSS05 – Manage Security Services contains several subdomains that have achieved Capability Level 5; however, the overall domain remains at Capability Level 3, indicating gaps in the implementation of security measures particularly in protection against threats and information security risk management that need to be addressed to improve overall system security effectiveness. DSS06 Manage Business Process Controls is also at Capability Level 3, which highlights a gap between the expected and actual performance. This gap suggests that control mechanisms over business processes, whether managed internally or outsourced, require enhancement to meet the established standards.

DISCUSSION

The comparative analysis of previous studies demonstrates the versatility of the COBIT 2019 framework in assessing various dimensions of IT governance, ranging from security management and quality assurance to strategic alignment in both academic and public institutions. While such as [17] and [19] primarily focused on capability and maturity evaluations using predefined domains, the work of [20]. Expanded the approach by incorporating design factors to ensure that IT initiatives are not only compliant but also strategically aligned with organizational goals. This shift toward a more customized governance assessment reinforces the value of COBIT 2019 as more than just a maturity model; it becomes a tool for strategic transformation.

Positioned within this context, the current study contributes a fresh perspective by applying COBIT 2019 to evaluate a government-operated public complaint system (LaporGub). By assessing six service-related domains (DSS01–DSS06), the study emphasizes operational effectiveness, responsiveness to citizen feedback, and alignment with public service objectives. Unlike prior research, which often emphasized internal organizational improvement, this study expands the discourse by focusing on external service delivery to the public, highlighting how governance frameworks can be instrumental in improving transparency, accountability, and citizen satisfaction.
Below is a comparison of the findings of this study with existing research, which can be seen in Table 4.

Table 4. The comparison study with existing research

Study	Assessment Focus	Method	Result
Anam et. al	Evaluation of information system security maturity	COBIT 2019 (DSS05, APO13); CMMI scale	The system is functional but requires continuous improvement to reach a higher maturity level.
Lubna et. al	IT governance capability and service quality	COBIT 2019 (APO11, DSS05); capability scoring	APO11: 3.67, DSS05: 3.48; capability gaps identified and improvement recommendations given.
Ikhsan et al.	Business-IT alignment in public sector governance	COBIT 2019 with design factor analysis; data from interviews, observation, and questionnaires	Systematic approach maps IT needs to COBIT domains; promotes alignment between IT governance and institutional goals.
This Study	Evaluation of public complaint management (LaporGub)	COBIT 2019 (DSS01–DSS06); domain-level analysis	Highlights service and data management gaps; offers recommendations for enhancing IT governance in the public sector.

CONCLUSION

The research methodology includes domain mapping based on COBIT 2019 design factors, accompanied by validation with LaporGub management to ensure alignment with organizational needs. In addition, capability assessments were conducted through triangulation of data from questionnaires, interviews, and

document reviews. The results of the study indicate that of the six domains analyzed, three have met the capability targets, while the other three, DSS03, DSS05 and DSS06, still require improvement. The gaps were identified using the Capability Maturity Model Integration (CMMI) approach, which plays a role in formulating more structured and sustainable improvement recommendations. Thus, the main contribution of this study provides strategic input for the Central Java Communication and Informatics Office in designing a medium-term IT improvement roadmap. Academically, these results also broaden the understanding of the use of COBIT 2019 in the public sector, especially in the context of IT-based public complaint services.

REFERENCES

[1] E. Ekowansyah *et al.*, Audit Sistem Informasi Akademik Menggunakan COBIT 5 di Universitas Jenderal Achmad Yani.

[2] W. Andayani, U. Brawijaya, E. Putrianti, O. Wisdaningrum, P. Putranto, and Y. Yanuarisa, "Penguatan Good Governance: Pengalaman Penerapan Electronic Government Pemerintah Daerah di Indonesia".

[3] R. Kurniasari, R. Santoso, and A. Prahutama, "Analisis Kecenderungan Laporan Masyarakat Pada 'Laporgub..!' Provinsi Jawa Tengah Menggunakan Text Mining Dengan Fuzzy C-Means Clustering," vol. 10, pp. 544–553, [Online]. Available: https://ejournal3.undip.ac.id/index.php/gaussian/

[4] A. Joshi, L. Bollen, H. Hassink, S. De Haes, and W. Van Grembergen, "Explaining IT governance disclosure through the constructs of IT governance maturity and IT strategic role," *Information and Management*, vol. 55, no. 3, pp. 368–380, Apr. 2018, doi: 10.1016/j.im.2017.09.003.

[5] R. Damayanti and A. D. Manuputty, "Analysis of Information Technology Governance In Department of Communication and Informatics of Salatiga Using COBIT 5 Framework Analisis Tata Kelola Teknologi Informasi Dinas Komunikasi dan Informatika Kota Salatiga Menggunakan Framework COBIT 5," *Journal of Information Systems and Informatics*, vol. 1, no. 2, 2019, [Online]. Available: http://journal-isi.org/index.php/isiPublishedByDRPM-UBD

[6] N. Abda Taqiya, S. Mukaromah, and A. Pratama, "Analisis Tingkat Kematangan SPBE di Dinas Komunikasi Dan Informatika Jawa Timur".

[7] N. Y. Wijayanti, W. Setiawan, and R. A. Sukamto, "Performance Assessment of IT Governance with Balanced Score Card and COBIT 4.1 of Universitas Pendidikan Indonesia," in *Journal of Physics: Conference Series*, Institute of Physics Publishing, Mar. 2017. doi: 10.1088/1742-6596/812/1/012072.

[8] H. M. Alfaraj and S. Qin, "Operationalising CMMI: Integrating CMMI and CoBIT perspective," Oct. 2011. doi: 10.1108/17260531111179933.

[9] A. Wijaya, N. Putra, A. Sunyoto, and A. Nasiri, "Andi Sunyoto 2) Asro Nasiri 3)," vol. 10, no. 3.

[10] M. Ikhsan, D. Mutiara, and K. Nugraheni, "Evaluation of Information Technology Governance in the Innovation Management Process and Management Information Technology Change Using COBIT 2019 at PT. XYZ." [Online]. Available: http://jcosine.if.unram.ac.id/

[11] A. Safitri, D. M. K. Nugraheni, and B. Warsito, "Integrasi Framework Balanced Scorecard dan COBIT 2019 dalam Pengelolaan Help Desk pada Sistem Informasi Desk Layanan," *JST (Jurnal Sains dan Teknologi)*, vol. 12, no. 2, Oct. 2023, doi: 10.23887/jstundiksha.v12i2.56181.

[12] W. Saputra *et al.*, "Capability Maturity Model Integration (CMMI) Untuk Analisis Keamanan Informasi Menggunakan Domain APO13 COBIT 5 pada Pustipad Instansi X."

[13] I. N. Rachmawati, "Pengumpulan Data Dalam Penelitian Kualitatif: Wawancara."

[14] M. Pramesti Cahyani and A. Rachmadi, "Evaluasi Tingkat Kematangan Teknologi Informasi Menggunakan Framework COBIT 4.1 Domain Plan and Organise dan Monitor and Evaluate pada Dinas Komunikasi dan Informatika Kota Malang," 2019. [Online]. Available: http://j-ptiik.ub.ac.id

[15] E. Nachrowi, Y. Nurhadryani, and H. Sukoco, "ARJUNA) Managed by Ministry of Research, Technology, and Higher Education," *Accredited by National Journal Accreditation*, vol. 4, no. 2, pp. 764–774, 2020, [Online]. Available: http://jurnal.iaii.or.id

[16] P. Widharto, Z. Suhatman, and R. F. Aji, "Measurement of information technology governance capability level: a case study of PT Bank BBS," *Telkomnika (Telecommunication Computing Electronics and Control)*, vol. 20, no. 2, pp. 296–306, 2022, doi: 10.12928/TELKOMNIKA.v20i2.21668.

[17] M. K. Anam, S. D. Putri, D. Yuliana, E. Yumami, and T. P. Lestari, "Application Of the Cobit 2019 Framework to Analyse the Security Of Academic Information Systems," *Decode: Jurnal Pendidikan Teknologi Informasi*, vol. 3, no. 2, pp. 296–309, Jul. 2023, doi: 10.51454/decode.v3i2.192.

[18] *COBIT® 2019 Implementation guide : implementing and optimizing an information and technology governance solution*. ISACA, 2012.

[19] L. Lubna, A. H. Muhammad, and A. Purwanto, "Identifikasi Level Tata Kelola TI dan Penilaian Tingkat Capability Level Menggunakan COBIT 2019," *JIPI (Jurnal Ilmiah Penelitian dan Pembelajaran Informatika)*, vol. 8, no. 3, pp. 815–827, Aug. 2023, doi: 10.29100/jipi.v8i3.3947.

[20] I. Darmajaya Bandar Lampung, "Assessment Capability Level dan Maturity Level Tata Kelola TI pada Kantor Kementerian Agama Kabupaten Pesawaran Provinsi Lampung Menggunakan Framework COBIT 2019," 2022.