

Analysis of Weaknesses and Recommendations for IT Governance Development in SIGAP at the Bureau of Leadership Administration, Regional Secretariat of North Sumatra Province

Efriansyah Putra Bahari Barus*, Andiesah Putera Utama Siahaan, Muhammad Amin

¹Master of Information Technology, University Pembangunan Panca Budi, Medan, Indonesia

Email: ^{1,*}efriansyahbarus@gmail.com, ²andiesiahaan@gmail.com, ³mhdamin@dosen.pancabudi.ac.id

Email Penulis Korespondensi: efriansyahbarus@gmail.com*

Submitted: 07/06/2026; Accepted: 29/06/2026; Published: 30/06/2026

Abstract—The implementation of effective information technology governance is necessary to support the quality of digital-based personnel administration services at the Bureau of Leadership Administration of the Regional Secretariat of North Sumatra Province. The problem faced is that the capability level of information technology governance in the Salary and Employee Appreciation Information System (SIGAP) is not yet known, so an evaluation is needed to identify areas that require improvement. This research aims to evaluate the capability level of information technology governance in the Employee Salary and Appreciation Information System (SIGAP) using the COBIT 2019 framework. The method used is descriptive quantitative with data collection techniques thru questionnaires, interviews, observations, and document studies. The evaluation was conducted on the domains EDM01, EDM02, EDM03, EDM04, EDM05, APO02, APO03, APO07, APO11, and APO14. The research results show that seven domains, namely EDM01, EDM02, EDM03, EDM04, APO02, APO03, and APO07, achieved Capability Level 3 (Established Process), while EDM05, APO11, and APO14 are at Capability Level 2 (Managed Process). Gap analysis shows that all domains still have a gap of one level against the set target. As a corrective solution, it is recommended to enhance process performance measurement, stakeholder engagement, quality management, data governance, and the development of SIGAP digital services to support the continuous improvement of information technology governance.

Keywords: COBIT 2019; Information Technology Governance; Capability Level; SIGAP; Personnel Administration

1. INTRODUCTION

Digital transformation in the government sector encourages the use of information technology to enhance the effectiveness, efficiency, transparency, and accountability of public services. One of the implementations of digital transformation is the use of the Employee Salary and Appreciation Information System (SIGAP) at the Bureau of Leadership Administration of the Regional Secretariat of North Sumatra Province. SIGAP is used to support various personnel administration services, such as periodic salaries, promotions, pensions, service medals, and employee data management. The success of information system implementation is not only determined by technological aspects but also by the application of information technology governance that can ensure alignment between organizational goals and the utilization of information technology [1] [2].

Although SIGAP has been actively used to support personnel administration services, observations indicate that there are still several issues, such as delays in updating employee data, suboptimal system monitoring and evaluation, the lack of full integration of several personnel services, and the continuation of semi-digital administrative processes. These conditions have the potential to reduce the effectiveness of services and hinder efforts to improve the quality of personnel administration services. Therefore, an evaluation of information technology governance is necessary to determine the level of capability of the processes that have been implemented and to identify areas that still require improvement.

Information technology governance is an important part of supporting the achievement of organizational goals thru the management of technological resources, risk control, and service quality improvement. The implementation of good governance allows organizations to obtain optimal benefits from information technology investments, improve the effectiveness of business processes, and support more accurate decision-making [3]. One of the frameworks widely used in the evaluation of information technology governance is COBIT 2019, developed by ISACA. This framework provides comprehensive guidelines for measuring and improving the capabilities of governance processes and information technology management according to the organization's needs..

Several previous studies have applied COBIT 2019 to evaluate information technology governance in various sectors. Most governance processes in the Housing and Settlement Information System are still at a low capability level and require continuous improvement [4]. Wasilah conducted an evaluation of information technology governance at the Ministry of Religious Affairs Office in Pesawaran Regency and found a gap between the current condition and the expected target [5]. Gouwnalan and Tanaamah explain that COBIT 2019 can be used as an effective framework in evaluating information technology governance and aligning technology with the organization's business needs [6]. Other research shows that evaluating information technology governance using COBIT 2019 can identify areas that require improvement thru capability level analysis and gap analysis as the basis for formulating improvement recommendations [7]. In addition, several domains of IT governance in

government information systems are still at Capability Level 2, necessitating strengthening in data management, service quality, and process oversight aspects [8].

Based on previous research, most studies still focus on the evaluation of information technology governance in general, while research specifically evaluating information technology governance in local government personnel administration systems is still limited. In addition, there has not been much research that combines the Evaluate, Direct and Monitor (EDM) domain and the Align, Plan and Organize (APO) domain to measure the capability level of information technology governance in the personnel information system. Therefore, this research aims to evaluate the capability level of information technology governance in SIGAP using COBIT 2019. The research results are expected to provide recommendations for improving information technology governance and support the development of digital-based personnel administration services within the Regional Secretariat of North Sumatra Province.

2. RESEARCH METHODOLOGY

2.1 Research Stages

This research uses a descriptive quantitative approach to evaluate the level of information technology governance capability at SIGAP in the Bureau of Leadership Administration of the Regional Secretariat of North Sumatra Province. The quantitative approach was chosen because it can provide an objective measurement of the process capability level based on the COBIT 2019 framework [1]. A similar approach was also used in research evaluating information technology governance in government agencies and e-Government services using COBIT 2019 [9].

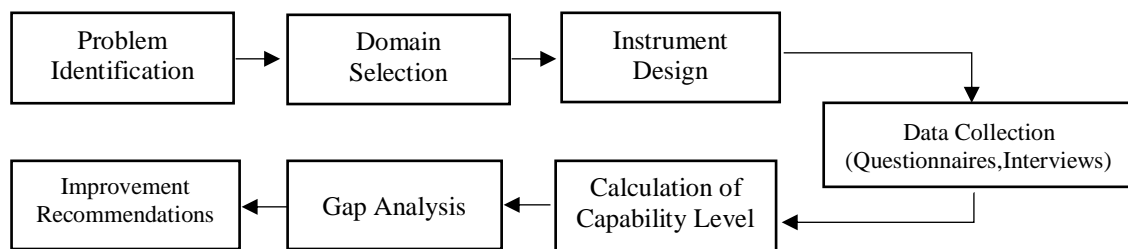


Figure 1. Research Methodology

2.2 Problem Identification

The problem identification stage is conducted to understand the condition of IT governance in SIGAP at the Adpim Bureau of the Provsu Provincial Secretariat. The identification is carried out thru initial observations and discussions with system managers to find issues related to data management, service quality, information security, and the effectiveness of SIGAP utilization in supporting personnel administration.

2.3 Domain Selection

Based on the results of the problem identification, the COBIT 2019 domains relevant to the research objectives were selected. The domains used consist of EDM01, EDM02, EDM03, EDM04, EDM05, APO02, APO03, APO07, APO11, and APO14. The selection of domains was made because they are related to governance, strategy management, human resources, service quality, and data management in SIGAP. These domains are also widely used in research on auditing and evaluating information technology governance in public sector organizations [10].

2.4 Instrument Design

The research instrument was developed based on the practices and activities found in the selected COBIT 2019 domain. The instruments used include a questionnaire with a Guttman scale (Yes or No) and an interview guideline aimed at obtaining information regarding the implementation of IT governance at SIGAP.

2.5 Data Collection

Data collection was conducted thru the distribution of questionnaires and interviews with respondents who were selected based on the RACI (Responsible, Accountable, Consulted, Informed) model of COBIT 2019 SIGAP [1]. In addition, a documentation study was conducted on organizational documents, work procedures, and other supporting documents to strengthen the research results.

Table 1. List of Respondents based on the RACI Chart

Number	They respond	Amount
1	Head of Executive Administration Bureau	1
2	Head of the Personnel and Planning Division	1

Number	They respond	Amount
3	IT Coordinator	1
4	Administrative Management Staff	3
5	Subsection Head of Administration within the Provincial Regional Secretariat	9
Amount		15

2.6 Calculation of Capability Level

The data from the questionnaire is processed to obtain the capability level value for each COBIT 2019 domain. The calculation is performed by comparing the number of activities completed with the total number of activities in each domain, and then converting it into a percentage of achievement according to the COBIT 2019 Process Capability Model guidelines. This capability level measurement method has been widely used in information technology governance research to assess the measurable capability level of organizational processes [11].

Table 2. Capability Level Scale

Achievement Percentage	Status
< 15%	Not Achieved
15% – 49%	Partially Achieved
50% – 84%	Largely Achieved
≥ 85%	Fully Achieved

The capability value of each process is calculated using the formula:

$$\text{Capability Index} = \frac{\text{the number of activities carried out}}{\text{total number of activities}} \times 100\% \quad (1)$$

2.7 Gap Analysis

Gap analysis is conducted by comparing the current capability level (as-is) with the expected capability level (to-be). The analysis results aim to identify process gaps and determine priorities for improving information technology governance. The gap analysis approach is used to formulate recommendations for improving governance, service quality, data management, and strengthening aspects of risk and information security as applied in various COBIT 2019 studies. [12]. The gap analysis approach is used to formulate recommendations for improving governance, service quality, data management, as well as strengthening risk and information security aspects as applied in various previous COBIT 2019 studies [13]

$$\text{Gap} = \text{Target Level (To - Be)} - \text{Nilai Kapabilitas (As - Is)}$$

2.8 Improvement Recommendations

The final stage is the formulation of improvement recommendations based on the obtained capability level and gap analysis results. The recommendations focus on improving IT governance, strengthening data security, developing digital services, enhancing service quality, and developing SIGAP features to support the effectiveness of personnel administration within the Adpim Bureau of the Provsu Provincial Secretariat.

3. RESULTS AND DISCUSSION

The results of the information technology governance evaluation at SIGAP were conducted on ten domains consisting of EDM01, EDM02, EDM03, EDM04, EDM05, APO02, APO03, APO07, APO11, and APO14 to determine the capability level of the applied information technology governance and management processes. The results of the measurements are then analyzed to identify the gaps between the current condition (as-is) and the expected condition (to-be), and serve as the basis for formulating improvement recommendations to support the enhancement of information technology governance at SIGAP.

3.1 Calculation of Domain EDM01 (Ensure Governance Framework Setting and Maintenance)

The measurement was conducted on 21 activities at each level involving three respondents determined based on the RACI Chart mapping, namely the Head of the Executive Administration Bureau, the Head of the Personnel and Planning Division, and the IT Coordinator. The results of the EDM01 Capability Level are presented in the following table:

Table 3. Results of the Measurement of Capability Level Domain EDM01

Capability Level	Achievement Percentage	Category
Level 2	89%	Fully Achieved
Level 3	86%	Fully Achieved

Capability Level	Achievement Percentage	Category
Level 4	48%	Partially Achieved

Domain EDM01 achieved a score of 89% at Level 2 and 86% at Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 48% in the Partially Achieved category. Therefore, the capability level of EDM01 is set at Level 3 (Established Process)

3.2 Calculation of Domain EDM02 (Ensure Benefits Delivery)

The measurement was conducted on 25 activities at each level involving three respondents determined based on the RACI Chart mapping, namely the Head of the Executive Administration Bureau, the Head of the Personnel and Planning Section, and the IT Coordinator. The results of the EDM02 Capability Level are presented in the table below.

Table 4. Measurement Results of Capability Level Domain EDM02

Capability Level	Achievement Percentage	Category
Level 2	87%	Fully Achieved
Level 3	87%	Fully Achieved
Level 4	48%	Partially Achieved

Domain EDM02 achieved a score of 87% at Level 2 and Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 48% in the Partially Achieved category. Therefore, the capability level of EDM02 is set at Level 3 (Established Process).

3.3 Calculation of Domain EDM03 (Ensure Risk Optimization)

The measurement was conducted on 16 activities at each level involving three respondents determined based on the RACI Chart mapping, namely the Head of the Executive Administration Bureau, the Head of the Personnel and Planning Division, and the IT Coordinator. The results of Capability Level EDM03:

Table 5. Measurement Results of Capability Level Domain EDM03

Capability Level	Achievement Percentage	Category
Level 2	88%	Fully Achieved
Level 3	88%	Fully Achieved
Level 4	46%	Partially Achieved

Domain EDM03 achieved a score of 88% at Level 2 and 88% at Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 46% in the Partially Achieved category. Therefore, the capability level of EDM03 is set at Level 3 (Established Process).

3.4 Calculation of Domain EDM04 (Ensure Resource Optimization)

The measurement was conducted on 13 activities at each level involving six respondents determined based on the RACI Chart mapping, namely the Head of the Executive Administration Bureau, the Head of the Personnel and Planning Division, the IT Coordinator, and three administrative management staff. The results of the Capability Level EDM04 are presented in the table below.

Table 6. Measurement Results of Capability Level Domain EDM04

Capability Level	Achievement Percentage	Category
Level 2	87%	Fully Achieved
Level 3	86%	Fully Achieved
Level 4	47%	Partially Achieved

Domain EDM04 achieved a score of 87% at Level 2 and 86% at Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 47% in the Partially Achieved category. Therefore, the capability level of EDM04 is set at Level 3 (Established Process).

3.5 Calculation of Domain EDM05 (Ensure Stakeholder Engagement)

The measurement was conducted on 11 activities involving fifteen respondents consisting of leaders, IT coordinators, administrative staff, and Subdivision Heads of Administration within the Regional Secretariat of North Sumatra Province. The results of the Capability Level EDM05 are presented in the table below.

Table 7. Hasil Measurement Results of Capability Level Domain EDM05

Capability Level	Achievement Percentage	Category
Level 2	86%	Fully Achieved
Level 3	61%	Largely Achieved

The EDM05 domain achieved a score of 86% at Level 2, thus meeting the Fully Achieved category. However, at Level 3, it only scored 61%, falling into the Largely Achieved category. Therefore, the capability level of EDM05 is set at Level 2 (Managed Process).

3.6 Calculation of Domain APO02 (Manage Strategy)

The measurement was conducted on 28 activities involving the Head of the Personnel and Planning Division and the IT Coordinator as the main respondents. The results of the Capability Level APO02 are presented in the table below.

Table 8. Measurement Results of Capability Level Domain APO02

Capability Level	Achievement Percentage	Category
Level 2	86%	Fully Achieved
Level 3	86%	Fully Achieved
Level 4	48%	Partially Achieved

Domain APO02 achieved a score of 86% at Level 2 and Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 48% in the Partially Achieved category. Therefore, the capability level of APO02 is set at Level 3 (Established Process).

3.7 Calculation of Domain APO03 (Manage Enterprise Architecture)

The measurement was conducted on 40 activities involving the Head of the Personnel and Planning Division and the IT Coordinator as respondents. The results of Capability Level APO03 are presented in the table below.

Table 9. Measurement Results of Capability Level Domain APO03

Capability Level	Achievement Percentage	Category
Level 2	88%	Fully Achieved
Level 3	86%	Fully Achieved
Level 4	48%	Partially Achieved

Domain APO03 achieved a score of 86% at Level 2 and 86% at Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 48% in the Partially Achieved category. Therefore, the capability level of APO03 is set at Level 3 (Established Process).

3.8 Calculation of Domain APO07 (Manage Human Resources)

The measurement was conducted on 34 activities involving five respondents, consisting of the Head of the Personnel and Planning Division, the IT Coordinator, and three administrative staff. The results of the Capability Level APO07 are presented in the table below.

Table 10. Measurement Results of Capability Level Domain APO07

Capability Level	Achievement Percentage	Category
Level 2	86%	Fully Achieved
Level 3	86%	Fully Achieved
Level 4	49%	Partially Achieved

Domain APO07 achieved a score of 86% at Level 2 and Level 3, thus meeting the Fully Achieved category. However, Level 4 only reached 49% in the Partially Achieved category. Therefore, the capability level of APO07 is set at Level 3 (Established Process).

3.9 Calculation of Domain (Manage Quality)

The measurement was conducted on 26 activities involving five respondents consisting of the Head of the Personnel and Planning Division, the IT Coordinator, and administrative staff. The results of the Capability Level APO11 are presented in the table below.

Table 11. Measurement Results of Capability Level Domain APO11

Capability Level	Achievement Percentage	Category
Level 2	86%	Fully Achieved
Level 3	46%	Partially Achieved

Domain APO11 achieved a score of 86% at Level 2, thus meeting the Fully Achieved category. However, Level 3 only reached 46% in the Partially Achieved category. Therefore, the capability level of APO11 is set at Level 2 (Managed Process).

3.10 Calculation of Domain APO14 (Manage Data)

The measurement was conducted on 62 activities at each level involving eleven respondents consisting of the Head of the Personnel and Planning Division of the Leadership Administration Bureau, the IT Coordinator, and the Head of the Administrative Subdivision within the Regional Secretariat of North Sumatra Province. The results of the Capability Level APO14 are presented in the table below.

Table 12. Measurement Results of Capability Level Domain APO14

Capability Level	Achievement Percentage	Category
Level 2	89%	Fully Achieved
Level 3	53%	Largely Achieved

Domain APO14 achieved a score of 89% at Level 2, thus meeting the Fully Achieved category. However, Level 3 only reached 53% in the Largely Achieved category. Therefore, the capability level of APO14 is set at Level 2 (Managed Process).

3.11 Gap Analysis

Gap analysis is conducted to compare the current capability level (as-is) with the expected capability level (to-be) in each COBIT 2019 domain. The target capability level is set based on the needs for the development of SIGAP governance, namely Level 4 (Predictable Process) for domains that have reached Level 3 and for domains that are still at Level 2, the target capability level is 3 (Established Process). The results of this analysis serve as the basis for formulating recommendations for improving information technology governance at SIGAP.

Table 13. Results of the Capability Level Gap Analysis

Governance and Management Objectives	As-Is	To-Be	Gap
EDM01	3	4	1
EDM02	3	4	1
EDM03	3	4	1
EDM04	3	4	1
EDM05	2	3	1
APO02	3	4	1
APO03	3	4	1
APO07	3	4	1
APO11	2	3	1
APO14	2	3	1

Based on Table 13, the gap analysis results show that all domains have a gap of 1 between the current condition (as-is) and the expected condition (to-be). Domains EDM01, EDM02, EDM03, EDM04, APO02, APO03, and APO07 have reached Capability Level 3 and are targeted to increase to Level 4 to achieve measurable and predictable processes. Meanwhile, domains EDM05, APO11, and APO14 are still at Capability Level 2 and are targeted to reach Level 3 thru the implementation of more standardized and documented processes. These findings indicate that SIGAP has a fairly good information technology governance, but still requires improvements in performance measurement, stakeholder engagement, quality management, and data governance to support the continuous enhancement of process capabilities.

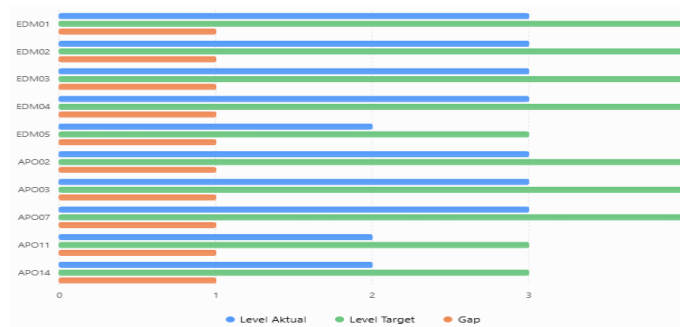


Figure 2. Comparison of Actual Capability Level, Target, and Gap

Figure 2 shows the achievement of capability levels across all evaluated domains. It can be seen that the majority of domains have reached the same level of capability, so governance improvement efforts can be focused on process refinement thru strengthening performance measurement and process control. On the other hand, the domains EDM05, APO11, and APO14 still show a greater need for improvement, particularly related to stakeholder engagement, service quality, and data governance. These conditions indicate that the further

development of SIGAP needs to be directed toward governance aspects that support service sustainability and information quality.

3.12 Improvement Recommendations

Based on the evaluation results of capability levels and gap analysis, all COBIT 2019 domains studied still require improvement to achieve the expected capability levels. Therefore, improvement recommendations have been formulated as an effort to enhance information technology governance at SIGAP. These recommendations focus on strengthening process performance measurement, risk management, resource optimization, service quality improvement, human resource competency development, as well as strengthening data governance and security to support the achievement of capability level targets and the sustainable development of SIGAP.

Table 14. Recommendations for Improving SIGAP Governance

Domain	Capability Level	Evaluation Results	Recommendation
EDM01	3	The governance of SIGAP has been conducted in a structured manner and supports the organization's operations.	Improving the measurement and evaluation of SIGAP governance periodically.
EDM02	3	SIGAP has provided benefits for personnel administration services and organizational operations.	Conducting benefit evaluations and continuous system development.
EDM03	3	Risk management has been carried out thru the identification and handling of system issues.	Improving risk monitoring and standardizing risk mitigation.
EDM04	3	Human resource management, applications, and infrastructure have supported SIGAP's operations.	Optimizing the utilization and supervision of resources in a measured manner.
EDM05	2	Stakeholder engagement has been ongoing, but documentation and communication evaluation have not been optimal.	Developing communication and stakeholder evaluation procedures on a regular basis.
APO02	3	The SIGAP development strategy has been formulated and implemented according to the organization's needs.	Improving the measurement of strategy achievement and periodic evaluation.
APO03	3	The development and integration of SIGAP have supported the organization's business processes.	Developing system integration and architecture evaluation continuously.
APO07	3	The management of SIGAP support HR has been carried out according to duties and responsibilities.	Improving the competence and performance evaluation of human resources periodically.
APO11	2	Service quality management has been implemented, but it has not been consistently documented.	Establish quality standards and conduct regular service evaluations.
APO14	2	Data management has been implemented, but data governance and oversight are not yet optimal.	Improving governance, security, and data quality in a structured manner.

3.2 Discussion

research results indicate that the governance of SIGAP has been at a relatively good level. Achievement of Capability Level 3 in most domains indicates that the organization has documented procedures, clear role distribution, and consistent implementation mechanisms. These findings are in line with the IT governance concept proposed by ISACA in COBIT 2019, which states that organizations at Level 3 have been able to implement defined and standardized processes to support organizational goals. This condition also indicates that the utilization of SIGAP has become part of the business process at the Bureau of Leadership Administration of the Provincial Secretary of North Sumatra and does not depend on specific individuals.

In the EDM01 domain, research results indicate that the organization has a governance framework that supports the structured management of SIGAP. The process of system usage, data management, and reporting has been carried out consistently, thereby supporting organizational decision-making. This finding is in line with research that states that the implementation of structured IT governance can enhance the effectiveness of information system management in government agencies [14].

Success in EDM01 serves as a foundation for achieving other domains because a good governance framework will influence the processes of delivering benefits, risk management, and resource optimization. Achievement of Capability Level 3 in EDM02 indicates that the implementation of SIGAP has provided tangible

benefits to the organization, particularly in supporting personnel administration services. This result supports the value delivery theory in COBIT 2019, which emphasizes that IT investments must be able to generate benefits that can be felt by the organization and stakeholders. In practice, SIGAP has helped accelerate service processes and improve the effectiveness of information delivery to ASN.

In EDM03 and EDM04, the research found that the organization has adequately managed IT risk and resources. However, the process of risk measurement and resource utilization evaluation still needs to be improved in order to produce more objective performance indicators. These findings indicate that the organization has understood the importance of risk and resource management as part of effective IT governance. These results support research that emphasizes that risk management and information security are important factors in enhancing the effectiveness of information technology governance [15].

In addition to governance and resource aspects, the effectiveness of SIGAP implementation is also influenced by the alignment of strategy and organizational management reflected in the APO domain. Meanwhile, the APO02, APO03, and APO07 domains have successfully achieved Capability Level 3 because the organization has a SIGAP development strategy, system architecture management, and clear division of human resource tasks. This condition indicates an alignment between organizational needs and IT development. These findings are consistent with research stating that the success of IT governance is influenced by the alignment of organizational strategy, human resource management, and sustainable system development [9].

Nevertheless, there are three domains that are still at Capability Level 2 (Managed Process), namely EDM05, APO11, and APO14. The results indicate that the processes are operational and managed, but not yet fully standardized and supported by consistent measurement, evaluation, and control mechanisms. In the EDM05 domain, the organization does not yet have a mechanism for the continuous documentation of stakeholder engagement evaluation. In APO11, the management of SIGAP service quality has been implemented, but it is not yet supported by documented quality measurements and periodic evaluations. Meanwhile, in APO14, data management, data backup, and data security have been implemented, but there is no formally integrated data governance standard yet. This condition indicates that the organization still needs to strengthen aspects of monitoring, quality assurance, and data governance to achieve a higher level of capability. These findings are in line with research that states that organizations at Level 2 generally still face challenges in documentation, process standardization, and performance control [16]. The results of this study are also consistent with findings that indicate that service quality, data governance, and stakeholder engagement are the areas that most often require improvement in government information systems [17][18].

In addition to the Capability Level calculations, the researchers also conducted interviews with the Head of the Administrative Subdivision of the Legal Bureau, the Head of the Administrative Subdivision of the Bureau of People's Welfare, and the Head of the Administrative Subdivision of the Bureau of Goods and Services Procurement as representatives of SIGAP users from several bureaus within the Regional Secretariat of North Sumatra Province. These interviews showed that SIGAP has provided ease in obtaining personnel administration information, particularly related to periodic salaries, promotions, and pension information. However, the informants conveyed the need for the development of more proactive notification features, integration of personnel services, improvement of data quality, and the provision of more integrated digital services. These findings support the COBIT 2019 evaluation results, which indicate the need for improvements in stakeholder engagement, service quality, and data governance to support the sustainable development of SIGAP.

From a practical perspective, the research results in several recommendations for the development of SIGAP, including the enhancement of system integration with other personnel services, strengthening data governance, the implementation of paperless services in ASN administrative processes, the development of data security features, and the improvement of digital notification services for promotions, periodic salary increases, retirement, and ASN birthdays. The implementation of these recommendations is expected to improve the effectiveness of personnel services and support the implementation of SPBE within the North Sumatra Provincial Government.

Theoretically, this research contributes by expanding the application of COBIT 2019 to regional government personnel information systems thru the measurement of capability levels in the combination of the EDM and APO domains, which have not been extensively studied in previous research. Practically, the research results can serve as a reference for the Bureau of Leadership Administration of the Provsu Regional Secretariat in formulating more targeted and sustainable SIGAP development policies.

4. CONCLUSION

This research aims to evaluate the governance of information technology in the Salary and Employee Appreciation Information System (SIGAP) at the Bureau of Leadership Administration of the Regional Secretariat of North Sumatra Province using the COBIT 2019 framework. The research results indicate that the domains EDM01, EDM02, EDM03, EDM04, APO02, APO03, and APO07 have reached Capability Level 3 (Established Process), which shows that the IT governance and management processes have been documented, standardized, and consistently implemented. Meanwhile, the domains EDM05, APO11, and APO14 are at Capability Level 2

(Managed Process), indicating that the processes are operational and managed, but not yet optimally supported by structured measurement, evaluation, and control mechanisms. The results of observations, interviews, and questionnaires indicate that SIGAP has supported the effectiveness of personnel administration services, particularly in periodic salary services, promotions, pensions, medals of honor, and employee data management. This research also identifies the need for improvements in data governance, service quality, information security, system integration, and the digitalization of administrative processes. The contribution of this research lies in the application of COBIT 2019 to measure the capability level of IT governance in the local government personnel information system thru the combination of the EDM and APO domains. The research results can serve as a reference in the development of IT governance and the improvement of digital service quality in the public sector environment.

REFERENCES

- [1] ISACA, *COBIT 2019 Introduction and Methodology*. 2018.
- [2] J. W. Ross, C. W. P. No, and S. W. P. No, "CENTER FOR INFORMATION SYSTEMS of Management Massachusetts Institute of Technology Massachusetts IT Governance on One Page Peter Weill Research Article : a completed research article drawing on one or more CISR research projects that presents management frameworks , findings and recommendations . Research Summary : a summary of a research project with preliminary findings . findings from research projects . Case Study : an in-depth description of a firm ' s approach to an IT management issue (intended for MBA and executive education) . Technical Research Report : a traditional academically rigorous research paper with detailed methodology , analysis , findings and," 2004.
- [3] A. M. Syuhada, "No Title," *Kaji. Perbandingan Cobit 5 Dengan Cobit 2019 Sebagai Framew. Audit Tata Kelola Teknol. Inf.*, vol. 6, no. 1, pp. 30–39, 2021.
- [4] A. Safitri, I. Syafii, and K. Adi, "Identifikasi Level Pengelolaan Tata Kelola SIPERUMKIM Kota Salatiga berdasarkan COBIT 2019," *J. RESTI*, vol. 5, no. 3, pp. 429–438, 2021, doi: 10.29207/resti.v5i3.3060.
- [5] H. Wasilah, "Assessment Capability Level dan Maturity Level Tata Kelola TI pada Kantor Kementerian Agama Kabupaten Pesawaran Provinsi Lampung Menggunakan Framework COBIT 2019," vol. 2, no. 2, pp. 229–240, 2022.
- [6] S. K. Gouwnalan and A. R. Tanaamah, "Penggunaan Framework Cobit 2019 dalam Evaluasi Tata Kelola Teknologi Informasi," *J. Tek. Inform. dan Sist. Inf.*, vol. 9, no. 2, pp. 1–11, 2023, doi: 10.28932/jutisi.v9i2.6373.
- [7] M. Irsyad, A. Putera, U. Siahaan, and L. Marlina, "Evaluasi Tata Kelola It Dan Prediksi Kinerja Bisnis Berbasis Data Science Untuk Optimalisasi Strategi Pada Manajemen Hotel Daily Inn," *J. Sci. Soc. Res.*, vol. 4307, no. 3, pp. 3413–3423, 2025, [Online]. Available: <http://jurnal.goretanpena.com/index.php/JSSR>
- [8] A. P. Siahaan, Utama, E. Barus, P. Bahari, and M. Hasanuddin, "Perancangan Peningkatan Tata Kelola Ti Kliping Digital di Instansi Pemerintahan Menggunakan Pendekatan Manajemen Informasi," vol. 4, no. 3, pp. 1850–1856, 2026.
- [9] M. Solehuddin *et al.*, "Perencanaan Tata Kelola Teknologi Informasi Menggunakan Framework Cobit 2019 pada DPMPSTP Pendahuluan Metode Penelitian," vol. 20, pp. 155–164, 2021.
- [10] B. G. A. Perdana, A. H. Muhammad, and A. Nasiri, "Evaluation of IT Governance Based on SPBE Using COBIT 2019 and ISO/IEC 38500:2015," *Inovtek Polbeng – Seri Inform.*, 2024.
- [11] A. Safitri, I. Syafii, and K. Adi, "Measuring the Performance of Information System Governance Using Framework COBIT 2019," *Int. J. Comput. Appl.*, 2021.
- [12] J. Saragih, A. Putera, U. Siahaan, and M. S. Novelan, "International Journal of Industrial Digital Transformation of it Governance at The Department of Community and Village Empowerment , Population and Civil Registration of North Sumatra Province," vol. 2, no. 2, pp. 17–35, 2025.
- [13] R. Setyadi and A. A. Rahman, "Enhancing IT Governance Based on Risk and Security Analysis in a Private School : A COBIT 2019 Approach," vol. 9, no. September, pp. 2148–2156, 2025.
- [14] T. N. Annisa and S. Heni, "Analysis of Information Technology Governance of the Tasikmalaya City Manpower Service Using Framework COBIT 2019," *J. Appl. Inf. Syst. Infomatics*, pp. 1–7, 2023.
- [15] A. S. Wahab, R. B. Huwae, and A. H. Jatmika, "Information Systems Security Risk Management Using the COBIT 2019 Framework and NIST 800-30 on the Website People ' s Representative Council NTB," vol. 9, no. 1, pp. 23–32, 2025.
- [16] R. S. Hardinata *et al.*, "Audit Tata Kelola Teknologi Informasi menggunakan Cobit 5," vol. 6, pp. 42–45, 2019.
- [17] M. Siahaan, A.P.U, Barus, E.P.B, Hasanuddin, "BULLETIN OF COMPUTER SCIENCE RESEARCH Assessing the Capability of E-Attendance Systems in Local Government Institutions Using COBIT 2019 : A Case from Indonesia," vol. 6, no. 1, pp. 373–380, 2025, doi: 10.47065/bulletincsr.v6i1.831.
- [18] T. Sutabri, A. Dinata, M. Majduddin, and N. H. P. Agustriani, "Analisa Domain Operasional Untuk Pengukuran Tingkat Kematangan Tata Kelola Layanan E-Government Menggunakan Framework COBIT 2019 Pada Dinas Kominfo Kota Palembang," *J. Ilm. Matrik*, vol. 26, no. 1, pp. 38–47, 2024, doi: 10.33557/jurnalatrik.v26i1.3000.