IT Governance Audit Using COBIT 5: A Case Study of Banyumas Regency Regional Library

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Abstract. This study evaluates information technology (IT) governance at the Banyumas Regency Regional Library using the COBIT 5 framework, motivated by recurring concerns related to IT service responsiveness, service continuity readiness, risk governance, and resource optimization that may affect the reliability of public library services. A descriptive case study approach was applied. Data were collected through a literature review, on-site observations, structured interviews, and questionnaires administered to 16 respondents representing library management, librarians, and IT staff. The assessment focused on four COBIT 5 processes: DSS02 (Manage Service Requests and Incidents), DSS04 (Manage Continuity), EDM03 (Ensure Risk Optimization), and EDM04 (Ensure Resource Optimization). The results indicate an overall mean capability score of 4.06, corresponding to a predictable process level, where practices are defined, measured, and implemented consistently. DSS02 achieved the highest capability score (4.24), suggesting that incident and service request handling is comparatively well established. In contrast, DSS04 recorded the lowest score (3.95), indicating the most substantial weaknesses are concentrated in disaster recovery readiness and continuity management. These findings provide an empirical basis for prioritizing improvements in Disaster Recovery Center preparedness, strengthening integrated IT risk governance, and enhancing the resilience and dependability of technology-enabled library services.

Keywords: IT governance; COBIT 5; capability assessment; incident management; business continuity

1. INTRODUCTION

In general, an audit is a structured activity to examine and evaluate information or organizational activities to ensure that processes, controls, and outcomes operate according to stipulated provisions. Audits are commonly conducted to ensure the reliability of information, assess efficiency and effectiveness, and generate recommendations that strengthen performance and accountability within an organization [1], [2]. In the context of information technology (IT), audits play a crucial role in verifying whether IT systems, processes, and infrastructure are managed effectively, efficiently, securely, and aligned with organizational objectives [3], [4]. Through IT audits, organizations can identify weaknesses in controls and operations, reduce the risk of service disruption, and ensure that IT investments provide measurable value and support organizational performance [5], [6].

The Banyumas Regency Library was established in 1996 and experienced institutional restructuring in 2008 through a merger that formed the Regional Library and Archives Office (Perpusda), based on Local Regulation No. 12 of 2008 [7]. As a public institution, the library supports education and science by providing open access to information and facilities such as reading rooms, book lending, free internet (Wi-Fi), and e-book services [7]. As user expectations shift toward fast and dependable digital services, the library's operational continuity and service credibility increasingly depend on how well its technology services are governed, not merely on whether the applications are available.

Based on observations and interviews with key stakeholders—including the head of the library department, librarians, and IT staff—the library's service system is generally perceived as functioning properly and has adopted relevant IT developments required by library managers. However, operational functionality alone does not guarantee that governance controls, risk handling, and service assurance are consistently implemented. Library automation is designed to support administrative processes, improve data accuracy, and help users search for resources anytime and anywhere [8], [9]. Therefore, the evaluation of IT should extend beyond "systems running" toward "services being controlled, measurable, resilient, and aligned with priorities" [3], [5].

The Banyumas Regency Library already utilizes multiple technology-based services, such as the Online Public Access Catalog (OPAC), e-book services, and the IpusdaBanyumas application for member borrowing and returns. Nevertheless, several governance-relevant issues were identified that may reduce service reliability and organizational readiness. First, service requests and IT incidents from the internal help desk, service portal, and email are not yet handled optimally in terms of response speed and resolution effectiveness. Second, the disaster recovery center (DRC), located approximately 1.7 km from the main office and implemented using a mirroring system, cannot immediately function properly when disruption occurs at the central system, raising continuity and recovery concerns. Third, supervision and maintenance of IT resources remain suboptimal because they are handled by other work units, limiting focused resource optimization within the library. Fourth, integrated risk management for automation services has not been implemented; consequently, there is no defined risk appetite that clarifies the level of risk the library is willing to accept while pursuing its objectives.

These findings highlight a clear gap between service availability (systems exist and are used) and service assurance (services are governed, monitored, measured, and improved systematically). Addressing this gap requires an IT governance approach that can assess not only operational practices but also governance alignment, risk, and value delivery. Several standards and frameworks can be considered, including ITIL (Information Technology Infrastructure Library), ISO/IEC 27001, and COBIT 5 [10],[11],[12]. This study adopts COBIT 5 because it integrates organizational governance, risk management, compliance, and value creation—dimensions that are essential for public service institutions [13],[14]. In contrast, ITIL and ISO/IEC tend to emphasize service management and information security management, respectively, without offering as comprehensive a capability measurement structure for governance alignment and accountability needs [15],[16].

Accordingly, this study aims to assess the current capability level of IT governance and service support practices at the Banyumas Regency Library using the COBIT 5 capability measurement approach. The assessment scope focuses on COBIT 5 domains EDM (Evaluate, Direct, and Monitor) and DSS (Deliver, Service and Support), specifically processes EDM03, EDM04, DSS02, and DSS04, because they correspond directly to the library's key issues—risk-oriented governance, value and resource oversight,

incident/service request handling, and continuity support. The expected contribution (novelty) is to provide (1) a governance-focused capability baseline for a regional public library environment where digital services are increasingly critical yet governance maturity is rarely measured systematically, and (2) actionable recommendations derived from capability gaps to strengthen incident handling, continuity preparedness, resource supervision, and integrated risk governance, thereby improving the reliability, accountability, and sustainability of technology-based library services.

2.   METHODS

This study uses a descriptive case study approach to systematically describe the current condition of IT governance and IT service management practices in the Banyumas Regency Regional Library. The methodology follows the sequential flow shown in Figure 1, starting from data collection and ending with IT service management (ITSM) improvement recommendations. As illustrated in Figure 1, the research procedure consists of: (1) data collection including: literature review, observation, interviews, and questionnaire, (2) analysis of findings, (3) mapping library service issues to COBIT 5 domains (EDM and DSS), (4) data processing, (5) capability level calculation and gap analysis, and (6) formulation of recommendations.
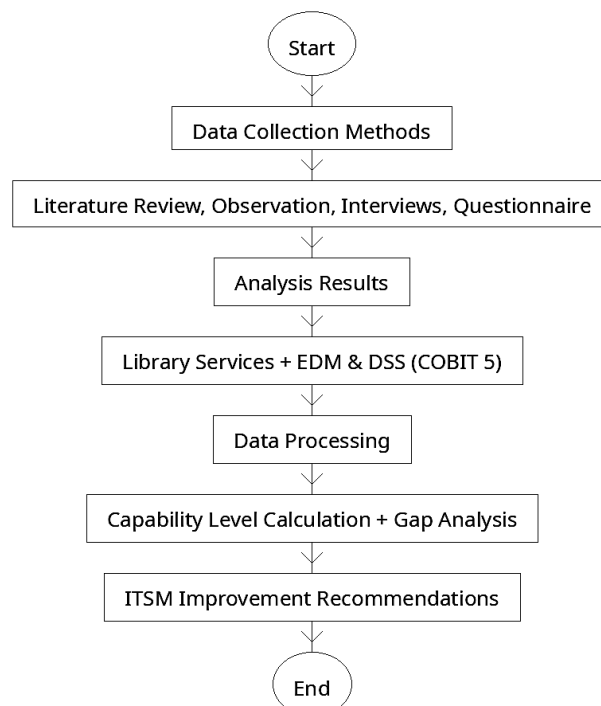

Figure 1. Research methodology flow based on the COBIT 5 framework

2.1. Data Collection Methods

Data collection is essential for identifying the actual problems faced by the organization and ensuring the assessment scope is aligned with the study objectives. In accordance with the flow in Figure 1, this stage includes: literature review, observation, interviews, and questionnaire distribution [17]. These techniques were applied to gather both qualitative and quantitative evidence regarding IT governance and service support practices at the library.

1) Literature review was conducted to understand IT governance concepts, the COBIT 5 approach, capability assessment, and previous relevant studies, supporting the selection of processes and interpretation of results [17].

2) Observation was carried out at the research site to understand the real operational context of the library's services and the use of IT-based applications (e.g., OPAC and membership services), including how incidents and service requests are handled in practice [17].

3) Interviews were conducted with key stakeholders (e.g., librarians, IT staff, and relevant managerial personnel) to clarify operational issues, confirm constraints, and validate whether documented procedures match actual practice [17].

4) Questionnaires were distributed to respondents involved in IT-related operations and service support to capture structured assessments of current practices against COBIT 5 indicators [17].

2.2. Questionnaire Instrument Design and Validation

The questionnaire instrument was developed using the COBIT 5 Process Assessment Model (PAM) issued by ISACA [18]. Indicators were derived from the management practices and capability attributes of the selected COBIT 5 processes—DSS02, DSS04, EDM03, and EDM04—so that each question directly corresponds to the governance objectives being evaluated. Each indicator was mapped to its related COBIT 5 process to maintain alignment between measurement items and the scope of assessment [18].

To improve instrument quality before deployment, the questionnaire was reviewed through expert judgment involving IT staff and academic supervisors to ensure clarity, relevance, and suitability for the library context. A limited pretest was then conducted to ensure respondents understood each item consistently and to reduce ambiguity, thereby improving the reliability and interpretability of the collected responses.

2.3. Analysis Results and Mapping to COBIT 5 (Library Services + EDM & DSS)

Following the flow in Figure 1, the qualitative and quantitative data obtained from literature, observation, interviews, and questionnaires were analyzed to identify the main issues affecting library services. The results of this analysis were then used to map library service challenges to the most relevant COBIT 5 governance and management processes.

This study focuses on COBIT 5 domains EDM (Evaluate, Direct, and Monitor) and DSS (Deliver, Service and Support) because the observed issues relate strongly to governance oversight, risk, service delivery, incident handling, and continuity. Specifically, EDM03, EDM04, DSS02, and DSS04 were selected because they align with the library's key needs: risk-oriented governance, value/resource oversight, incident and service request handling, and continuity/recovery support [19],[20]. This mapping ensures the assessment evaluates not only whether systems operate, but also whether service assurance mechanisms—controls, responsibilities, monitoring, and improvement practices—are implemented at an adequate capability level.

2.4. Data Processing: Capability Level Calculation and Gap Analysis

In line with Figure 1, the next stage is data processing to calculate capability levels and identify gaps. Respondents evaluated each questionnaire indicator using a five-point Likert scale, where 1 indicates the practice is not implemented and 5 indicates the practice is fully implemented and continuously optimized. The capability score for each COBIT 5 process was calculated by averaging Likert responses across indicators and respondents within the same process. The resulting mean values were then mapped to COBIT 5 capability levels (from level 0/Incompleted to level 5/Optimizing) based on the COBIT 5 Process Assessment Model [19],[20].

After capability levels were obtained, a gap analysis was conducted by comparing the current capability level against the target capability level. Tables were compiled to present actual values, target values, and the resulting gaps, enabling clear identification of priority areas for improvement [21]. This stage connects measurement results to preliminary conclusions regarding the condition of IT governance and service support capability within the library.

In this study, the target capability level for the assessed processes was set at level 5 (Optimizing) as an ideal benchmark consistent with continuous improvement expectations in governance practices [19],[20]. This benchmark supports systematic identification of capability gaps, especially in critical areas such as incident handling and service continuity.

2.5.   ITSM Improvement Recommendations

As the final step in Figure 1, recommendations were formulated based on the capability assessment results and the identified gaps. The recommendations aim to improve IT governance and service support performance so the organization can move toward higher capability levels [22]. Proposed improvements include developing IT standard operating procedures (SOP), enhancing IT-related human resource competencies, and strengthening IT policies and strategies aligned with the organization's vision and mission [22]. These recommendations are intended to serve as practical guidance for library management to optimize IT utilization and improve the quality, reliability, and accountability of public services.

3.   RESULT AND DISCUSSION

3.1.   Enterprise Goals Identification

Enterprise goals were identified by mapping the library's problem context to the COBIT 5 Enterprise Goals and examining how each goal relates to the governance objectives of benefit realization, risk optimization, and resource optimization. The mapping results are presented in Table 1, where P (Primary) indicates a strong and direct relationship between an enterprise goal and a governance objective, while S (Secondary) indicates a supporting relationship [23]. This step is reported as a results component because it produces a set of prioritized organizational goals that directly guide the subsequent selection of COBIT 5 processes and the capability assessment scope.

The mapping in Table 1 shows that the enterprise goals most relevant to the Banyumas Regency Regional Library are those that consistently appear as Primary (P) across the governance objectives and that align with the service and governance challenges observed in the organization. The results indicate a clear concentration around goals related to risk and compliance, service orientation and availability, operational process

performance, change management, productivity, and workforce capability. In other words, the dominant governance needs are not limited to "making systems run," but extend to ensuring that services are controlled, resilient, compliant, and continuously improved in a measurable way [23].

Table 1. COBIT 5 Enterprise Goals

BSC Dimensions	Company Objectives		Relationship with Governance Objectives		
			Benefit Realization	Risk Optimization	Resource Optimization
Financial	1	Value for stakeholders from business investments			
	2	Competitive product and service portfolio			
	3	Business risk management (asset protection)	P	P	P
	4	Compliance with external laws and regulations	P	P	P
	5	Financial Transparency			
Customer	6	Customer-oriented service culture	P	P	P
	7	Business service continuity and availability	P	P	P
	8	Flexible response to an ever-changing business environment			
	9	Information-based strategic decision making			

BSC Dimensions	Company Objectives		Relationship with Governance Objectives		
			Benefit Realization	Risk Optimization	Resource Optimization
	10	Service provision cost optimization			
Internal	11	Business process function optimization	P	P	P
	12	Business process cost optimization			
	13	Managed business change programs	P	P	P
	14	Operational and employee productivity	P	P	P
	15	Compliance with internal policies	P	P	P
Learning and Growth	16	Skilled and motivated people	P	P	P
	17	Culture of product and business innovation			

Description: P = Primary; S = Secondary

From this mapping, nine enterprise goals are prioritized as the most relevant to the study background: business risk management (asset protection) and compliance with external laws and regulations reflect the library's exposure to operational and governance risks; customer-oriented service culture and business service continuity and availability reflect the service quality and resilience expectations of a public institution; and optimization of business process functions, managed business change programs, and operational and employee productivity highlight the need for standardized, efficient, and controlled operational practices that can sustain technology-based services. In addition, compliance with internal policies and a skilled and motivated workforce underscore the importance of internal control discipline and human-resource readiness to support consistent service delivery and governance execution [23].

These prioritized enterprise goals provide an evidence-based foundation for narrowing the governance assessment to processes most directly associated with the library's challenges, particularly those related to risk oversight, incident/service request handling, continuity support, resource supervision, and performance improvement. Consequently, the results of this enterprise goal identification serve as the justification for the next stage—mapping and assessing relevant COBIT 5 processes—so that the capability measurement and gap analysis remain aligned with organizational priorities and public-service accountability requirements [23].

3.2. IT-Related Goals Identification

IT-related goals were identified by cascading the prioritized Enterprise Goals (Section 3.1) into the COBIT 5 IT-Related Goals using the standard goal-cascade linkage provided in the COBIT 5 framework. This step ensures that the IT governance assessment remains anchored to organizational priorities and that the selected IT objectives directly support the enterprise-level expectations. The mapping results are summarized in Table 2, which shows the relationships between IT-related goals and the enterprise goals considered most relevant to the Banyumas Regency Regional Library (Enterprise Goals 3, 4, 6, 7, 11, 13, 14, 15, and 16). In Table 2, a Primary (P) relationship indicates that an IT-related goal is strongly and directly associated with an enterprise goal, while a Secondary (S) relationship indicates a supporting association [24].

Table 2 demonstrates that the selected enterprise goals are linked to multiple IT-related goals across the IT Balanced Scorecard dimensions (Financial, Customer, Internal, and Learning & Growth). Notably, many linkages appear as Primary (P), indicating that achieving the library's priority enterprise goals—such as service continuity, risk management, compliance, process optimization, productivity, and workforce capability—requires strong enabling conditions at the IT level. This mapping result is important because it confirms that the library's challenges are not isolated technical issues; rather, they are governance-relevant concerns that require coordinated IT objectives spanning compliance, risk, agility, resource capability, and service assurance [24].

Table 2. IT-Related Goals

IT BSC Dimensions		Objectives Related to Information and Technology	Company Objectives								
			3	4	6	7	11	13	14	15	16
Financial	1	Stakeholder value of business investments									
	2	Portofolio of competitive products and service	P	P	P	P	P	P	P	P	P
	3	Manage business risk (safeguarding of assets)									
	4	Compliance with external laws and regulations	P	P	P	P	P	P	P	P	P
	5	Financial transparency									
Customer	6	Customer-oriented service culture									
	7	Business service continuity and availability									
	8	Agile responses to a changing business environment	P	P	P	P	P	P	P	P	P
	9	Information-based strategic decision making	P	P	P	P	P	P	P	P	P
	10	Optimization of service delivery costs	P	P	P	P	P	P	P	P	P
Internal	11	Optimization of business process functionality	P	P	P	P	P	P	P	P	P

IT BSC Dimensions		Objectives Related to Information and Technology	Company Objectives								
			3	4	6	7	11	13	14	15	16
	12	Optimization of business process costs									
	13	Managed business change programmes									
	14	Operational and staff productivity									
	15	Compliance with internal policies	P	P	P	P	P	P	P	P	P
Learning and Growth	16	Skilled and motivated people	P	P	P	P	P	P	P	P	P
	17	Product and business innovation culture	P	P	P	P	P	P	P	P	P

Description: P = Primary; S = Secondary

Based on the relationship strength shown in Table 2, nine IT-related goals were prioritized because they align most consistently with the selected enterprise goals and reflect the library's governance and service context. These prioritized IT-related goals include: (a) IT compliance and support for business compliance with external regulations and laws; (b) management of IT-related business risks; (c) adequate use of applications, information, and technology solutions; (d) IT agility; (e) information security, processing infrastructure, and applications; (f) optimization of IT assets, resources, and capabilities; (g) IT compliance with internal policies; (h) competent and motivated business and IT workforce; and (i) governance, expertise, and initiatives for business innovation [24]. Collectively, these goals indicate that improvement priorities for the library should focus on strengthening governance discipline (risk and compliance), improving reliability and resilience of IT-supported services (security and continuity enablers), and ensuring sustainable operational performance through capable resources and structured innovation support [24].

3.3. Identification of COBIT 5 Domains

The results of the IT-Related Goals mapping indicate that the library's priority issues are concentrated in two complementary areas: (i) governance-level needs, such as ensuring risk and resource optimization, and (ii) operational service management needs, such as incident handling and service continuity. In the COBIT 5 structure, these needs are represented most directly by the EDM (Evaluate, Direct, and Monitor) domain for governance oversight and the DSS (Deliver, Service and Support) domain for service delivery and operational support. Therefore, this study focuses on the EDM and DSS domains because they provide the most relevant lens for evaluating how well the library governs and supports its IT-enabled services, particularly with respect to reliability, continuity, responsiveness, and control.

3.4. COBIT 5 Process Identification

Following the alignment of enterprise goals and IT-related goals, the next result is the identification of COBIT 5 processes that most strongly support these goals. The mapping was performed by referring to the COBIT 5 Process Reference Model, ensuring that the selected processes reflect the library's strategic objectives and the practical governance challenges identified in the case context. The resulting process mapping is presented in Table 3, where P (Primary) indicates a strong relationship between each process and the corresponding IT-related goals.

Table 3. COBIT 5 Framework Process

Process	Process Name	IT-Related Goals								
		2	4	8	9	10	11	15	16	17
DSS02	Manage Service Request and Incidents	P	P	P	P	P	P	P	P	P
DSS04	Manage Continuity	P	P	P	P	P	P	P	P	P
EDM03	Ensure Risk Optimisation	P	P	P	P	P	P	P	P	P
EDM04	Ensure Resource Optimisation	P	P	P	P	P	P	P	P	P

Description: P = Primary; S = Secondary

As shown in Table 3, DSS02, DSS04, EDM03, and EDM04 demonstrate a consistently strong (Primary) contribution to the prioritized IT-related goals. This finding confirms that the library's improvement priorities require attention to both operational and governance dimensions. DSS02 is critical for strengthening responsiveness and control in handling

Vol. 8, No. 1, February 2026

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service requests and IT incidents across multiple channels. DSS04 directly addresses service continuity needs, which is particularly relevant given the continuity and recovery constraints identified in the library environment. At the governance level, EDM03 emphasizes risk optimization, which is essential when risk management practices and risk appetite are not yet integrated. EDM04 addresses resource optimization, aligning with concerns about supervision, maintenance responsibilities, and the effective allocation of IT resources. Collectively, these processes form the core assessment scope because they represent the strongest leverage points for improving service assurance and governance performance in line with the mapped organizational goals.

3.5.   Determining the Capability Level

Capability level determination was conducted through a structured assessment using questionnaires distributed to respondents holding strategic and operational roles in IT governance and service delivery at the Banyumas Regency Regional Library. Respondents included the Head of the Library, Librarians, and IT Staff who are directly involved in operating, supporting, and maintaining the library's information systems. Capability assessment followed the COBIT 5 capability scale, ranging from level 0 (Incomplete) to level 5 (Optimizing), to provide a standardized measurement of how consistently and effectively each process is implemented.

For each assessed process—DSS02, DSS04, EDM03, and EDM04—responses were compiled and processed by calculating the average score of all indicators within the respective process. The resulting mean scores were then mapped to the corresponding COBIT 5 capability levels to determine the library's current capability position for each process. This approach produces a measurable baseline that supports comparison against the target capability level and enables a clear identification of capability gaps. By quantifying the current capability level and comparing it with the intended target, the assessment provides a structured basis for prioritizing improvements and formulating recommendations that are directly tied to governance and service management needs.

3.6.   Capability Level Calculation

To ensure traceability of responses, each questionnaire was coded using the respondent sequence shown in Table 4. The respondents represent key roles involved in governing, operating, and supporting IT-enabled library services, consisting of one Head of Library

Division, ten librarians, and five IT staff. This composition provides a balanced view between managerial oversight, day-to-day service execution, and technical operation/support.

Table 4. Respondent Number

Respondent	Position
1	Head of Library Division
2	Librarian 1
3	Librarian 2
4	Librarian 3
5	Librarian 4
6	Librarian 5
7	Librarian 6
8	Librarian 7
9	Librarian 8
10	Librarian 9
11	Librarian 10
12	IT Staff 1
13	IT Staff 2
14	IT Staff 3
15	IT Staff 4
16	IT Staff 5

Job Description:

a. Head of Library Division as the person in charge of managing library services.

b. Librarian as the operational implementer of services and information management.

c. IT staff who play a role in managing, maintaining, and supporting the library information system.

The questionnaire results were processed by indicator and grouped into the predetermined COBIT 5 sub-domains (DSS02, DSS04, EDM03, and EDM04). Each indicator description follows the COBIT 5 Process Assessment Model and is adapted to the context of this study, ensuring that the measured practices remain consistent with ISACA guidance while reflecting library operations [25]. The tables below present respondent

scores per indicator and the calculated mean values, which form the basis for determining each process's capability level.

Based on Table 5, DSS02 obtained an average capability score of 4.24, indicating that service request and incident management practices are largely implemented in a consistent and measurable manner. Across indicators DSS02.01–DSS02.05, the mean values are clustered in a relatively narrow band (approximately 4.13–4.44), suggesting that respondents generally perceive the incident/request lifecycle—classification, verification, investigation, resolution, and recovery—as functioning in an established and repeatable way. Although a small number of low scores (e.g., a minimum value of 2) appear in several indicators, the overall pattern points to a process that is already well embedded across operational units. Practically, this implies that the library has a foundation of procedures and routines for handling user-facing IT issues; however, the existence of lower outlier scores also indicates that responsiveness and escalation effectiveness may still vary depending on channel, workload, or the specific unit involved.

Table 5. Calculation of DSS02 Questionnaire Results

Description	DSS02.01 Establish a scheme, classification criteria, and priority for service request incidents
	DSS02.02 Recording, classification, and prioritization of incidents
	DSS02.03 Verification, approval, and service requests
	DSS02.04 Describe the investigation of an incident
	DSS02.05 Resolve and recover incidents

Management Practices	Respondents																Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DSS02.01	5	4	4	4	5	5	4	4	2	4	3	5	5	4	4	4	4.13
DSS02.02	5	4	4	5	5	5	4	4	2	4	3	5	5	4	4	4	4.19
DSS02.03	5	4	4	5	5	4	4	4	4	4	3	5	5	3	5	4	4.25
DSS02.04	5	4	4	4	4	4	4	4	4	4	3	5	5	4	5	4	4.19
DSS02.05	5	5	4	5	5	5	4	4	4	4	4	4	5	4	5	4	4.44
Average Capability Score DSS02																	4.24

As shown in Table 6, DSS04 achieved an average capability score of 3.95, making it the lowest among the assessed processes. Unlike DSS02, the distribution of scores in DSS04 shows greater variability, with minimum ratings reaching 1–2 in several indicators (e.g., DSS04.01, DSS04.04, DSS04.06) while maximum ratings reach 5. This spread suggests that continuity practices are not uniformly understood and implemented across stakeholder groups. Some respondents perceive continuity planning, readiness assessment, and competency development as well established, while others indicate limited implementation, which may reflect uneven documentation, inconsistent execution, or the absence of routine testing and refinement activities across units.

Substantively, the DSS04 outcome signals that the library has initiated continuity management (planning and documentation exist), but the practices are not yet sufficiently stable to ensure consistent preparedness for major disruptions. This finding aligns with the initial problem context: recovery capability is constrained when the Disaster Recovery Center (DRC) cannot take over immediately as expected, and continuity exercises and recovery testing are still limited. In addition, the variability in responses indicates that roles, responsibilities, and continuity competencies may not be formally institutionalized, meaning continuity readiness can still depend heavily on certain individuals rather than standardized and routinely exercised procedures.

Table 6. Calculation of DSS04 Questionnaire Results

Description	DSS04.01 Assessing business process services and stakeholders
	DSS04.02 Identifying scenarios, recovery, and prevention of significant disruptions
	DSS04.03 Assessing readiness, completeness, documenting, and managing operations
	DSS04.04 Testing, evaluating, and refining risks
	DSS04.05 Reviewing and updating in response to changes
	DSS04.06 Business continuity competencies and skills

Management Practices	Respondents																Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DSS04.01	5	4	4	5	4	5	4	4	2	4	3	4	4	4	4	4	3.94
DSS04.02	5	5	4	5	4	5	4	4	4	4	3	5	5	4	4	4	4.25

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Description	DSS04.01 Assessing business process services and stakeholders
	DSS04.02 Identifying scenarios, recovery, and prevention of significant disruptions
	DSS04.03 Assessing readiness, completeness, documenting, and managing operations
	DSS04.04 Testing, evaluating, and refining risks
	DSS04.05 Reviewing and updating in response to changes
	DSS04.06 Business continuity competencies and skills

Management Practices	Respondents																Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DSS04.03	5	4	4	5	4	4	3	4	4	4	4	4	4	3	4	4	3.88
DSS04.04	5	4	4	4	5	5	3	4	2	4	3	5	5	3	3	4	3.69
DSS04.05	5	4	4	5	5	5	4	4	2	4	3	5	5	3	4	4	4.06
DSS04.06	5	4	4	5	4	5	3	4	1	4	3	5	5	3	5	4	3.88
Average Capability Score DSS04																	3.95

Table 7 indicates that EDM03 obtained an average capability score of 4.06, reflecting that risk governance practices are generally present and performed in a structured manner. Scores range from 2 to 5, indicating moderate differences in how risk governance is perceived and applied across respondents. Higher ratings suggest that governance-level risk oversight and direction are visible to managerial stakeholders, while lower ratings point to weaker operational-level formalization—particularly regarding risk appetite definition, consistent risk reporting, and routine monitoring mechanisms that are understood across all units. Overall, this result implies that risk governance is functioning, but would benefit from stronger institution-wide alignment so that risk management becomes more consistently embedded in daily service operations rather than remaining concentrated at the managerial layer.

Table 7. Calculation of EDM03 Questionnaire Results

Description	EDM03.01 Establish, align, and oversee IT risk governance
	EDM03.02 Direct and strengthen risk governance
	EDM03.03 Continuous risk monitoring and reporting

Management	Respondents	Average

Practices	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
EDM03.01	5	5	4	4	4	4	4	4	2	4	4	5	5	4	4	5	4.06
EDM03.02	5	4	4	5	5	5	3	4	2	4	3	5	4	3	5	5	4.00
EDM03.03	5	5	4	5	5	5	4	4	4	4	3	5	4	3	4	5	4.13
Average Capability Score for EDM03																	4.06

In Table 8, EDM04 achieved an average capability score of 4.03, indicating that resource planning and utilization are generally implemented and measurable. However, the score range (2 to 5) suggests that effectiveness is not uniform across the organization. The lower scores are consistent with the earlier organizational issue that supervision and maintenance responsibilities overlap with other work units, which can reduce clarity of ownership and weaken consistent monitoring. The results imply that while resource management activities exist (planning, allocation, operation, and monitoring), further improvements are needed to standardize responsibilities and strengthen routine evaluation so that resource optimization is not dependent on individual capability or informal coordination.

Table 8. Calculation of EDM04 Questionnaire Results

Description	EDM04.01 Planning, allocation, and control of resources
	EDM04.02 Implementation and operation of resource management
	EDM04.03 Monitoring, evaluation, and optimization of IT resources

Management Practices	Respondents																Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
EDM04.01	5	4	4	5	5	5	3	4	2	4	4	5	5	4	4	4	4.12
EDM04.02	5	5	4	4	5	5	4	4	2	4	3	5	5	4	4	4	4.06
EDM04.03	5	4	4	4	5	5	3	4	2	4	3	5	5	3	4	5	3.93
Average Capability Score EDM04																	4.03

Table 9 summarizes the mean capability scores and compares them to the expected level (5.00) set as an ideal benchmark for governance excellence. The results show that all assessed processes are positioned above level 3, with mean scores ranging from 3.95 to 4.24. DSS02 is the closest process to the expected level (gap 0.76), indicating relatively strong operational consistency in managing service requests and incidents. Conversely,

DSS04 presents the largest gap (1.05), confirming that continuity management is the most critical improvement area. The overall average across subdomains is 4.06, producing an average gap of 0.94, which indicates that IT governance and service support are functioning at a predictable level but have not yet reached an optimized, continuously improving state.

Table 9. Results of Average Capability Level Calculations in the DSS and EDM Domains

Sub-Domain	Description	Mean Capability Score	Expected Level	Maximum Level	GAP
DSS02	Manage Service Request and Incidents	4.24	5.00	5.00	0.76
DSS04	Manage Continuity	3.95	5.00	5.00	1.05
EDM03	Ensure Risk Optimisation	4.06	5.00	5.00	0.94
EDM04	Ensure Resource Optimisation	4.03	5.00	5.00	0.97
All Subdomains		4.06	5.00	5.00	0.94

The visualization in Figure 2 maps the comparison between actual achievements (Mean Capability Score) and the established ideal standard (Expected Level). The radar chart shows that the entire DSS and EDM domain processes have exceeded level 3, where the blue line representing the current maturity position is in the score range of 3.95 to 4.24.

The gap is reflected in the distance between the blue line (actual) and the green line (target level 5). In line with the table, the DSS02 domain is the aspect closest to the target with a score of 4.24, while the DSS04 domain is at the lowest point with a score of 3.95, recording the largest gap of 1.05. Overall, although IT governance at the Banyumas Regency Regional Library is already running quite well, strategic improvements are needed to close the average gap of 0.94 in order to achieve an optimal level of capability.
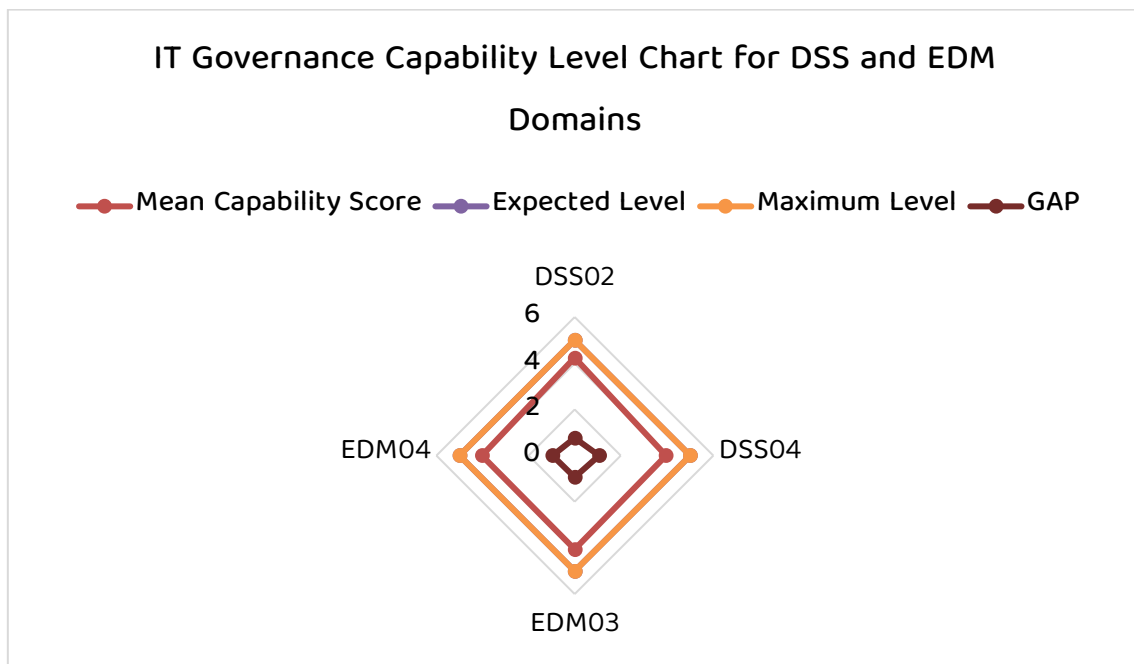
Figure 2. Radar chart of capability level assessment result

Based on the COBIT 5 Process Assessment Model, capability level 4 (Predictable Process) indicates that processes are well defined, executed, consistently, and monitored using measurable performance indicators. In the context of regional library operations, this level means that information technology service such as incident management, service continuity, risk management, and IT resources is running stably and predictably, but are not yet fully adaptive to change and continuous innovation as required at level 5 (Optimizing).

3.7.   Discussion and Recommendation

This study reveals that the overall capability level of IT governance at the Banyumas Regency Regional Library has reached level 4 (predictable process) according to the COBIT 5 Process Assessment Model. This finding indicates that IT governance processes are not only formally defined but also consistently implemented and monitored using measurable performance indicators. In practical terms, this level reflects a relatively mature governance environment in which IT services reliably support core library operations.

Despite this overall maturity, the analysis highlights notable differences across assessed domains. The DSS04 (Manage Continuity) domain exhibits the lowest capability level and

the widest dispersion of scores, indicating inconsistency in the implementation of service continuity practices. This suggests that while continuity planning exists at a procedural level, its operationalization—particularly in disaster recovery testing, role clarity, and system failover readiness—remains limited. Such findings reinforce the argument that governance maturity is not solely determined by documentation, but by sustained execution and organizational alignment.

The results also demonstrate that domains related to operational execution (DSS02) and governance oversight (EDM03 and EDM04) perform more consistently. This pattern implies that routine service management and high-level governance mechanisms are better institutionalized than cross-cutting processes such as continuity management, which require coordination across technical, managerial, and strategic levels.

From a theoretical perspective, these findings are consistent with the COBIT 5 framework, which emphasizes that higher capability levels require not only standardized processes but also continuous evaluation and optimization. The presence of gaps-particularly in DSS04-indicates that the organization has not yet transitioned from predictable processes toward optimized governance (level 5), where proactive improvement and innovation are embedded.

Practically, this study contributes by demonstrating the applicability of the COBIT 5 capability assessment model within a regional public library context. The findings provide empirical evidence that even organizations with relatively mature IT governance may still face critical vulnerabilities in service continuity. Therefore, targeted improvement strategies focusing on continuity management are essential to enhance the resilience and sustainability of public library services.

Based on the results of the Capability Level assessment, the Banyumas Regency Library was found to have a gap between its current information technology governance assessment and its target capabilities. Through data analysis, significant findings were obtained that serve as a strategic basis for efforts to optimize the level of IT governance capabilities in the library environment. By setting the Expected Level at a score of 5 as the ideal benchmark for achieving optimization, the following are recommendations to strengthen and improve Capability Level achievements:

1) DSS02 (Strengthening Service Management and Incident Response)

a) Develop and implement updates to well-documented Standard Operating Procedures (SOPs) for incident management and service requests, including classification, prioritization, response times, and incident escalation mechanisms.

b) Develop or optimize an integrated helpdesk system capable of recording, monitoring, and analyzing all incidents and service requests in real-time.

2) DSS04 (Service Continuity Strategy Transformation)

a. A technical review and upgrade of the data mirroring system is required. The main objective is to ensure that the Disaster Recovery Center (DRC) can automatically and instantly transfer workloads in the event of a serious disruption to the main data center.

b. The organization must conduct periodic system recovery tests. In addition, the business continuity strategy document must be updated in accordance with the latest infrastructure configuration to ensure personnel readiness in dealing with emergency situations.

3) EDM03 (Proactive Risk Management Integration)

a) Formulate policy documents regarding clear risk appetite and risk tolerance thresholds in information technology operations. This serves as a guide for management in determining priorities and protecting data assets.

b) Establish a mechanism for reporting risks periodically to top management. The goal is to ensure that any potential IT threats are identified early and mitigated through measurable and well-documented stages.

4) EDM04 (Optimization and Professionalism of IT Resources)

a. To avoid overlapping workloads, management needs to establish a more specific IT organizational structure. Staff responsible for managing information systems should focus on their technical tasks without being distracted by non-IT administrative matters, in order to maintain optimal system performance.

b. Developing regular technical training and professional certification plans for librarians and IT staff. This stage is to ensure that human resource expertise remains relevant to the dynamics of modern library information technology.

4. CONCLUSION

This study concludes that information technology governance at the Banyumas Regency Library based on the COBIT 5 framework, particularly in the EDM and DSS domains, is at an average capability level of 4 (predictable process), indicating that the processes for managing services, risks, and IT resources have been defined, measured, and implemented consistently. However, there is still a gap to the optimal capability level (level 5), especially in terms of service continuity, risk management integration, and IT resource optimization. These findings confirm that strengthening policies, operational procedures, disaster recovery infrastructure readiness, and improvement of human resource competencies are key factors in promoting more adaptive and sustainable IT governance. The impact of this research is the availability of an empirical picture of the maturity level of IT governance as well as strategic recommendations that can be used as a basis for reliable, accountable, and long-term value-oriented information technology-based public services.

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