



Good Governance Practices of COBIT 2019 and ITIL v4 for Sustainable Service Management in Museum Electronic-Based Government System

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Abstract.

Purpose: Good governance practices in transparency, accountability, responsibility, fairness, and stakeholder participation are core principles that ensure governance mechanisms are not merely procedural, but also creates a sustainable service management environment that aligns governance conditions with public interests.

Methods/Study design/approach: Through the integration of COBIT 2019 and ITIL v4 frameworks, along with structured staff interviews, service performance analysis, and direct operational observations, several important domains emerged, indicating the need for management development.

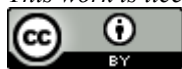
Result/Findings: The results show that several COBIT 2019 domains, APO07 (Managed Human Resources), DSS01 (Managed Operations), BAI03 (Managed Solutions Identification and Build), EDM02 (Ensured Benefits Delivery), and MEA01 (Managed Performance and Conformance Monitoring) and ITIL v4 domains, Information Security Management, Organizational Change Management & Workforce, Continual Improvement require immediate improvement with the Capability Index (*CLi*) scored 46.875% classified as Partially Achieved (15–49%) and classified in Level 2 (Managed Process). COBIT 2019 Design Factors show urgent areas for improvement in DF-4 (IT Related Issues), DF-6 (Compliance Requirements), and DF-7 (Role of IT). Balanced Scorecard (BSC) was also evaluated governance performance from four perspectives, financial, customer, internal process, and learning & growth, scoring 69,4% and classified as moderate. Key Performance Indicator (KPI) recommendations were also proposed, e.g., staff training increasement, operational IT services availability, user-based IT solutions, IT process measurement, security accidents reporting, effective workforce, and user-oriented IT developments.

Novelty/Originality/Value: This study proposes an integrated COBIT 2019 and ITIL v4 approach, embedding good governance principles for sustainable service management in Museum Electronic-Based Government System (SPBE) and addressing the gap between governance conditions and public interests.

Keywords: Good governance, Sustainable service management, COBIT 2019, ITIL v4, Electronic-based government system (SPBE)

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INTRODUCTION

Good governance has become core principles to ensure transparency, accountability, responsibility, fairness, and stakeholder participation in public sector organizations [1], ensuring sustainable service delivery and strengthening social cohesion and public trust [2], [3]. Through digital transformation, these core principles is illustrated in Figure 1.

Electronic-Based Government System (SPBE) implementation has become a national priority to improve service quality, management processes, and governance efficiency [4], [5]. However, many public institutions, such as museums still have issues with inadequate performance evaluation, service delivery procedure, and IT governance maturity. As a result, digital transformation often remains operational rather than strategic.

To assess this issues, COBIT 2019 is widely used to evaluate governance conditions, risk management and process management capability [6], [7]. Several studies demonstrate COBIT 2019 effectiveness for

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assessing IT governance maturity [8]. Meanwhile, ITIL v4 emphasizes on service delivery practices, workforce capability, and continual improvement [9], [10]. Hence, integrating COBIT 2019 and ITIL v4 framework can increase operational service excellence and governance control.

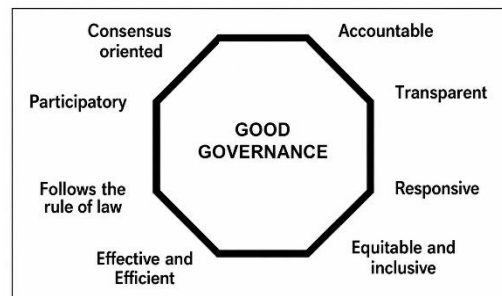


Figure 1. Good governance characteristics [11]

Prior studies have applied COBIT 2019 and ITIL v4 across multiple sectors, yet most implementations leaving issues of efficiency and standardization unresolved, specifically in the public sector where alignment with Electronic-Based Government System (SPBE) adds complexity [12], [13]. Structural constraints, policy limitations, and decision-making challenges further obstruct effective governance, whilst arising AI adoption demands more adaptive frameworks that aligns between models and real-world governance practice [14]–[16].

Based on these conditions, three key research gaps are identified. First, there is limited research examining on how COBIT 2019 and ITIL v4 can enhance IT governance and service capability within the museum sector. Second, prior studies seldom incorporate good governance principles as a foundational element for sustainable service management. Third, only a few studies provide measured management strategies improvement and operational service excellence using classified governance domains and design factors, KPI recommendations, and Balance Scorecard evaluation approach for public institutions.

METHODS

This study proposed a qualitative approach to evaluate management performance and service delivery excellence at the Museum of Soil and Agriculture, Bogor, Indonesia. Data collection was conducted through methodological triangulation consisting of structured staff interviews, service performance analysis, and direct operational observation. The research flow is illustrated in Figure 2.

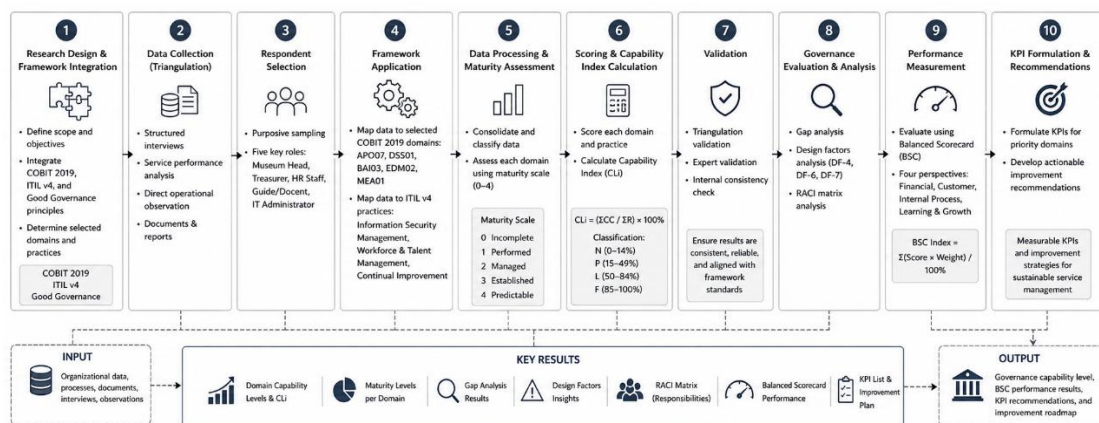


Figure 2. Research flow

To ensure a systematic and structured governance performance, the research methodology is conducted through the following stages:

- 1) Research Design & Framework Integration: Define the research scope and objectives by implementing COBIT 2019, ITIL v4, and Good Governance and identifies relevant governance domains, and service management evaluation [17].

- 2) Data Collection (Triangulation): Collect organizational data through structured interviews, service performance analysis, and direct operational observations. The triangulation approach is applied to improve data validity, consistency, and reliability [18].
- 3) Respondent Selection: Select respondents based on their organizational roles and responsibilities related to IT governance and operational management [19].
- 4) Framework Application: Map the collected data into selected COBIT 2019 and ITIL v4 domains.
- 5) Data Processing & Assessment: Classify the collected data into capability and maturity evaluations to determine governance conditions [20].
- 6) Scoring & Capability Index Calculation: Perform domain scoring and practice evaluation to calculate the Capability Index (*CLi*). The capability level is determined based on percentage achievement classifications, ranging from Incomplete to Predictable levels [21].
- 7) Validation: Validate the assessment results through data triangulation, expert validation, and internal consistency checking to ensure that the findings are accurate, reliable, and aligned with organizational conditions.
- 8) Governance Evaluation & Analysis: Conduct gap analysis between current governance conditions and expected targets using Design Factors (DFs) analysis, Balanced Scorecard (BSC) evaluation, and RACI matrix analysis [22], [23].
- 9) Performance Measurement: Evaluate organizational governance and service performance using the Balanced Scorecard (BSC) approach to measure overall governance effectiveness [24], [25].
- 10) KPI Formulation & Recommendations: Formulate Key Performance Indicators (KPIs) based on priority governance domains and evaluation results, followed by strategic and sustainable recommendations for governance [26]–[29].

Purposive sampling was applied to select respondents based on their strategic, administrative, operational, and technical perspectives which are required for assessing IT governance capability [30]. The interview instruments are presented in Table 1.

Table 1. Interview questions for Indonesia's museum of soil and agriculture staff representatives

Question Instruments (Code)	Follow-up Questions (Code)	Respondents				
		R1	R2	R3	R4	R5
Do you familiar with COBIT 2019 and ITIL v4 governance frameworks? (1)	Does this framework already implemented at Indonesia's Museum of Soil and Agriculture IT governance?					
	(If yes) Does this framework evaluated regularly? (1b)					
	(If no) Does framework relevant for Museum of Soil and Agriculture governance model? (1c)					
What are the common IT issues that you encountered in operational daily basis? (2)	Do these issues related to reservation and inventory systems? (2a)					
Are there any KPIs to measure the effectiveness of IT systems? (3)	Are these KPIs evaluated regularly? (3a)					
Are there any IT Standard Operation Procedure (SOP) that you follow? (4)						

Interview responses, observations, and supporting documents were annotated into a five levels capability scale adapted from maturity level classification approaches that are commonly used in COBIT 2019 framework [31], [32] as shown in Table 2.

Table 2. Maturity level classification based on guttman scale

Maturity Level Classification	Process Name	Criteria
0	Incomplete Process	No established process
1	Performed Process	Ad hoc and undocumented processes
2	Managed Process	Processes are initiated but remain inconsistent
3	Established Process	Processes are documented and consistently implemented
4	Predictable Process	Processes are measurable and their performance can be evaluated

Scores for each selected COBIT 2019 and ITIL v4 domain were determined based on evidence consistency across data sources and then averaged to obtain the capability level and Capability Index (*CLi*) [33], [34].

To classified roles and responsibilities of respondents, RACI Matrix Analysis was applied in Table 3 to clarify accountability and operational responsibility [35], [36].

Table 3. Responsible, accountable, consulted, informed (RACI) analysis

Respondents Roles	RACI Analysis	Respondents Code
Museum Head (R1)	A/ C / I	R1
Treasurer (R2)	C	R2
Personnel Staff (R3)	R	R3
Cultural Guide / Docent (R4)	I	R4
Computer Administrator (R5)	R	R5

RESULTS AND DISCUSSIONS

COBIT 2019 & ITIL v4 Domain Mapping and Capability Evaluation

Based on the maturity scoring in Table 2, the assessment results indicate that the current governance and service capability at the Museum of Soil and Agriculture remains below the expected target level. The domain mapping from the proposed frameworks in Table 4 denote that the selected domains need to be implemented according to their priority levels to support organizational governance sustainability. APO07 indicates limited workforce talent development, while DSS01 reflects dependence on unstructured operational practices, BAI03 highlights limited user-based development and evaluation, EDM02 and MEA01 indicate that IT initiatives lack clear outcome measurement. While Information Security Management remains at Level 1, indicating weak security governance, Workforce and Talent Management and Continual Improvement reach Level 2, indicating inconsistent improvement efforts.

Table 4. Domain mapping and capability evaluation for COBIT 2019 and ITIL v4

Framework	Domain by Priority Levels	Priority Purpose	Actual Level	Target Level	Gap
COBIT 2019	APO07 (Managed Human Resources)	To ensure continuous workforce development and capability enhancement	2	4	2
	DSS01 (Managed Operations)	To ensure standardized IT operational procedures supporting daily service delivery	2	4	2
	BAI03 (Managed Solution Identification and Build)	To ensure reliable IT solutions through continuous evaluation	2	4	2
	EDM02 (Ensured Benefits Delivery)	To ensure alignment between IT investments and institutional strategic objectives	2	4	2
	MEA01 (Managed Performance and Conformance Monitoring)	To ensure continuous monitoring and evaluation of IT governance performance	2	4	2
ITIL v4	Information Security Management	To ensure effective information security practices for risk mitigation	1	4	3
	Workforce and Talent Management	To ensure adequate talent competencies for sustainable governance practices	2	4	2
	Continual Improvement	To establish a structured approach for continuous IT service improvement	2	4	2
Total			15	32	17

$$CLi = \frac{\sum CC}{\sum R} \times 100\% = \frac{15}{32} \times 100\% = 46.875\% \quad (1)$$

The total capability score ($\sum CC$) is 15 out of 32, indicating 17 level gaps between current practices and expected standards. The Capability Index (CLi) in Equation (1) scored 46.875% and classified as *P* or *Partially Achieved* in capability level as shown in Table 5.

Table 5. Capability level interpretation

Scale	Category	Range
N	Not Achieved	0–14%
P	Partially Achieved	15–49%
L	Largely Achieved	50–84%
F	Fully Achieved	85–100%

The results are further classified in *Level 2 (Managed Process)* based on Table 2, indicates that processes have been initiated but remain inconsistent.

Balanced Scorecard (BSC) Evaluation

To equip the capability assessment, the Balanced Scorecard (BSC) was applied to evaluate governance performance from four perspective, financial, customer, internal process, and learning & growth. Each indicator was selected based on their relevance to digital service operations, efficiency, and workforce talent capability. The Balanced Scorecard score was calculated in Equation (2).

$$\sum BSC\ Index = \frac{\left(\frac{Realization}{Target} \times 100\%\right) \times Weight}{100\%} = \frac{Score \times Weight}{100\%} \quad (2)$$

The Balanced Scorecard results in Table 6 show an overall score of 69.4%, classified as moderate. Internal management process and workforce talent development remain the weakest areas. These findings align with prior studies emphasizing public institutions governance capability often constrained by structural and operational limitations that affect overall service excellence.

Table 6. Balance scorecard

Perspective	Target (%)	Realization (%)	Score (%)	Weight (%)	Score × Weight
Financial	100	75	75.0	20	15.0
Customer	80	70	87.5	25	21.9
Internal Process	90	60	66.7	30	20.0
Learning & Growth	100	50	50.0	25	12.5
Total BSC Index					69.4

Design Factor COBIT 2019 Analysis

Further analysis using COBIT 2019 Design Factors reinforce the findings. Design Factor 4 in Figure 3, indicate that IT related issues affect several domains (BAI06, DSS02, APO07, and MEA01) limitations in internal management processes and workforce talent capabilities. This reflects systemic governance misalignment commonly observed in public institution undergoing digital transformation.

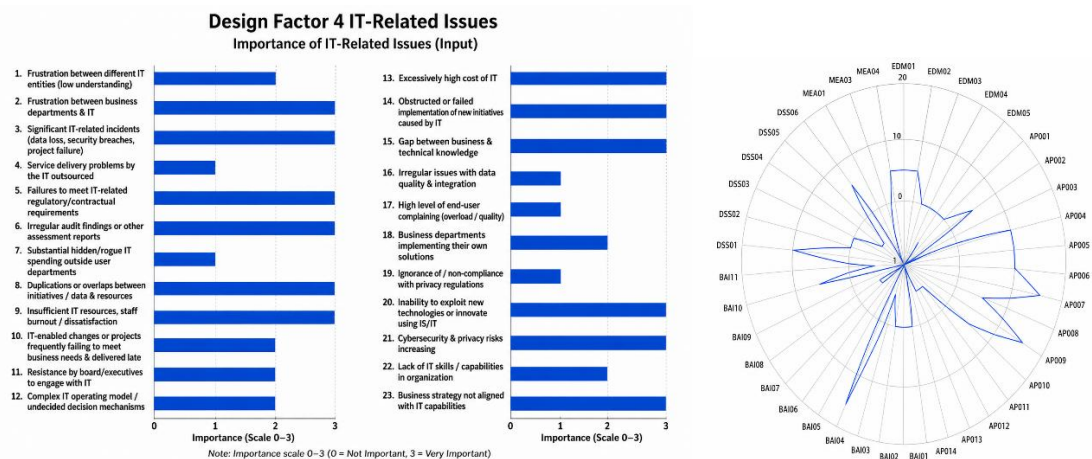


Figure 3. Design factor 4: IT related issues

Figure 4 show COBIT 2019 Design Factor 6, show that Compliance Requirements for IT is only acquired 80% responds as a supporting function and 20% responds as a main function.

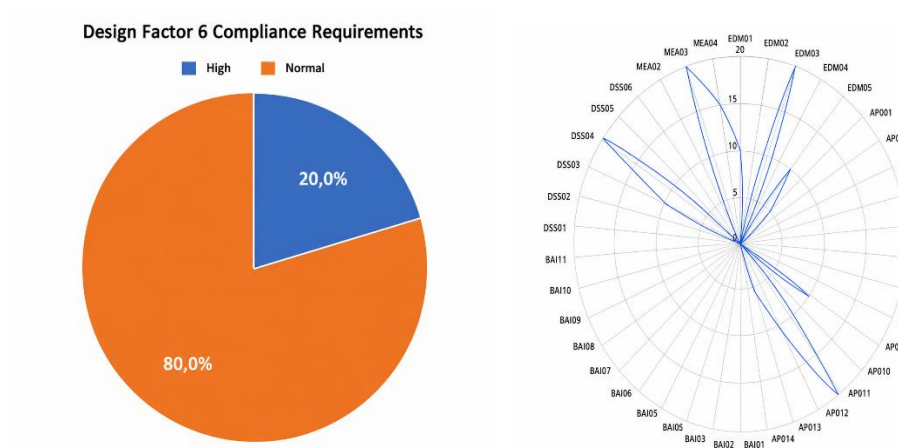


Figure 4. Design factor 6: Compliance requirements

Figure 5 shows COBIT 2019 Design Factor 7, which classifies the role of IT as operational support (baseline 4/5), while strategic and turnaround roles are not yet consistently implemented (Level 2).

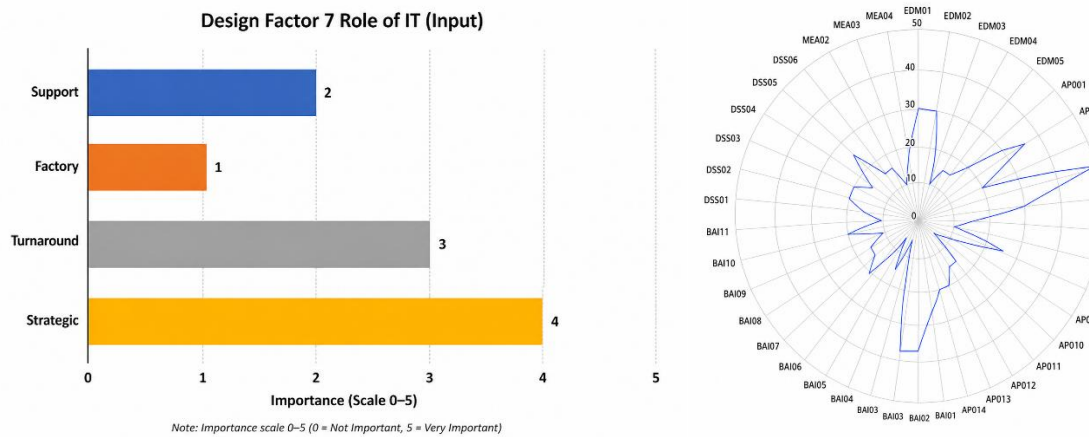


Figure 5. Design factor 7: Role of IT

KPI Recommendations for Sustainable Museum SPBE Service Management

Based on the governance performance analysis, Key Performance Indicators (KPIs) were proposed in Figure 6 to support measurable governance improvement at the Museum of Soil and Agriculture. These indicators are aligned with the most important domains that achieved inadequate scores and require continuous monitoring.

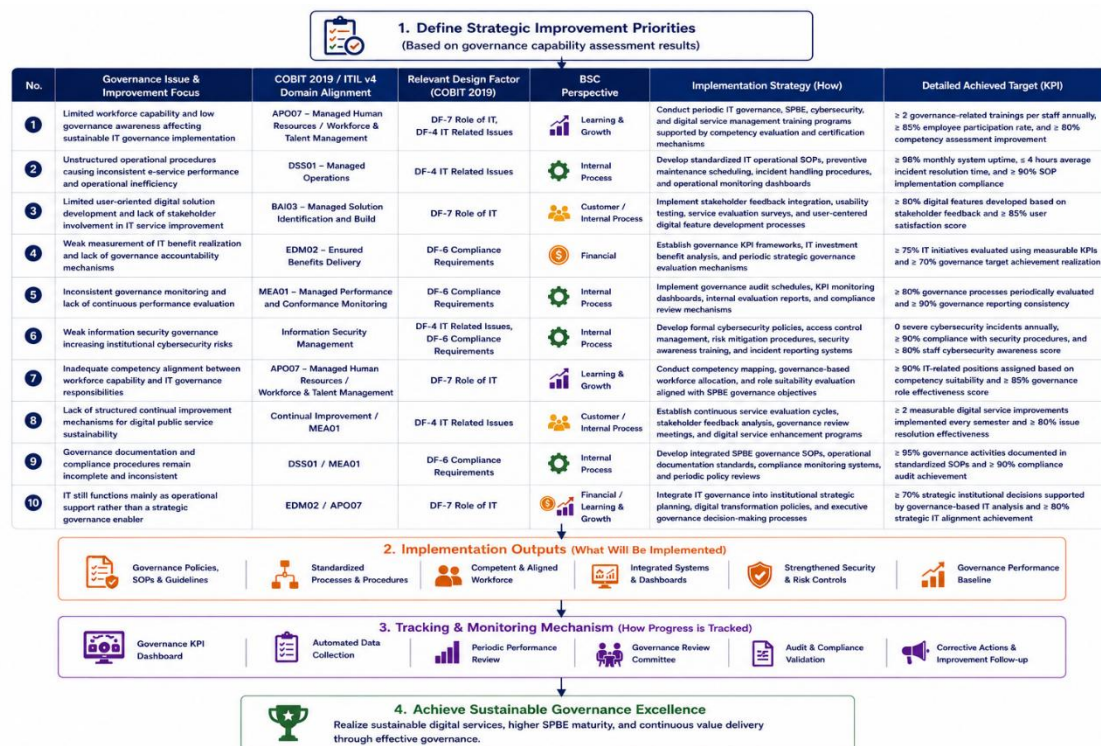


Figure 6. Museum governance KPI improvement flowchart for sustainable service management

- 1) Routine IT Governance and Cybersecurity Training to improve workforce capability (APO07, Workforce & Talent Management, DF-7 Role of IT, DF-4 IT Related Issues, and BSC Learning and Growth). Implementation is carried out through periodic governance and cybersecurity training, certification programs, and competency evaluations. The achieved target includes at least two governance-related trainings annually, employee participation above 85%, and competency improvement above 80%.
- 2) Standardized IT Operations and Service Monitoring to improve management and service reliability (DSS01, DF-4 IT Related Issues, and BSC Internal Process). Implementation includes SOP development, preventive maintenance schedules, incident handling procedures, and monitoring dashboards. The achieved target includes system uptime above 98%, incident resolution time below four hours, and SOP compliance above 90%.
- 3) User-Oriented Digital Service Development to improve digital services (BAI03, DF-7 Role of IT, and BSC Customer and Internal Process). Implementation involves stakeholder feedback integration, usability testing, and service evaluation surveys. The achieved target includes at least 80% of digital features developed based on stakeholder feedback and user satisfaction above 85%.
- 4) Monthly KPI and Performance Evaluation to strengthens governance accountability and measurable IT solution (EDM02, DF-6 Compliance Requirements, and BSC Financial). Implementation includes governance KPI frameworks, IT investment benefit analysis, and periodic governance evaluations. The achieved target includes at least 75% of IT initiatives evaluated using measurable KPIs and governance achievement realization above 70%.
- 5) Annual Governance and Compliance Evaluation to improves governance monitoring and continuous evaluation (MEA01, DF-6 Compliance Requirements, and BSC Internal Process). Implementation includes governance audits, KPI dashboards, evaluation reports, and compliance reviews. The achieved target includes periodic evaluation of at least 80% of governance processes and governance reporting consistency above 90%.
- 6) Cybersecurity and Risk Management Monitoring to strengthens institutional cybersecurity governance and reduces digital security risks (Information Security Management, DF-4 IT Related Issues, DF-6

Compliance Requirements, and BSC Internal Process). Implementation includes cybersecurity policies, access control management, awareness training, and incident reporting systems. The achieved target includes zero severe cybersecurity incidents, security compliance above 90%, and cybersecurity awareness scores above 80%.

- 7) Workforce Competency and Role Alignment Evaluation to align workforce competencies with governance responsibilities (APO07, Workforce & Talent Management, DF-7 Role of IT, and BSC Learning and Growth). Implementation includes competency mapping, governance-based workforce allocation, and role suitability evaluations. The achieved target includes at least 90% of IT-related positions assigned based on competency suitability and governance role effectiveness above 85%.
- 8) Continuous Digital Service Improvement to supports continual improvement in digital services (Continual Improvement, MEA01, DF-4 IT Related Issues, BSC Customer, and BSC Internal Process). Implementation includes continuous service evaluations, stakeholder feedback analysis, and governance review meetings. The achieved target includes at least two measurable service improvements every semester and issue resolution effectiveness above 80%.
- 9) SPBE Governance Documentation and Governance Compliance to improves governance consistency through standardized documentation and compliance procedures (DSS01, MEA01, DF-6 Compliance Requirements, and BSC Internal Process). Implementation includes integrated SPBE SOPs, documentation standards, compliance monitoring systems, and policy reviews. The achieved target includes at least 95% of governance activities documented in standardized SOPs and compliance audit achievement above 90%.
- 10) Integration of IT Governance into Strategic Planning to positions IT as a digital tranformation in service management (EDM02, APO07, DF-7 Role of IT, BSC Financial, and BSC Learning & Growth). Implementation includes integrating IT governance into institutional planning, digital transformation policies, and governance-based decision-making. The achieved target includes at least 70% of strategic decisions supported by IT governance analysis and strategic IT alignment above 80%.

By integrating these KPIs into routine performance evaluation, institution can improve sustainable service management. However, the study is limited by its single-case scope, small sample size, and qualitative assessment approach. Future studies may involve multiple institutions and long-term evaluations.

CONCLUSION

This study evaluates good governance for sustainable service management at the Museum of Soil and Agriculture, Bogor, Indonesia to support Electronic-Based Government System (SPBE) digital transformation by integrating COBIT 2019 and ITIL v4 frameworks. The research utilizes structured staff interviews, service performance analysis, and direct operational observations. The results denote a Capability Index (*CLi*) score is 46.875%, classified as Partially Achieved (15–49%), indicating inconsistency in governance process. Key gaps were identified in APO07, DSS01, BAI03, EDM02, MEA01, Information Security Management, Organizational Change Management & Workforce, and Continual Improvement. The findings confirm that COBIT 2019 strengthens governance control, while ITIL v4 improves service management and continual improvement. The proposed Balanced Scorecard evaluation, COBIT 2019 Design Factors, and KPI recommendations were developed to assess the issues, e.g., staff training increasement, operational IT services availability, user-based IT solutions, IT process measurement, security accidents reporting, effective workforce, and user-oriented IT developments. However, the study is limited by its single-case scope, small sample size, and qualitative assessment approach. Hence, future research is recommended to involve multiple institutions and apply long-term evaluations to acquire more comprehensive findings.

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