Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

June 2026. Vol. 5. No. 3; e-ISSN: 2808-4519

Evaluation of the E-Open Population Service Information System using COBIT 2019 at DISDUKCAPIL Bekasi City

Henny Sweet Zai[1*], Mardi Yudhi Putra[2]

[1, 2]*Universitas Bina Insani*
hennyzai8@gmail.com[1*], mardi@binainsani.ac.id[2]

Abstract

This study aims to evaluate the capability condition of the e-Open information system using the COBIT 2019 framework, focusing on the DSS01, DSS02, DSS05 and DSS06, on the Department of Population and Civil Registration. The study applied a quantitative descriptive approach through questionnaires distributed to employees directly involved in operating and managing the e-Open system using purposive sampling, resulting in 41 valid respondents. All evaluated domains successfully reached Level 4 (Quantitative Process) with a 'Fully Achieved' rating. DSS06 scored the highest at 4.50 (90.00%). DSS02 and DSS05 at 4.48 (89.60%) and followed by DSS01 domain at 4.41 (88.20%). To hit the target Level 5, the system still faces a capability gap between 0.50 and 0.59. This study suggests periodic account verification, structured incident logs, and automatic data masking to improve security and governance.

Keywords: *COBIT 2019, Capability Level, e-Open, Information System, Governance*

1. Introduction

Digital transformation in today's era is driving government agencies to leverage information systems to support public services. The Bekasi City Population and Civil Registration Office developed the e-Open (Online Electronic Population Services) information system in 2020. e-Open serves as a digital platform for population administration services. The system was initially a mobile application. However, in June 2024, an evaluation and update were conducted, leading to the launch of a web version accessible via www.e-open.id. The e-Open system has been in operation for more than five years and is used for population administration services, based on research observations, no system governance evaluation using COBIT 2019 has been identified.

The author identified several operational and security issues during initial observations: citizens' full names are still displayed on the public queue dashboard, which potentially violates Law No. 27 of 2022 on Personal Data Protection [1]. User accounts registered in 2024 remain active without re-verification or password changes, incident handling is conducted informally via messaging apps without official log records, and no automated controls are in place to filter sensitive data from public view.

Similar issues were identified in previous studies. [2] found that information systems in government agencies generally suffer from weak system monitoring and the absence of structured incident response mechanisms, with capability levels ranging from Level 1 to Level 2. Other studies by [3], [4] , [5], [6], [7], and [8] demonstrate the effectiveness of COBIT 2019 in measuring capabilities within organizations or companies, although each study covered only 2 or 3 DSS domains. No previous research has evaluated public civil registration service systems specifically using a combination of the DSS01, DSS02, DSS05, and DSS06 domains simultaneously. COBIT 2019, published by ISACA, is an internationally recognized IT governance framework and has proven effective in measuring process capability levels in government agencies and other companies. This study aims to fill this gap by measuring the capability level of the e-Open, information system based on the four relevant DSS domains, and providing measurable recommendations for improvement to the Bekasi City Population and Civil Registration Office.

2. Literature Review

2.1. Information System Evaluation

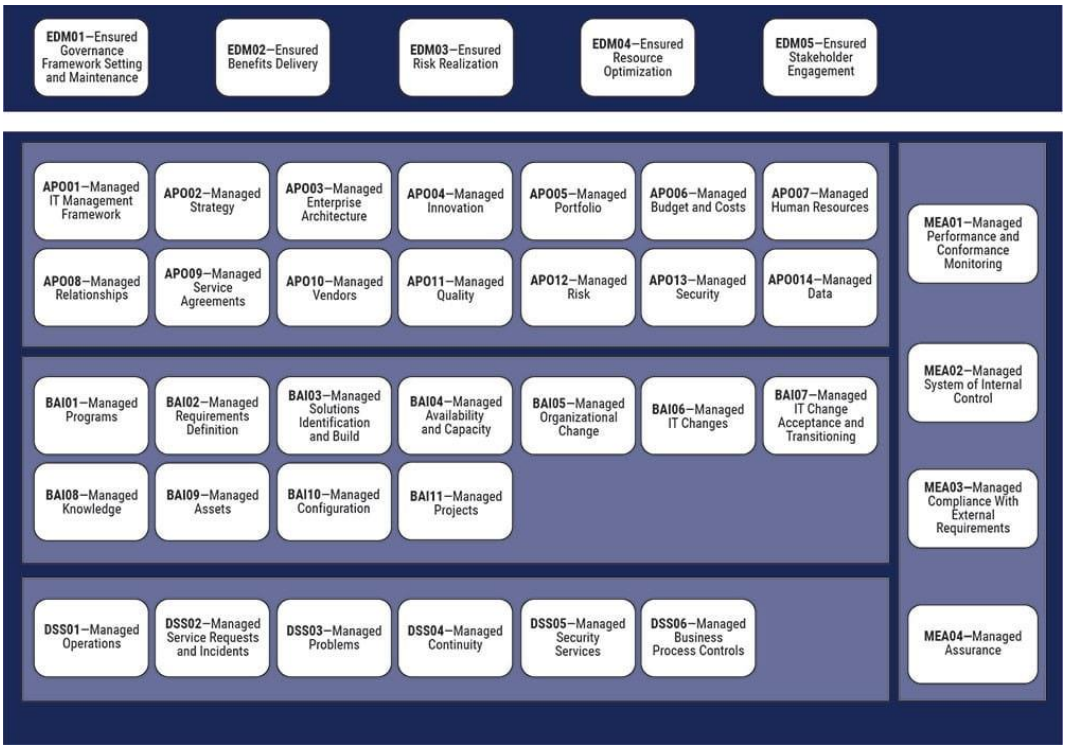
Information system evaluation is a structured assessment process conducted on an active information system uses within an organization or agency, with the aim of determining the extent to which a system can meet predetermined targets [9]. This process serves as a practical guide for monitoring asset usage, mitigating risks, and ensuring the quality of work aligns with organizational objectives. The evaluation results can be used to support future decision-making regarding information systems [10]. According to [10], information system evaluation is a systematic process for measuring, assessing, and understanding the capability level of an organization's management in using the system. In the context of public services, evaluation plays a role in maintaining the stability, and reliability of services for users [11].

2.2. IT Governance

IT governance is a framework of relationships and systematic processes that guide an organization in achieving its goals through the use of IT [12]. In the context of the digital era, good governance must be adaptive to technology while also serving as an instrument for data protection and improving the efficiency of public services [13]. [14]emphasize that IT governance is the most critical component in designing control structures, measuring IT performance, and ensuring alignment between technology and the organization's business objectives.

2.3. COBIT 2019

According to [15], COBIT (Control Objectives for Information and Related Technology) is a framework for information technology governance and management. COBIT serves to ensure alignment between the use of information technology and the business objectives of a given organization [16]. COBIT 2019 is an update to COBIT 5, which was launched in 2012.
COBIT 2019 comprises key domains in information technology governance and management, with each domain having its own processes or subdomains. The following figure shows the 40 processes grouped by domain:



Source:[17]

Fig. 1: COBIT 2019 Domains.

The Deliver, Service, and Support (DSS) domain is one of the domains in COBIT 2019, which supports operations and service delivery for organizations or companies. COBIT 2019 measures capability level using a scale of 0 to 5 that adopts the CMMI (Capability Maturity Model Integration) scheme, ranging from Level 0 (Incomplete) to Level 5 (Optimizing). In addition to determining capability levels, COBIT 2019 provides an achievement rating scale: Not Achieved (0-14%), Partially Achieved (15-49%), Largely Achieved (50-84%), and Fully Achieved (85-100%) [2].
The evaluation of the information system in this study is based on the COBIT 2019 framework. The framework is used to measure capability levels within each domain according to the issues identified.

2.4. Capability Level

Capability level is a measure of how well a process is implemented within an organization. There are six capability levels that can be achieved, as shown in the following table:

Table 1: Capability Level

Capability Level		Description
Level 0	*Incomplete*	The process plan has not been implemented or the objectives has not been achieved
Level 1	*Initial*	The process achieved its objectives but is not yet organized
Level 2	*Managed*	The process is planned and monitored
Level 3	*Defined*	The process is defined and standardized
Level 4	*Quantitative*	The process is quantitatively measurable
Level 5	*Optimizing*	The process achieves its objectives and focuses on continuous improvement

Source: [15]
The measurement results reflect a process achieved through the procedures that have been implemented, this evaluation can determine the current status in order to maximize service improvements [18]

2.5. Deliver, Service, and Support (DSS)

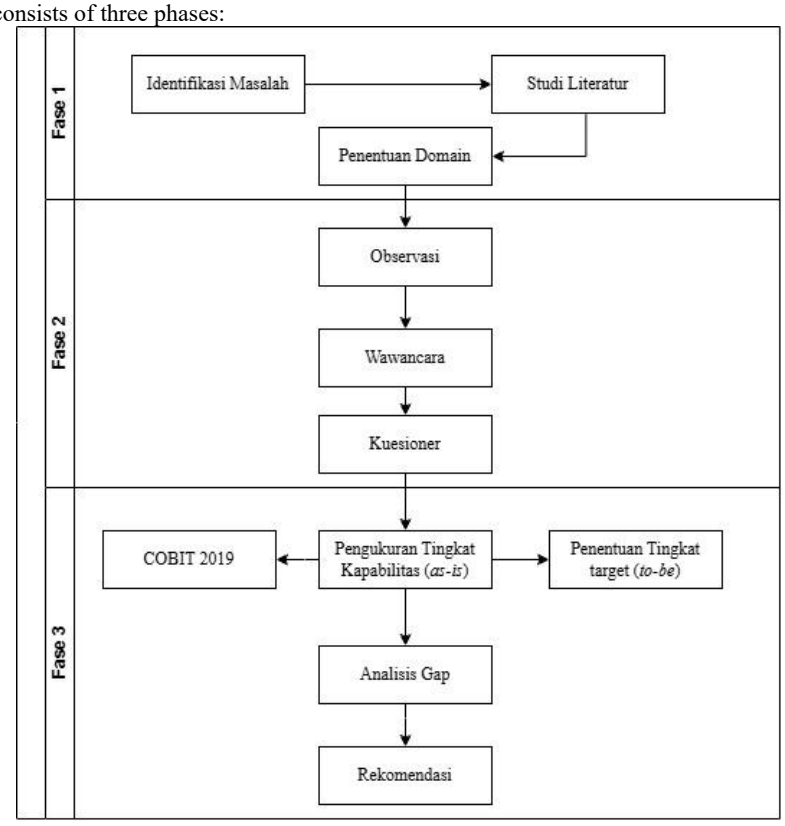
The DSS domain focuses on operational delivery and support for information technology services. This domain ensures that the IT services required by the organization operate effectively and efficiently, according to plan, and maintain the security of services within business processes [15]. The domains used in this study include: DSS01 (Manage Operations) for managing daily system operations, DSS02 (Manage Service Requests and Incidents) for handling service requests and incidents, DSS05 (Manage Security Services) for data protection and system security, and DSS06 (Manage Business Process Controls) for business process controls and regulatory compliance.

3. Research Method

This study employs a descriptive quantitative approach, aiming to measure and describe the level of capability of the e-Open information system based on the COBIT 2019 framework. The study assesses the current (as-is) state and compares it with the desired (to-be) state. Data were collected via a questionnaire containing 20 statements based on COBIT 2019 activities using a Likert scale ranging from 1 to 5 (Strongly Disagree to Agree) [19]. The questionnaire was divided into four domains, each containing 5 items.

3.1. Research Framework

The research framework consists of three phases:



The first phase involves problem identification, a literature review, and the determination of relevant DSS domains.
The next phase involved direct observation of the e-Open system, brief interviews with technical administrators, and the distribution of questionnaires to selected respondents.
The third phase was the final stage, involving the assessment of the current capability level (as-is) using COBIT 2019, the determination of target (to-be) levels, gap analysis, and the formulation of recommendations based on the findings.

3.2. Population and Sample

The population in this study consists of Disdukcapil employees who are directly involved in the operation, monitoring, and management of the e-Open information system within the Bekasi City Disdukcapil. The sampling technique used was non-probability sampling with a purposive sampling approach [20], which involves selecting respondents based on criteria of direct involvement in the operation and management of e-Open. Of the 51 questionnaires collected, a selection was made based on purposive sampling criteria, resulting in 41 valid respondents. The distribution of respondents is shown in the following table:

Table 2: Respondent Distribution

Position	Number of Respondents
Population Database Administrator	2 People
Database Administrator Staff	1 Person
Operational Service Manager	18 People
Operational Service Administrator	10 People
Operational Service Operator	10 People
Total Respondents	41 People

Based on the results of the respondent identification, the majority held operational positions that involved direct interaction with the e-Open system, namely the operational service manager, operational service administrator, operational service operator, and population database administrator. The selection of respondents through this purposive sampling ensures that the evaluation results obtained are objective and in accordance with existing conditions in the field.

3.3. Research Instrument

The research instrument, a questionnaire consisting of 20 statements, was developed based on the COBIT 2019 process activities and adapted to the operational context of e-Open. It is evenly distributed across four domains, as shown in the following table:

Table 3: Research Instrument

Domain	Item	Focus
DSS01 (Manage Operations)	P1-P5	Daily system operations management.
DSS02 (Manage Service Requests and Incidents)	P6-P10	Incident and service request handling.
DSS05 (Manage Security Services)	P11-P15	Data security and user access rights.
DSS06 (Manage Business Process Controls	P16-P20	Business process controls and regulatory compliance.

3.4. Data Collection Technique

Research data was obtained through direct observation of the e-Open website (www.e-open.id) to determine the actual condition of the system, such as the display of resident data in the public queue and account verification status. Brief interviews with the e-Open system's technical administrators were conducted to supplement the data, and a questionnaire served as the primary data collection method. A literature review was also conducted to establish a theoretical foundation regarding information system evaluation, IT governance, and the implementation of COBIT 2019.

3.5. Data Analysis Technique

Questionnaire responses were tabulated and processed using Microsoft Excel through the following steps:

1. Tabulating of response distributions per item
2. Calculation of the capability index (NK) per item using the formula:

$$\text{NK} = \frac{\sum score\ x\ number\ of\ respondents\ selecting\ it}{\sum Number\ of\ Respondents}$$

   Where NK is the capability index for each statement item. the numerator is the cumulative weighted score for that item and the denominator is the total valid sample (N = 41)
3. Calculate the average for each domain
4. Convert the achievement percentage using the following formula:

$$\text{Achievement Percentage (\%)} = \frac{\text{Domain Average Score}}{Maximum\ Score\ Scale(5)} x100\%$$

   The resulting percentage is then matched to the following COBIT standard compliance rating scale:

Table 4: Achievement Level Scale

Scale	Description	Achievement (%)
N	*Not Achieved*	0-14
P	*Partially Achieved*	15-49
L	*Largely Achieved*	50-84
F	*Fully Achieved*	85-100

Source: [2]

   The achievement level scale has four levels: the lowest level is "Not Achieved" (abbreviated as N), the next level is "Partially Achieved" (abbreviated as P), the middle level is "Largely Achieved" (abbreviated as L), and the highest level is "Fully Achieved" (abbreviated as F).
5. Interpret the process achievement level based on the average score mapped to the COBIT 2019 capability and achievement categories.
6. Gap analysis compares the as-is condition with the Level 5 to-be target, using the following formula:

$$\text{Gap} = \text{Target}\ To\ Be\ (5{,}00) - Domain\ NK$$

   The target-to-be is set at 5.00 (Level 5) for all domains, given that e-Open is a public civil registration service that requires optimal and sustainable operations.

3.6. Research Location and Period

The research was conducted at the Bekasi City Population and Civil Registration Office.

4. Result and Discussion

4.1. Domain DSS01 (Managed Operations)

DSS01 is a domain that focuses on the day-to-day operational management of information systems to ensure that the systems run stably and in accordance with standards. This domain was selected because a problem was identified: the lack of a centrally documented SOP for the e-Open system.

Table 5: DSS01 Recapitulation

Item	Statement	STD (1)	D (2)	N (3)	A (4)	SA (5)	NK
P1	The operational procedures for the e-Open system are officially documented and followed by all relevant employees.		2	1	15	23	4.44
P2	The e-Open system is ensured to run stably and be available every workday in accordance with service standards.			4	17	20	4.39
P3	System performance is monitored routinely, and the results are recorded for evaluation		2	3	17	19	4.29
P4	Server and network performance are monitored periodically to ensure the availability of the e-Open service.		1	2	18	20	4.39
P5	There is a routine mechanism for cleaning up or deactivating inactive user accounts.		1	1	14	25	4.54
Average							4.41

Calculations were performed for all items. After this step was completed and scores were obtained, the overall average score for the DSS01 domain was calculated by summing all the NK scores and dividing the total by the number of items, which is 5. The results of the calculations are as follows:

$$\text{Average DSS01} = \frac{4.44 + 4.39 + 4.29 + 4.39 + 4.54}{5} = \frac{22.05}{5} = 4.41$$

The average score for each domain is then converted to a percentage of achievement. For example, for domain DSS01:

$$(\%) = \frac{\text{Domain Average Score } (4.41)}{Maximum\ for\ Scale\ (5)} x100\% = 88.20\%$$

Based on the analysis of the data above, the following conclusions regarding the assessment of domain DSS01 are drawn:

a. Determination of Capability Level. The domain's average score is 4.41, falling within the score range of 3.51–4.50. This indicates that, in terms of capability, the DSS01 domain is at Level 4, or the Quantitative Process level. This assessment indicates that the operational processes of the e-Open system at the Bekasi City Population and Civil Registration Office (Disdukcapil) have been running consistently, are measurable, and adhere to clear performance standards.
b. In terms of achievement level, the percentage conversion result of 88.20% falls within the 85%–100% range. Based on the scale defined by COBIT, this value is categorized as F (Fully Achieved). It can be concluded that most operational management activities have been implemented effectively, although there are still some aspects that require attention.

4.2. Domain DSS02 (Managed Service and Requests and Incidents)

DSS02 is a domain that focuses specifically on incident handling and resolution. This domain was selected because it was found that incident handling on e-Open is still conducted informally via WhatsApp without being officially logged.

Table 6: DSS02 Recapitulation

Item	Statement	STD (1)	D (2)	N (3)	A (4)	SA (5)	NK
P6	Every citizen service request through e-Open is handled according to established procedure		1	2	14	24	4.49
P7	Every incident or disruption is recorded, classified, and followed up in a structured manner		1	3	14	23	4.44
P8	An escalation procedure to leadership exists if staff cannot handle data security issues		1	4	16	20	4.34
P9	Citizens receive clear and timely information on the status of their complaints			3	11	27	4.59
P10	Security or operational incidents are evaluated periodically to prevent recurrence		1		15	25	4.56
Average							4.48

After all items have been scored, the overall average score for the DSS02 domain is calculated by summing all the raw scores and dividing by the total number of 5 items. The result of the DSS02 domain average calculation is as follows:

$$\text{Average DSS02} = \frac{4.49 + 4.44 + 4.34 + 4.59 + 4.56}{5} = \frac{22.42}{5} = 4.48$$

The domain average score is then converted to a percentage of achievement as follows:

$$(\%) = \frac{\text{Domain Average Score } (4.48)}{Maximum\ Score\ Scale\ (5)} x100\% = 89.60\%$$

Based on the data analysis above, the following conclusion is drawn regarding the assessment of the DSS02 domain:

a. The domain average score of 4.48 falls within the score range of 3.51-4.50. This indicates that, in terms of capability, the DSS02 domain is at Level 4. This assessment means that the process of handling service requests and incidents in the e-Open system has been measured, monitored, and managed according to clear performance indicators within the agency.
b. In terms of achievement level, the percentage-based assessment result was 89.60%, falling within the "Fully Achieved" scale, which means the agency has performed the above activities well.

4.3. Domain DSS05 (Managed Security Services)

DSS05 focuses on data protection and information system security. This domain was selected because it was found that citizens'full names were still displayed on the e-Open public queue dashboard, which may be inconsistent with Law No. 27 of 2022.

Table 7: DSS05 Recapitulation

Item	Statement	STD (1)	D (2)	N (3)	A (4)	SA (5)	NK
P11	A formal information security policy is technically applied to e-Open		1		18	22	4.49
P12	Staff access rights are granted on a limited, role-based basis and updated periodically	1	1	3	15	21	4.32
P13	Inactive or expired user accounts are deactivated through standard security procedures		1		19	21	4.46
P14	Citizen population data is protected through encryption or verified technical security mechanisms		1		14	26	4.59
P15	An active monitoring system exists to detect potential security threats on e-Open		1	1	13	26	4.56
	Average						4.48

The calculation was performed in the same manner as before. It began with item P11, which had 41 respondents. After all items were scored, the overall mean score for the DSS05 domain was calculated by summing all the NK scores and dividing the total by the number of items, which was 5. The results of the calculation are as follows:

$$\text{Average DSS05} = \frac{4.49 + 4.32 + 4.46 + 4.59 + 4.56}{5} = \frac{22.42}{5} = 4.48$$

The average domain score is then converted to a percentage of achievement as follows:

$$(\%) = \frac{\text{Domain Average Score } (4.48)}{Maximum\ Score\ Scale\ (5)} x100\% = 89.60\%$$

Based on the analysis of the data above, the following conclusions were drawn regarding the assessment of domain DSS05:

a. The average score form domain DSS05 is 4.48, which falls at Level 4 (Quantitative). The lowest scoring item is P12 with a score of 4.32, indicating that access restrictions based on roles are not yet fully consistent.
b. In terms of achievement percentage, the DSS05 domain scored 89.60%, indicating that the agency has implemented data security in the e-Open system and is approaching a state of perfection.

4.4. Domain DSS06 (Managed Business Process Controls)

The DSS06 domain focuses on business process controls to ensure information integrity and compliance with regulations. This domain was selected because there are currently no automated controls in place to filter sensitive data from public queue displays.

Table 8: DSS06 Recapitulation

Item	Statement	STD (1)	D (2)	N (3)	A (4)	SA (5)	NK
P16	e-Open business processes are controlled to ensure every step follows operational procedure			1	18	22	4.51
P17	The system has automatic controls ensuring only non-sensitive information is displayed on the public queue page		1		20	20	4.44
P18	Data management on e-Open is aligned with Law No. 27 of 2022 on Personal Data Protection		1		13	27	4.61
P19	A clear segregation of duties exists between system managers and supervisors		1	1	17	22	4.46
P20	Internal audits or reviews of business processes on e-Open are conducted periodically		1	1	16	23	4.49
Average							4.50

After all items were scored, the overall average score for the DSS06 domain was calculated by summing all the NK scores and dividing the total by the number of items, which is 5. The results of the calculation are as follows:

$$\text{Average DSS06} = \frac{4.51 + 4.44 + 4.61 + 4.46 + 4.49}{5} = \frac{22.51}{5} = 4.50$$

The average domain score is then converted to a percentage of achievement as follows:

$$(\%) = \frac{\text{Domain Average Score } (4.50)}{Maximum\ Score\ Scale\ (5)} x100\% = 90.00\%$$

Based on the analysis of the data above, the following conclusions were drawn regarding the DSS06 domain:

a. DSS06 received the highest average score of 4.50, which falls under Level 4 (Quantitative), indicating that business process control in the e-Open system is already operating optimally but requires further refinement.
b. d. In terms of the percentage of achievement, DSS06 has successfully carried out its activities and achieved a "fully achieved" rating, meaning that these activities have been performed perfectly.

Based on the average of the four domains above, DSS01 has the lowest score of 4.41, while DSS06 has the highest score of 4.50. The differences between the domains are relatively small, indicating that, overall, the e-Open system is operating at a consistent and measurable level of capability.

4.5. Capability Level and Gap Analysis

Table 9: Capability Level and Achievement

Domain	NK	%	Achievement	As-Is	To-Be	Gap
DSS01	4.41	88.20%	Fully Achieved	Level 4	Level 5	0.59
DSS02	4.48	89.60%	Fully Achieved	Level 4	Level 5	0.52
DSS05	4.48	89.60%	Fully Achieved	Level 4	Level 5	0.52
DSS06	4.50	90.00%	Fully Achieved	Level 4	Level 5	0.50

Source: Research Result (2026)

All domains are at Level 4 (Quantitative Process), meaning that governance processes are being carried out in a measurable and consistent manner. DSS06 received the highest score (4.50), indicating the most optimal business process control, while DSS01 received the lowest score (4.41), indicating that operational aspects still require the most attention.

DSS01 received a score of 4.41, Level 4, with the lowest score on P3 (Statement 3), the average score of 4.29 indicates that system performance monitoring is not yet fully and optimally documented.

DSS02 is at Level 4, with an as-is score of 4.48 and a gap of 0.52. The lowest average score was found in P8 (NK 4.34), indicating that procedures for escalating incident handling to management need to be strengthened.

DSS05 achieved a capability score of 4.48, at Level 4, with a gap of 0.52. The lowest scoring item, P12 (NK 4.32), indicates that role-based access controls are not yet consistently applied, and DSS06 is at Level 4, with the highest capability score among the other domains at 4.50 and a gap of 0.50, meaning this domain is nearly at the target level. However, item P17 (NK 4.44) indicates that automated controls for sensitive data in public queues still need improvement.

The research results show that all domains are at Quantitative Level 4 with the "Fully Achieved" category (88.20% - 90.00%). These results are higher than the findings [2], which reported Levels 1 through 3 in law enforcement agencies. Similarly, [18] reported an average score of 3.41, ranging from Level 3 to Level 4 in the DSS domain at the Pematangsiantar City Communication and Information Agency. This difference is likely related to the characteristics of e-Open as a public application used by the general public, which requires higher operational guidance and oversight compared to internal systems. Nevertheless, the high questionnaire scores reflect employees' perceptions and should be interpreted in conjunction with the observational findings, which revealed residents' full names displayed on the dashboard and old accounts that remain active without re-verification. This indicates a gap between perception and actual technical implementation.

4.6. Findings and Recommendations

Table 10: Evaluation Findings and Recommendations

No.	Finding	Recommendation
1.	System performance monitoring has not produced documented records that can be used for periodic evaluation	Create scheduled system performance monitoring logs, for example, recording uptime, response times, and issues that occur on each business day, using a simple application accessible to the team.
2.	Written procedures for escalating incidents to management are not yet available	Develop a written incident escalation SOP that includes the reporting workflow, responsible parties at each stage, and resolution deadlines.
3.	Staff access rights to the system have not been updated based on role or position	Update staff access rights periodically, at least once a year, or immediately following a change in position or employee rotation.
4.	Inactive user accounts have not been consistently deactivated	Implement periodic re-verification every 6 months. If this deadline is exceeded, access is temporarily restricted until the user resets their password or verifies via OTP.
5.	Residents' full names are displayed on the public dashboard	Implement automatic data masking for residents' full names.

5. Conclusion

Based on the results of the research and data analysis conducted, it can be concluded that in the evaluation of the e-Open information system using COBIT 2019, the DSS01 domain received a score of 4.41, DSS02 received a score of 4.48, DSS05 also received an average

score of 4.48, and DSS06 received an average score of 4.50. All domains are at Level 4 - Quantitative, achieving the "Fully Achieved" category with a gap of 0.50 to 0.59 toward Level 5.

Research Limitations

This study has several limitations, including:

1. Measurements were based on employee perceptions via a Likert-scale questionnaire
2. The study covered only four of the six DSS subdomains
3. Existing SOPs were not fully integrated into the analysis
4. The study did not utilize the formal COBIT 2019 stakeholder mapping

Recommendations

For the Bekasi City Population and Civil Registration Office (Disdukcapil), these results can serve as a basis for prioritizing improvements, particularly the implementation of data masking. For future research, it is recommended to use a combination of questionnaires and document analysis (SOPs, system logs) for stronger triangulation, as well as to include DSS03 and DSS04 domains for a more comprehensive evaluation.

References

[1] Pemerintah Republik Indonesia, "Undang-undang (UU) Nomor 27 Tahun 2022 tentang Perlindungan Data Pribadi," 2022.

[2] W. Dari and H. Bastian, "Audit Tata Kelola Teknologi Informasi Pada Kejaksaan Negeri Sanggau Menggunakan Framework COBIT 2019," *Indonesian Journal On Information System*, vol. 10, Apr. 2025.

[3] J. Mustaqfirah, I. Dwitawati, and M. S. Rizal, "Analisis Tata Kelola Teknologi Informasi Pada Diskominfo Kota Sabang Menggunakan Framework COBIT 2019," *Jurnal Pendidikan Teknologi informasi*, vol. 9, no. 1, pp. 49–62, Mar. 2025.

[4] L. L. Aulia, D. H. Satyareni, and C. S. Anugrah, "Audit E-SPPD Diskominfo Kabupaten Mojokerto Menggunakan Framework COBIT 2019," *Jurnal Dimamu*, vol. 5, no. 1, pp. 1–11, Dec. 2025, doi: 10.32627.

[5] M. A. Firdaus and N. Suyatna, "Audit Sistem Informasi E-Learning Menggunakan Framework Cobit 2019 dengan Domain DSS," *Jurnal Dimamu*, vol. 4, no. 3, pp. 583–591, Aug. 2025, doi: 10.32627.

[6] V. Lavega, Vivian, A. Monica, M. Valery, C. S. Jaya, and D. Pratama, "Evaluasi Tata Kelola Infrastruktur Teknologi Informasi pada UMKM Kuliner Ryudon Cafe & Resto Menggunakan Framework COBIT 2019," *Jurnal Riset Sistem Informasi*, vol. 3, no. 2, pp. 63–71, Apr. 2026, doi: 10.69714/e0tmf592.

[7] J. Mulyana and E. H. Hermaliani, "Audit Sistem Informasi Melalui Evaluasi Kapabilitas Tata Kelola Enterprise Resource Planning Berbasis Cobit 2019," *Jurnal Mahasiswa Teknik Informatika*, vol. 10, no. 3, p. 4406, 2026, doi: https://doi.org/10.36040/jati.v10i3.18160.

[8] A. B. Exacta, Suprapto, and A. Rachmadi, "Evaluasi Tata Kelola Teknologi Informasi Menggunakan Kerangka Kerja COBIT 2019 pada Proses EDM04, APO07, dan DSS01 (Studi Kasus: Dinas Komunikasi dan Informatika Kabupaten Mojokerto)," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 9, no. 6, pp. 2548–964, Jun. 2025, [Online]. Available: http://j-ptiik.ub.ac.id

[9] Asriani, M. Amir, and A. Kadir, *Sistem Informasi Manajemen: Teori & Prinsip-Prinsip Dasar*. Kendari: CV. Literasi Indonesia, 2024. [Online]. Available: www.literacyinstitute.org

[10] N. P. M. K. Dewi, I. G. P. K. Juliharta, and A. A. G. A. M. Putra, "Evaluasi Tata Kelola Sistem Informasi Akademik Menggunakan Kerangka Kerja COBIT 2019 (Studi Kasus: Universitas Primakara)," *Jurnal Ilmiah Teknologi Informasi Asia*, vol. 18, no. 2, pp. 1–16, Aug. 2024, doi: 10.32815/jitika.v18i2.1039.

[11] H. N. D. Saputra and Wasilah, "Evaluasi Tingkat Kematangan Tata Kelola Teknologi Informasi menggunakan COBIT 2019 pada SIAKAD Universitas Nahdlatul Ulama Lampung," *Sistemasi: Jurnal Sistem Informasi*, vol. 15, pp. 455–462, Dec. 2026, [Online]. Available: http://sistemasi.ftik.unisi.ac.id

[12] H. Kusbandono, D. Ariyadi, and T. Lestariningsih, *Tata Kelola Teknologi Informasi*. Ponorogo: CV. Nata Karya, 2019.

[13] S. Ninu, "Peran Hukum Administrasi Negara dalam Penguatan Prinsip Good Governance Pada Era Digital," *Parlementer : Jurnal Studi Hukum dan Administrasi Publik*, vol. 3, no. 1, pp. 08–21, Apr. 2026, doi: 10.62383/parlementer.v3i1.1597.

[14] A. Tafdhilla, J. H. Iftinan, A. Rahmadani, and A. Wulansari, "Penilaian Penggunaan Framework COBIT 2019 dalam Pengelolaan Teknologi Informasi Pada Institusi Perguruan Tinggi," *Bulletin of Computer Science Research*, vol. 4, no. 1, pp. 91–100, Dec. 2023, doi: 10.47065/bulletincsr.v4i1.314.

[15] ISACA, *COBIT® 2019 Framework: Governance and Management Objectives*. Schaumburg, IL, USA, 2018.

[16] B. A. M. Pangaribuan and S. Fernandez, "Tata Kelola Teknologi Informasi Menggunakan COBIT 2019 Pada Val," *Jurnal Ilmiah Komputer Grafis*, vol. 16, no. 1, pp. 196–208, Jul. 2023, doi: 10.51903/pixel.v16i1.1247.

[17] ISACA, *COBIT 2019 Design guide designing an information and technology governance solution*. 2019.

[18] A. Pratama, D. Yulisda, and M. Fajar, "Analisis Tingkat Kemampuan (Capability Level) Teknologi Informasi Menggunakan Framework COBIT 2019 Domain DSS (Deliver, Service, And Support) Studi Kasus Diskominfo Kota Pematang Siantar," *Jurnal TIKA Fakultas Ilmu Komputer Universitas Almuslim*, vol. 8, pp. 10–16, Apr. 2023.

[19] K. Alamsyah, W. T. Setiantoro, J. J. Oeleu, Faisal, and A. K. Utami, "Analisis Program Layanan Pemesanan Perjalanan Digital Pada Aplikasi Agoda dengan Metode Skala Likert," *Jurnal Ilmiah Sain dan Teknologi*, vol. 3, pp. 864–872, 2024.

[20] I. Machali, *Metode Penelitian Kuantitatif: Panduan Praktis Merencanakan, Melaksanakan dan Analisis dalam Penelitian Kuantitatif*, Cetakan 3. Yogyakarta: Fakultas Ilmu Tarbiyah dan Keguruan Universitas Islam Negeri (UIN) Sunan Kalijaga Yogyakarta, 2021.