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Evaluation of E-Learning Service Governance Using the COBIT 2019 DSS Domain at Universitas Indonesia Mandiri

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ABSTRACT

This research evaluates e-learning service governance through the COBIT 2019 framework, focusing on the Deliver, Service, and Support (DSS) domain. A quantitative cross-sectional design was employed, involving 30 respondents drawn from IT staff, academic lecturers, and students via structured questionnaire. Analytical procedures encompassed instrument validation, capability level measurement, and gap analysis. Findings confirm instrument validity and reliability across all items. The mean capability score reached 3.34, placing governance at Level 3 (Established Process), reflecting structured yet sub-optimal implementation. Gap analysis revealed that the majority of DSS subdomains showed a deviation of two levels from the target Level 5 (Optimizing Process), with the most critical deficiencies observed in incident handling, problem resolution, service continuity, and business process oversight. These results imply that governance remains largely reactive, underscoring the necessity for proactive strategies encompassing continuous monitoring and evidence-based management. The study offers actionable guidance for institutional governance improvement, though its cross-sectional nature limits the capture of longitudinal governance changes.

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1. Introduction

The acceleration of digital transformation within higher education institutions over the preceding decade has been substantially propelled by the widespread integration of information and communication technologies into academic operations. Universities have progressively transcended conventional instructional paradigms, embedding digital systems across teaching delivery, administrative management, and student engagement services. Among the most consequential of these technological adoptions is e-learning, which functions as a technology-mediated instructional platform enabling flexible and scalable educational provision [1].

Contemporary e-learning platforms have evolved considerably beyond their original function as repositories for instructional content. Modern implementations encompass interactive communication channels, collaborative learning environments, assessment management tools, and mechanisms for real-time academic engagement between instructors and learners. Empirical scholarship has established that well-governed e-learning ecosystems generate positive outcomes across learning effectiveness, institutional accessibility, and user satisfaction, particularly when learners can access academic resources independent of geographical or temporal constraints [2]. These circumstances underscore the imperative for systematic governance evaluation to safeguard the sustained and optimal performance of e-learning services.

Notwithstanding the demonstrable benefits of e-learning adoption, the operational effectiveness of such systems is profoundly conditioned by the quality of the institutional IT governance architecture underpinning them. In numerous higher education contexts, governance deficiencies manifest as recurring service disruptions, prolonged incident resolution cycles, security exposures, and deteriorating consistency in user experience. Such conditions progressively erode stakeholder confidence in institutional digital infrastructure and compromise the long-term viability of online learning systems [3]. Accordingly, the systematic evaluation of e-learning governance constitutes an essential institutional practice for ensuring service dependability, operational efficiency, and the conditions necessary for continuous improvement.

Within the discipline of IT governance, COBIT 2019 stands as one of the most rigorously developed and broadly adopted frameworks available to organizations [4]. This framework delivers structured guidance for aligning technological processes with institutional objectives through configurable governance design factors, performance management instruments, and capability measurement models. The cross-sectoral adoption of COBIT 2019 has intensified as organizations recognize its capacity to expose governance vulnerabilities, quantify process maturity, and generate evidence-based strategies for systematic improvement [5]. Its inherent adaptability renders the framework particularly germane for higher education institutions navigating accelerated digital transformation trajectories.

Among the governance domains constituting COBIT 2019, the Deliver, Service, and Support (DSS) domain holds particular relevance for e-learning governance evaluation. This domain concentrates on the operational dimensions of service delivery, encompassing incident management, continuity planning, information security governance, and business process control mechanisms. These functional dimensions are directly and continuously connected to the quality of e-learning experiences encountered by students, academic staff, and institutional administrators on a daily basis [6]. Effective governance across DSS processes has been consistently associated with measurable improvements in system reliability, service responsiveness, and stakeholder confidence in digital learning infrastructure.

Accumulated empirical evidence has confirmed that COBIT-anchored governance evaluations reliably improve organizational governance quality through systematic identification of capability gaps and reinforcement of institutional control mechanisms [7]. Within educational contexts specifically, governance assessments have enabled institutions to establish service improvement priorities, rationalize resource deployment, and strengthen the quality of technology-mediated decision-making processes [8]. Notwithstanding these contributions, the preponderance of existing scholarship remains oriented toward general IT governance assessment rather than directing analytical attention specifically toward e-learning service governance through the DSS domain lens, representing a gap that the present study seeks to address.

Several substantive research gaps can consequently be identified in the existing scholarship. First, empirical investigations directed specifically at e-learning service governance through the COBIT 2019 DSS domain within higher education remain markedly limited in number and scope. Second, a significant proportion of prior studies emphasize capability scoring as an end in itself while providing insufficient structured gap analysis oriented toward defined target maturity levels. Third, the generation of practically implementable recommendations for sustainable governance improvement remains underdeveloped across much of the existing literature, constraining the utility of governance assessments for institutional decision-makers.

In response to these identified limitations, the present study undertakes a comprehensive evaluation of e-learning service governance through the COBIT 2019 framework, with analytical concentration within the DSS domain. The study integrates capability level assessment with systematic gap analysis to quantify the disparity between prevailing governance conditions and the aspirational Level 5 (Optimizing Process). The distinctive contribution of this research resides in its integrated evaluation architecture, which simultaneously addresses three analytical dimensions: operational capability measurement, strategic gap prioritization, and the generation of governance improvement recommendations tailored to the specific institutional context of university e-learning services.

The novelty of this study lies in its integrated evaluation model that combines three dimensions simultaneously: operational capability measurement, strategic gap prioritization, and governance improvement recommendations in the context of university e-learning services. This integrated approach provides a more practical contribution for institutional decision makers seeking to strengthen digital learning governance in a sustainable manner.

Conceptually, the study adopts a governance evaluation framework consisting of three components: input (e-learning operational services and governance data), process (DSS mapping, capability assessment, and gap analysis), and output (capability results and strategic recommendations). The findings are expected to contribute both theoretically to the IT governance literature and practically to improving the quality, resilience, and sustainability of e-learning services in higher education institutions.

2. Literature Review

A. Information Technology Governance

IT governance encompasses the structural arrangements, organizational processes, and relational mechanisms through which institutions ensure that their technology investments are aligned with strategic objectives, risks are systematically managed, and measurable value is delivered to stakeholders. Effective IT governance enables institutions to synchronize technological resource deployment with operational imperatives while sustaining accountability, transparency, and service quality standards. In contemporary organizational settings, governance has evolved from a predominantly technical administrative concern toward a strategically significant organizational capability that actively supports institutional innovation and competitive positioning [9].

Within higher education institutions, the strategic significance of IT governance has intensified as universities become increasingly dependent upon digital platforms for instruction, research dissemination, and administrative operations. Governance deficiencies in this context tend to produce fragmented system landscapes, inadequate service integration, amplified cybersecurity exposure, and diminished user

satisfaction [10]. By contrast, robust governance architectures demonstrably enhance service continuity, resource utilization efficiency, and the realization of digital transformation objectives. Universities confront distinctive governance challenges arising from the necessity of balancing academic autonomy with stakeholder diversity and technological standardization imperatives — a tension that demands governance frameworks emphasizing institutional adaptability alongside control.

B. *E-Learning Systems*

E-learning constitutes a technology-mediated instructional system that leverages internet-based platforms to facilitate the delivery of academic content, learner-instructor communication, assessment administration, and collaborative knowledge construction. This mode of educational delivery enables asynchronous and synchronous engagement between students and faculty through digital media, thereby substantially expanding accessibility and flexibility [11]. The rapid and widespread adoption of e-learning has catalyzed fundamental transformations in pedagogical models across universities internationally.

Empirical scholarship consistently demonstrates that effective e-learning implementation produces improvements in learning outcomes, student engagement, and institutional resilience — particularly when supported by user-centered interface design, stable technical infrastructure, and responsive support services. Digital learning environments have additionally emerged as indispensable mechanisms for preserving educational continuity during periods of institutional disruption, including pandemic recovery and transitions to hybrid learning modalities [12].

Nevertheless, e-learning success is not reducible to platform availability alone. Service reliability, security integrity, quality of user support, and the capacity for ongoing technological enhancement collectively exert strong influence over user satisfaction and sustained adoption intention [13]. These multidimensional determinants of e-learning effectiveness establish the necessity for systematic governance evaluation to ensure that digital learning systems operate at optimal levels while remaining responsive to evolving stakeholder requirements.

C. COBIT 2019 Framework

COBIT 2019 represents a globally recognized governance framework developed by ISACA to support organizations in comprehensively governing and managing enterprise information and technology assets. The framework provides principles, governance objectives, performance management instruments, and capability measurement models engineered to align IT functions with strategic institutional goals [8]. Relative to its predecessors, COBIT 2019 introduces substantially greater configurational flexibility through governance design factors that permit organizations to tailor governance systems in accordance with their specific size, risk profile, industry characteristics, and transformation priorities — an adaptive orientation that renders it particularly applicable to higher education institutions exhibiting varied governance maturity levels.

Accumulated research evidence has consistently demonstrated that COBIT-based governance assessments contribute to enhanced control quality, improved process transparency, and more effective managerial decision-making. The framework's utilization has expanded across education, healthcare, finance, and public administration sectors, driven by its structured, evidence-based approach to governance capability development [14].

D. Deliver, Service, and Support (DSS) Domain

The Deliver, Service, and Support (DSS) domain within COBIT 2019 concentrates on the operational dimensions of IT service delivery and day-to-day technology management. This domain is of foundational importance because even strategically sophisticated governance frameworks fail to generate institutional value when operational execution is deficient. DSS ensures that technology services are delivered with security, consistency, and operational efficiency through six constituent subdomains: DSS01 (Manage Operations), DSS02 (Manage Service Requests and Incidents), DSS03 (Manage Problems), DSS04 (Manage Continuity), DSS05 (Manage Security Services), and DSS06 (Manage Business Process Controls) [15].

The direct operational relevance of these subdomains to e-learning governance derives from the continuous daily interaction of students and academic staff with institutional digital systems. Service interruptions, security compromises, or inadequate continuity arrangements immediately and adversely affect learning quality and institutional credibility [16]. Research has affirmed that operational governance quality constitutes one of the most powerful determinants of digital service satisfaction within higher education environments.

E. Capability Level in COBIT 2019

Within the COBIT 2019 framework, capability level serves as the primary quantitative indicator for assessing the maturity of IT governance processes. The framework defines a six-tier progression: Level 0 (Incomplete Process), Level 1 (Performed Process), Level 2 (Managed Process), Level 3 (Established Process), Level 4 (Predictable Process), and Level 5 (Optimizing Process). The advancement through successive levels reflects increasingly sophisticated governance quality, moving from undocumented reactive practices toward fully optimized, continuously improving governance systems [17]. This measurement architecture enables institutions to establish their current governance position with precision and to define evidence-based improvement targets aligned with their strategic aspirations [18].

F. Gap Analysis

Gap analysis constitutes a strategic management instrument deployed to systematically compare prevailing organizational conditions against defined target states. Within IT governance evaluation, this technique is applied to quantify the disparity between existing process capability and desired maturity levels, enabling institutions to identify specific dimensions requiring prioritized improvement investment. In the context of the present study, the benchmark target is established at Level 5 (Optimizing Process), which embodies the characteristics of continuous improvement culture, predictive control mechanisms, governance automation, and data-driven institutional management.

The analytical significance of gap analysis resides in its capacity to complement capability measurement by transforming diagnostic findings into actionable governance priorities. Capability scores alone characterize current performance without indicating the strategic distance remaining to reach defined improvement objectives. Recent scholarship has persuasively argued that the integration of capability measurement with systematic gap analysis generates substantially more practical institutional value than maturity assessment conducted in isolation, as this combined methodology translates evaluative findings into structured governance improvement roadmaps [19].

3. Methodology

This This study adopts a quantitative evaluative approach to assess the governance of e-learning services in a systematic and measurable manner. A quantitative design was selected because it allows data collected from respondents to be transformed into numerical indicators that represent the current condition of information technology governance. In addition, this approach supports statistical analysis and structured interpretation, thereby improving the reliability of the findings [20],[21].

The study is based on the COBIT 2019 framework, with a focus on the Deliver, Service, and Support (DSS) domain. This domain was selected because it addresses operational IT processes that directly affect the performance of e-learning services, including incident management, service continuity, service requests, security controls, and operational activities. In the context of higher education, these aspects are closely related to the quality of academic services and user experience.

This study applies an integrated evaluation approach consisting of three main stages: instrument validation, capability level measurement, and gap analysis. This approach enables the study not only to assess the current condition of governance processes but also to identify areas that require improvement.

A. Research Design

This This research adopted an evaluative cross-sectional design. Data were collected at a single point in time to capture respondents' perceptions regarding the current governance performance of e-learning services. Cross-sectional evaluation is considered appropriate for organizational governance studies because it enables efficient measurement of operational conditions without disrupting institutional processes.

The evaluative design focused on determining the capability level of governance processes based on COBIT 2019 indicators. The results were then compared with the ideal governance target Level 5 (Optimizing Process) to identify governance gaps and improvement priorities.

Conceptually, the research was implemented through five sequential phases:

1. Problem identification
2. Literature review and indicator mapping
3. Instrument development
4. Data collection and statistical testing
5. Capability and gap analysis followed by strategic recommendations

This structured design improves methodological transparency and enhances replicability for future studies.

B. Population and Sample

The population of this study consists of all users of the e-learning system within the higher education environment, including IT staff, lecturers, and students. This population represents key stakeholders involved in the utilization, management, and support of the e-learning platform.

Sampling was conducted using a purposive sampling technique, where respondents were selected based on predefined criteria. The inclusion criteria in this study are: (1) active users of the e-learning system for at least one academic semester, (2) direct involvement in academic or system operational activities, and (3) familiarity with e-learning service processes such as content access, teaching delivery, or system administration.

A total of 30 respondents were selected for this study. The sample size is considered appropriate for an evaluative study focusing on IT governance capability assessment, where the objective is to analyze process maturity rather than statistical generalization. Therefore, the emphasis is placed on respondent relevance and experience with the system rather than sample size magnitude.

The detailed distribution of respondents is presented in Table 1.

Table 1. Distribution of Respondents

Respondent Group	Number of Respondents	Percentage (%)	Role in E-Learning Governance
IT Staff	5	16.7%	System administration, service support, incident handling, and infrastructure management
Lecturers	10	33.3%	Academic service users, content delivery, assessment management, and learning process monitoring
Students	15	50.0%	Primary users of e-learning services and experience evaluators of system usability and reliability
Total		**30**	**100%**

C. Data Collection Techniques

Data were collected through the distribution of questionnaires developed based on indicators within the DSS domain of COBIT 2019. Each indicator was translated into statements that are easily understood by respondents.

The questionnaire utilizes a Likert scale ranging from 1 to 5, where each value represents the respondents' level of assessment regarding the current condition of the e-learning service. This scale was chosen because it effectively measures perceptions, attitudes, and user satisfaction quantitatively.

Additionally, the use of questionnaires enables efficient and structured data collection, thereby facilitating subsequent data processing and analysis [21].

D. Data Analysis Techniques

The collected data were analyzed through several stages, including:

1. Validity Testing

   Validity testing was conducted using item-total correlation analysis. Questionnaire items with correlation values above the acceptable threshold were considered valid.

2. Reliability Testing

   Reliability was assessed using Cronbach's Alpha. Values above 0.70 indicate satisfactory internal consistency.

3. Capability Level Measurement

   The mean score of each DSS subdomain was calculated based on respondents' Likert-scale responses. The obtained mean values were then mapped into COBIT 2019 capability levels to determine the maturity of each process.

   The capability level classification is defined as follows:

   - Level 0 = Incomplete Process (mean 0.00–0.49)
   - Level 1 = Performed Process (mean 0.50–1.49)
   - Level 2 = Managed Process (mean 1.50–2.49)
   - Level 3 = Established Process (mean 2.50–3.49)

- Level 4 = Predictable Process (mean 3.50–4.49)
- Level 5 = Optimizing Process (mean 4.50–5.00)

This classification enables the transformation of quantitative questionnaire results into standardized COBIT 2019 capability levels for further gap analysis.

4. Gap Analysis

   Gap analysis was conducted by comparing current capability levels with the target level (Level 5). The formula applied was:

$$Gap = Target\ Level - Current\ Level$$

   Higher gap values indicate stronger urgency for governance improvement.

5. Priority Mapping

   Subdomains with the largest gap scores were categorized as high-priority improvement areas. This step provides practical value beyond conventional maturity assessment.

   Process).

E. Research Flow

The research flow employed in this study is illustrated in Figure 1.

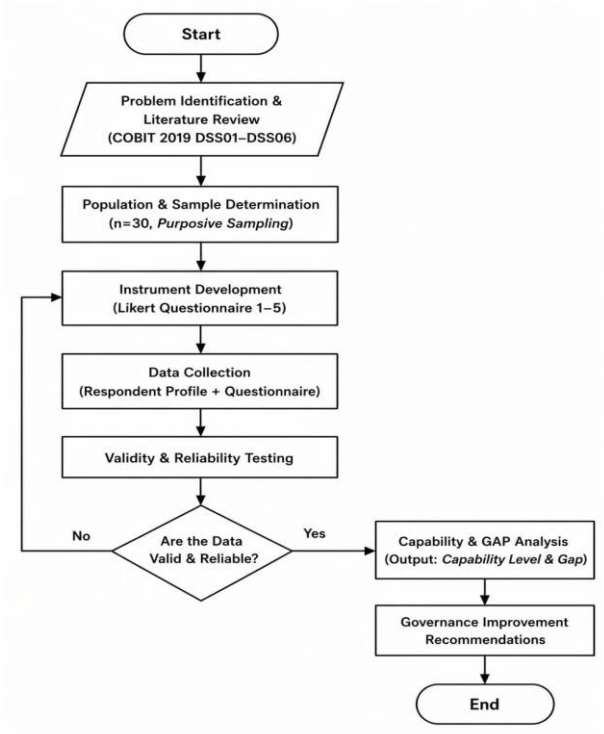

Figure 1. Research Flowchart

The diagram represents the research stages carried out in a sequential and systematic manner. The explanation of each stage is as follows:

1. Problem Identification

   This initial stage aims to understand the problems occurring in e-learning services, particularly those related to service quality and system governance.

2. Literature Review

   This stage involves examining theories and previous studies related to information technology governance and COBIT 2019 as the conceptual foundation of the research.

3. Sample Determination
   Respondents are selected based on predefined criteria using a purposive sampling technique.
4. Instrument Development
   A questionnaire is developed based on DSS domain indicators to align with the evaluation objectives.
5. Data Collection
   Questionnaires are distributed to respondents to obtain research data.
6. Validity and Reliability Testing
   The instrument is tested to ensure that the data obtained are valid and reliable.
7. Capability Level Analysis
   This stage measures the capability level of e-learning service governance.
8. Gap Analysis
   This stage identifies the gap between the current condition and the ideal condition.
9. Improvement Recommendations
   Strategic recommendations are formulated to enhance the quality of service governance.

4. Results and Discussion

This section presents the results of the evaluation of e-learning service governance based on the COBIT 2019 framework, particularly within the Deliver, Service, and Support (DSS) domain. The analysis aims to identify the current capability level, evaluate governance gaps, and provide a more interpretative understanding of the findings.

The analysis is structured into four stages: validity and reliability testing, capability level measurement, gap analysis, and discussion. This structure allows the study not only to describe governance conditions but also to interpret their implications in an organizational context.

A. Validity and Reliability Testing

Prior to the main analysis, the quality of the research instrument was assessed to ensure that it produces accurate and consistent data. Validity testing was conducted to determine whether each questionnaire item appropriately represents the measured construct, while reliability testing was used to evaluate the internal consistency of the responses.

This step is essential to reduce measurement bias and to ensure that the collected data reflects the actual condition of e-learning service governance. The results of the validity and reliability testing for each DSS subdomain are presented in Table 2.

Table 2. Validity and Reliability Test Results

Subdomain	Number of Items	r-Value (Min–Max)	r Table	Cronbach's Alpha	Description
DSS01	5	0.81 – 0.91	0,361	0.92	Valid & Reliable
DSS02	5	0.72 – 0.89	0,361	0.85	Valid & Reliable
DSS03	5	0.76 – 0.88	0,361	0.87	Valid & Reliable
DSS04	5	0.82 – 0.90	0,361	0.91	Valid & Reliable
DSS05	5	0.79 – 0.92	0,361	0.93	Valid & Reliable
DSS06	5	0.85 – 0.94	0,361	0.88	Valid & Reliable

Based on Table 2, all questionnaire items meet the validity criteria, as indicated by correlation values ranging from 0.72 to 0.94, which exceed the minimum threshold. This confirms that each item is capable of representing the intended construct within the DSS subdomains.

In terms of reliability, all subdomains show Cronbach's Alpha values between 0.85 and 0.93, which are well above the acceptable threshold of 0.70. These results indicate a high level of internal consistency, suggesting that the responses are stable and consistent across items within each construct.

Notably, the relatively high reliability values across all subdomains suggest that the instrument is robust and free from significant measurement error. This consistency strengthens the credibility of the subsequent analysis, particularly in assessing the capability level of e-learning service governance.

Therefore, the instrument can be considered both valid and reliable, and the data obtained are suitable for further analysis.

B. Capability Level Analysis

After confirming the validity and reliability of the instrument, the next step was to measure the capability level of each process within the DSS domain. This analysis aims to assess the maturity of IT governance processes and determine how effectively they are implemented within the organization. The capability level was calculated based on the mean score of responses for each subdomain. The results are presented in Table 3.

Table 3. Capability Level Results

Subdomain	Mean	Level
DSS01	3.53	Level 4 (Predictable Process)
DSS02	3.21	Level 3 (Established Process)
DSS03	3.21	Level 3 (Established Process)
DSS04	3.41	Level 3 (Established Process)
DSS05	3.51	Level 4 (Predictable Process)
DSS06	3.19	Level 3 (Established Process)
Average	3.34	**Level 3 (Established Process)**

Based on Table 3, the average capability score is 3.34, which corresponds to Level 3 (Established Process). This indicates that the governance of e-learning services has been implemented through standardized and documented procedures. At this level, governance activities are generally carried out consistently, showing that the organization has established a formal operational structure for managing e-learning services.

However, the results also show that the organization has not yet reached Level 5 (Optimizing Process), where processes are continuously improved through predictive controls and ongoing evaluation mechanisms. This suggests that although governance practices are already formalized, they are not yet supported by a systematic continuous improvement approach.

The variation in capability values across subdomains indicates that governance maturity is not evenly distributed. DSS01 and DSS05 achieved the highest scores, at 3.53 and 3.51, respectively, corresponding to Level 4 (Predictable Process). These results suggest that operational service management and security

management are relatively more mature compared to other governance areas. This condition may indicate that the organization prioritizes operational stability and data security, as these aspects directly influence the reliability and safety of e-learning services.

In contrast, DSS02, DSS03, DSS04, and DSS06 remain at Level 3, indicating that these processes are already established but have not yet incorporated predictive monitoring or continuous optimization mechanisms. This implies that functions such as incident management, problem resolution, service continuity, and business process control are still focused on routine implementation rather than proactive improvement.

To provide a clearer overview of the capability distribution, the results are visualized in Figure 2.

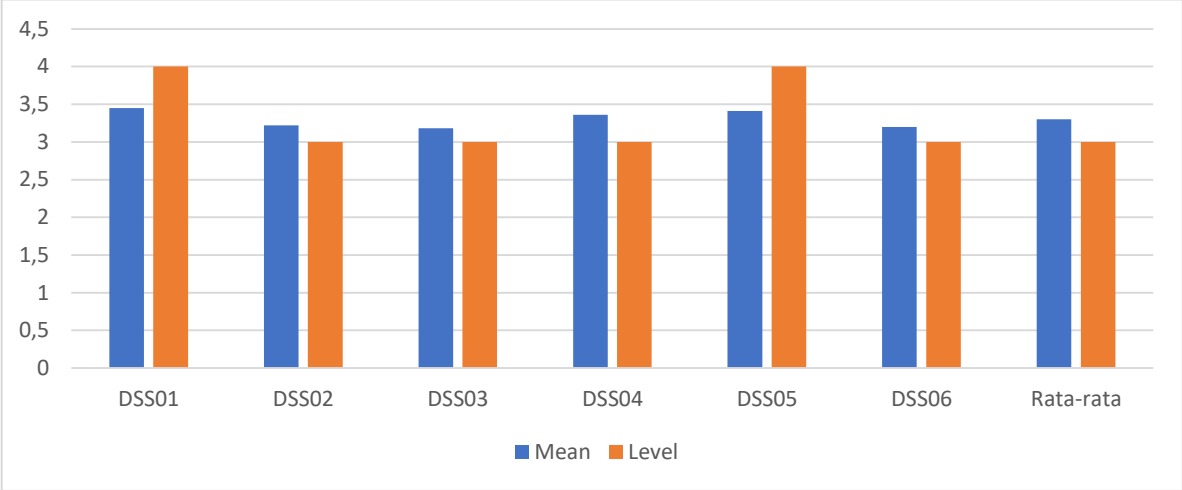

Figure 2. Capability Level Diagram

Figure 2 shows that most subdomains are concentrated at Level 3, with only two subdomains reaching Level 4. This pattern indicates that while the organization has succeeded in formalizing governance procedures, the transition toward optimized governance has not yet occurred.

This finding suggests that the organization's governance practices are still primarily operational in nature. The absence of broader Level 4 and Level 5 attainment indicates limited implementation of automation, predictive monitoring, and continuous evaluation mechanisms. Without these elements, governance processes may remain stable but less adaptive to emerging service challenges.

These findings are consistent with previous studies, which report that many higher education institutions tend to remain at Level 3 due to limited resources and the incomplete adoption of continuous governance improvement practices [22]. This indicates that achieving higher capability levels requires not only procedural consistency but also the integration of performance monitoring and strategic optimization mechanisms.

C. Gap Analysis Results

To further evaluate the performance of IT governance, a gap analysis was conducted to compare the current capability level with the expected Level 5 (Optimizing Process) based on the COBIT 2019 framework. This analysis aims to identify the extent to which existing practices deviate from the ideal condition and to determine priority areas for improvement.

The results of the gap analysis for each DSS subdomain are presented in Table 4.

Table 4. Gap Analysis Results

Subdomain	Current	Target	Gap	Priority Level
DSS01	4	5	1	Low
DSS02	3	5	2	High
DSS03	3	5	2	High
DSS04	3	5	2	High
DSS05	4	5	1	Low
DSS06	3	5	2	High

Based on Table 4, most subdomains exhibit a gap value of 2, indicating a substantial difference between the current capability level and the expected Level 5. This finding suggests that although governance processes have been implemented and standardized, they have not yet been optimized through continuous improvement and predictive management practices.

A more detailed examination shows that the largest gaps are found in DSS02 (Manage Service Requests and Incidents), DSS03 (Manage Problems), DSS04 (Manage Continuity), and DSS06 (Manage Business Process Controls). These subdomains represent critical operational areas that directly influence service reliability and organizational resilience.

The presence of higher gap values in these areas indicates that governance practices are still predominantly reactive. For instance, incident management processes may focus on resolving issues after they occur, rather than preventing them through early detection and predictive monitoring. Similarly, problem management may lack structured root cause analysis, which can lead to recurring operational disruptions.

In contrast, DSS01 and DSS05 show smaller gap values (gap = 1), indicating relatively better alignment with the expected capability level. This suggests that operational management and security processes are more mature and may already incorporate elements of monitoring and control. However, these processes still require further development to achieve full optimization.

To provide a clearer overview of the gap distribution, the results are visualized in Figure 3.

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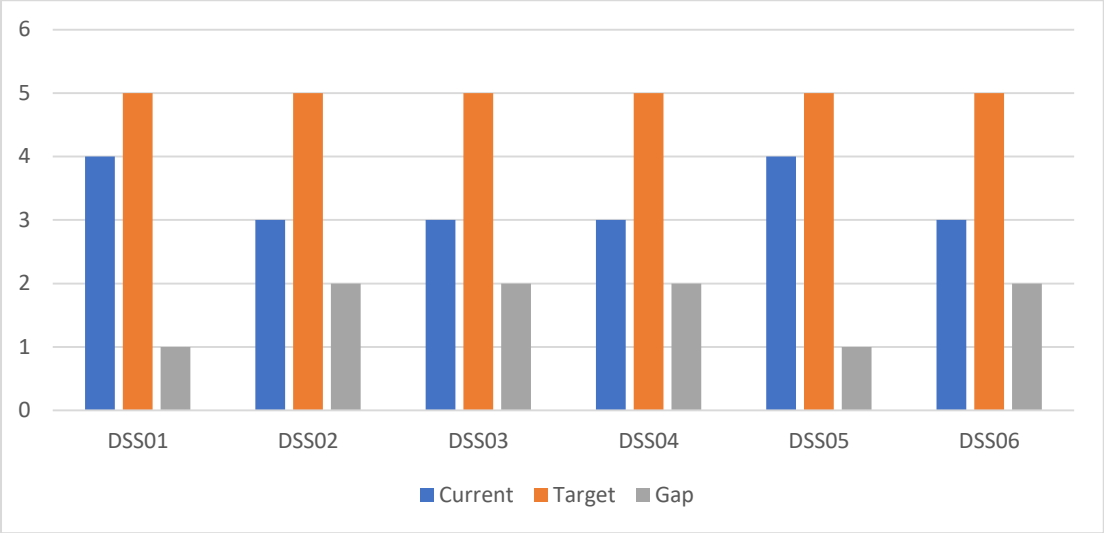

Figure 3. Gap Analysis Diagram

Figure 3 shows that all subdomains remain below the target level, confirming that improvements are required across all areas. The relatively consistent gap pattern also indicates that governance challenges are systemic rather than isolated, suggesting that improvement efforts should be implemented in an integrated manner rather than focusing on individual processes only.

From an analytical perspective, the existence of these gaps reflects the organization's current position at a transitional stage between standardized and optimized governance. According to ISACA (2022), achieving Level 5 requires the integration of continuous improvement practices, performance monitoring, and data-driven decision-making. The absence of these elements explains why the identified gaps persist across multiple subdomains.

These findings are also consistent with previous studies in higher education contexts, which report that organizations often face challenges in implementing proactive governance due to limited technological integration and insufficient evaluation mechanisms. Therefore, addressing these gaps requires not only procedural improvements but also the adoption of advanced governance practices, such as automation, predictive analytics, and continuous performance assessment.

D. Discussion

The findings generated by this evaluation indicate that e-learning service governance at the studied institution has attained a moderate maturity level, as reflected by the mean capability score of 3.34 corresponding to Level 3 (Established Process). At this governance stage, institutional processes are adequately defined, systematically documented, and implemented with reasonable consistency, confirming the existence of a formalized operational governance foundation. However, the results simultaneously reveal that the governance system has not yet progressed toward an optimized state, as evidenced by persistent gap values particularly concentrated in DSS02, DSS03, DSS04, and DSS06 [23].

The elevated performance registered by DSS01 and DSS05 reflects a governance orientation that prioritizes operational stability and information security — dimensions that directly condition institutional credibility and service continuity. This prioritization pattern aligns with documented tendencies in IT governance literature, where system stability and data protection consistently receive more structured control

and monitoring investment relative to other governance dimensions [16],[12]. By contrast, the sustained deficiencies identified in incident management, problem resolution, service continuity, and business process control confirm that these areas remain governed through reactive rather than anticipatory mechanisms.

These outcomes are consistent with the principles articulated in ISACA's foundational documentation, which affirms that advancing beyond established governance processes toward optimizing capability requires systematic integration of continuous improvement practices and robust performance monitoring. The observed stagnation at intermediate maturity levels also resonates with broader empirical findings demonstrating that organizations managing complex digital services in multi-stakeholder environments frequently encounter structural barriers to governance optimization, particularly when accountability is distributed across institutional hierarchies [24].

From a practical governance improvement perspective, the findings underscore the necessity for the institution to implement integrated monitoring infrastructure, cultivate structured evaluation cycles, and develop institutional capacity for data-driven decision-making across all governance domains. Research examining IT governance in university contexts affirms that such transformation additionally requires sustained executive sponsorship, clearly delineated role boundaries between governance and management structures, and the systematic cultivation of shared governance understanding among all relevant stakeholders. Furthermore, the engagement of IT governance functions with academic and professional development communities has been demonstrated to substantially strengthen governance implementation capacity, particularly in resource-constrained institutional settings [25].

5. Conclusion

This The main findings of this study can be summarized as follows:

1. Evaluation findings establish that e-learning service governance at the studied institution has attained a mean capability level of 3.34, situating institutional governance at Level 3 (Established Process). This classification confirms that governance procedures are documented, formalized, and implemented with reasonable operational consistency.
2. Notwithstanding this achievement, the institution has not yet attained the optimizing governance stage represented by Level 5. The integration of continuous improvement cycles, predictive monitoring mechanisms, and data-informed decision-making processes remains insufficiently developed to support transition to higher capability levels.
3. Gap analysis reveals that the majority of DSS subdomains exhibit a two-level deviation from the target Level 5, confirming the existence of a substantial and consequential gap between prevailing governance practices and aspirational optimization benchmarks.
4. The most pronounced governance deficiencies are concentrated in incident management, problem resolution, service continuity, and business process oversight — domains characterized by reactive operational responses rather than proactive governance strategies.
5. Comparative subdomain performance indicates that operational management and security governance functions demonstrate relatively superior maturity, reflecting institutional prioritization of system stability and data protection as foundational governance concerns.

6. The collective evidence points unequivocally toward the necessity for a fundamental shift in governance orientation — from reactive operational management toward proactive, anticipatory governance grounded in continuous monitoring, structured evaluation, and evidence-based institutional decision-making.
7. The findings yield actionable insights for institutional leaders and governance practitioners seeking to identify priority domains for e-learning governance investment and improvement.
8. It is acknowledged that the study's cross-sectional design and reliance on respondent perceptions at a single temporal point constrain the capacity to capture longitudinal governance dynamics, representing a limitation for future longitudinal investigations to address.

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