Evaluating IT Service Capability of Palu BPS Website Using COBIT 5 Framework

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Abstract

This research assesses the IT service capability of the official website of the Palu City Central Bureau of Statistics (BPS) by applying the COBIT 5 framework. The assessment is centered on four key processes from the Deliver, Service, and Support (DSS) as well as Monitor, Evaluate, and Assess (MEA) domains—namely DSS01 (Manage Operations), DSS02 (Manage Service Requests and Incidents), DSS06 (Manage Business Process Controls), and MEA01 (Monitor, Evaluate, and Assess Performance and Conformance). Data were collected through structured interviews, observation sessions with website administrators, and an analysis of supporting documents to determine the current capability levels and compare them with the desired target level of 3. The results show that DSS01 and MEA01 have reached capability level 2, indicating that the processes are defined but not consistently standardized. Meanwhile, DSS02 and DSS06 remain at level 1, indicating reactive operations with limited documentation. The average capability level of 1.5 suggests that there is room for significant improvement in terms of documentation, process formalization, and the use of enabling technologies. Based on these findings, this study recommends targeted improvements to enhance the overall performance and reliability of digital public services, as well as to support better IT governance and e-government practices.

Keywords *— Central Bureau of Statistics, Digital Public Services, COBIT 5, Capability Assessment, Governance Improvement*

1. INTRODUCTION

In the digital transformation era, information technology (IT) plays a critical role in supporting modern public services. IT enables the public to perform various tasks that enhance daily life by providing access to digital public services. As reliance on digital platforms increases, internet usage in Indonesia rose from 66.48% in 2022 to 69.21% in 2023. Simultaneously, household internet penetration increased from 86.54% to 87.08%, indicating that nearly 90% of households now have internet access at home[1].

The integration of IT into public sector systems has significantly improved service speed, accuracy, and transparency[2]. It fosters service innovations that enhance accessibility, efficiency, and user satisfaction across society[3]. One of the most common public digital service tools is the website, which allows users to access official information with ease. As a

service provider, the government is expected to adopt such digital advancements to enhance public access to data[4].

At the local level, Badan Pusat Statistik (BPS) Kota Palu is a non-ministerial government agency responsible for providing reliable statistical data. These data serve as essential inputs for policy formulation in areas such as rural development, Education, and economic planning. The BPS Palu City maintains a public website intended to disseminate statistical data to diverse user groups, including citizens, government institutions, academics, and business owners. However, based on interviews with the BPS website administration team, the platform remains underutilized. This underutilization stems from limited public awareness of the website's existence, a lack of user familiarity with its features, and insufficient knowledge on how to search for data. As a result, many users still prefer visiting the office in person to request data.

This phenomenon highlights a gap between the availability of digital services and their adoption. Although the national ICT Development Index (IDI) showed a slight improvement from 5.60 in 2022 to 5.76 in 2023 in Central Sulawesi Province, the region remains below the national average, reflecting ongoing challenges in digital literacy, adoption, and infrastructure development[1]. The persistent digital gap is also evident in the widening difference between the highest and lowest provincial ICT development scores, which reached 4.29 points in 2023 (only slightly down from 4.42 in 2022).

This situation reflects the broader perspective that public satisfaction with services can be measured by factors such as ease of access, affordability, quality, and efficiency[5]. Therefore, it is essential to offer digital services that are easily accessible and understandable to the general public.

To enhance the effectiveness and governance of digital public services, a robust IT governance framework is necessary. IT governance aligns technology with organizational goals, optimizes resources, and ensures data integrity and service delivery[6]. One widely recognized governance framework is COBIT 5, which is particularly relevant in the domains of Deliver, Service, and Support (DSS) and Monitor, Evaluate, and Assess (MEA). COBIT 5 is designed to optimize organizational performance by managing IT services systematically[7]. Previous studies, such as evaluations of the e-KTP service system by the Population and Civil Registration Offices, have demonstrated the practical applicability of COBIT 5 in Auditing information systems and increasing process capability levels[8].

A systematic review of COBIT 5 implementation in Indonesian government agencies over the past five years confirms that the DSS domain is frequently used to assess IT service management performance[9]. The findings reinforce the importance of adopting the COBIT 5 framework to evaluate and improve the quality of digital public services, particularly for platforms like the BPS Palu City website. This approach helps identify gaps between actual and expected process conditions, providing recommendations that align with organizational goals.

Furthermore, studies such as the Audit of Queue Service information Systems at the Population and Civil Registration Office have found that system inefficiencies negatively affect service quality[10]. The application of COBIT 5 in the Palembang City Communication and information Office helped improve service delivery through more structured management[11]. Similarly, an analysis of IT governance at the Jayapura City Communication and information Office showed that several processes had reached a capability level of 4, reflecting a higher maturity level[12]. Similar studies, such as those conducted by Neno et al.[13] evaluated the maturity of IT service optimization using COBIT 4.1 in higher Education institutions. Their findings establish a precedent for structured capability assessment, underscoring the relevance of COBIT-based evaluation in public service organizations, such as BPS. These findings support the argument that implementing COBIT 5 enhances IT governance effectiveness in the public sector and improves service delivery.

Against this background, this study, entitled "Evaluation of Website Capability of Palu City Statistics Agency with COBIT 5," aims to assess the functionality and quality of the BPS Palu City website using the COBIT 5 framework. The evaluation focuses on the DSS and MEA domains, assessing aspects such as technical performance, functional alignment, strategic objectives, and regulatory compliance. The findings are expected to provide practical recommendations for enhancing the website's IT service management and supporting its role as an accessible, high-quality public data platform.

2. RESEARCH METHOD

This research adopts a qualitative descriptive method, utilising the COBIT 5 Process Assessment Model (PAM) as a basis for evaluating IT service capability within specific process domains[14]. The evaluation focuses on four relevant COBIT 5 processes for the BPS Palu City website:

- DSS01: Manage Operations
- DSS02: Manage Service Requests and Incidents
- DSS06: Manage Business Process Controls
- MEA01: Monitor, Evaluate, and Assess Performance and Conformance

The research flow follows seven structured stages as recommended by COBIT 5 and ISO/IEC 15504 standards[14][15][16], as illustrated in the diagram below.

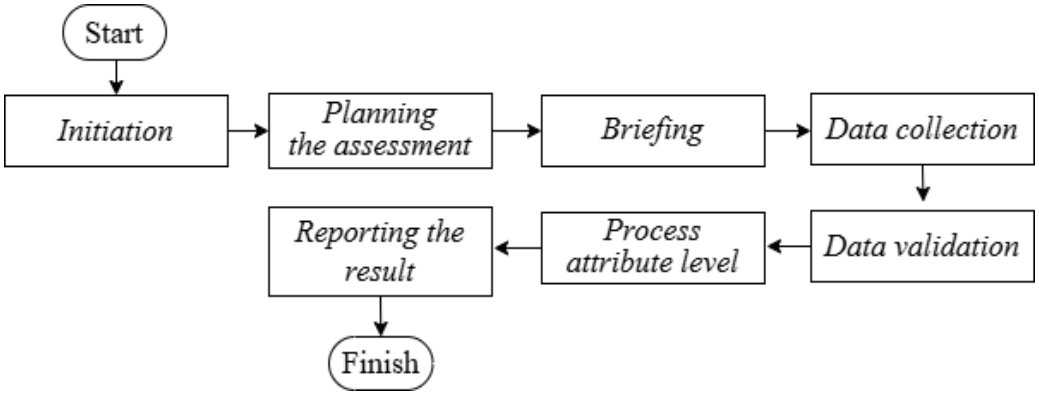

Figure 1. Research Flow Diagram

2.1. Initiation

During the Initiation phase, the assessment scope was clearly defined and aligned with the strategic objectives of BPS Palu City. The organisation's vision—to become a provider of high-quality statistical data supporting a progressive Indonesia—underscores the necessity for efficient and accessible digital services. To ensure alignment, this study applied the COBIT 5 Goal Cascade model to map enterprise objectives with IT-related targets and the supporting governance mechanisms. The mapping process is presented in Tables 1 and 2.

Table 1. Alignment of COBIT 5 Enterprise Objectives with IT-Related Goals [15]

IT-*Related Goal*		*Enterprise Goal*																
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
		Finance					*Customer*					*Internal*					*Learning and Growth*	
Finance	01	P	P	S			P	S	P	P	S	P	S	P			S	S
	02			S	P											P		
	03	P	S	S					S	S		S		P			S	S
	04		P	S				P	S		P			S		S	S	
	05	P	P				S		S		S	S	P		S			S
	06	S		S		P				S	P		P					
Customer	07	P	P	S	S		P	S	P	S		P	S	S			S	S
	08	S	S	S			S	S		S	S	P	S		P		S	S
Internal	09	S	P	S			S		P			P		S	S		S	P
	10			P	P			P								P		
	11	P	S						S		P	S	P	S	S			S
	12	S	P	S			S		S		S	P	S	S	S			S
	13	P	S	S			S				S		S	P				
	14	S	S	S	S			P		P		S						
	15			S	S											P		
Learning and	16	S	S	P			S		S						P		P	S
	17	S	P				S		P	S		S		S			S	P

Table 2. Alignment of COBIT 5 IT-Related Goals with Governance Processes [15]

COBIT 5 Process	IT-Related Goal																
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
	Finance						*Customer*		*Internal*							*Learning and Growth*	
DSS01		S		P	S		P	S	S	S	P			S	S	S	S
DSS02				P			P	S		S				S	S		S
DSS03		S		P	S		P	S	S		P	S		P	S		S
DSS04	S	S		P	S		P	S	S	S	S	S		P	S	S	S
DSS05	S	P		P			S	S		P	S	S		S	S		
DSS06		S		P			P	S		S	S	S		S	S	S	S
MEA01	S	S	S	P	S	S	P	S	S	S	P		S	S	P	S	S
MEA02		P		P		S	S	S		S				S	P		S
MEA03		P		P	S		S			S					S		S

The prioritised COBIT 5 processes selected for evaluation are summarised in Table 3.

Table 3. COBIT 5 Process Used [15]

No	Proses COBIT 5		Description
Deliver, Service, and Support			
1	DSS01	Manage Operations	Maintain continuous operations for the website's IT services
2	DSS02	Manage Service Requests and Incidents	Manage incoming user service demands and incident responses
3	DSS06	Manage Business Process Controls	Oversee and ensure the integrity of core business processes
Monitor, Evaluate, and Assess			
1	MEA01	Monitor, Evaluate, and Assess Performance and Conformance	Evaluate IT service outcomes and their alignment with established standards

2.2. Planning The Assessment

This phase involves identifying the assessment team and relevant indicators. Staff directly managing the website—such as statisticians and IT operators—were engaged to ensure that the evaluation reflects real operational conditions [16].

The website management staff of BPS Palu City, who had firsthand knowledge of how digital services function, participated in the data collection process for this study. Their participation is crucial to ensure that the evaluation accurately reflects the field circumstances.

Table 4. COBIT 5 Website Management Team – BPS Palu City

No	NAME	Position
1	Ida Ayu Wayan Regita Iswari Puri	Junior Expert Computer Operator BPS Palu City
2	Cristia Monica	First Expert Statistician
3	Diyah Aji Purwaningsih	Junior Expert Statistician

2.3. Briefing

A briefing session was held to explain the research objectives, data collection procedures, and COBIT 5 evaluation process. The researcher met with participants to ensure shared understanding. Activities included interviews, documentation reviews, and confirmation of the research flow. Table 5 summarises the briefing sessions.

Table 5. Briefing Stage Activities

Activities	Implementation	Position
Interviews in research	Researchers and Participants	Discussion
Observation of supporting documents in research	Researchers and Participants	Discussion
Recapitulation of research results	Researcher	Discussion
Reporting of research results	Researcher	Discussion

2.4. Data Collection

Data collection followed a structured approach adapted from COBIT 5: Enabling Processes[15]. Three methods were used:

- Structured interviews with process owners,
- Review of organisational documents (e.g., Standard Operating Procedures (SOPs), logs, performance reports).
- Direct observations of service operations.

The interviews focused on the process activities of DSS01, DSS02, DSS06, and MEA01. Supporting documents, such as operational logs, SOPs, and evaluation reports, served as evidence. These supporting materials played a crucial role in ensuring the traceability of each evaluation result to specific outputs.

In parallel with the primary data sources, publicly available regional indicators—such as the Human Development Index (HDI) and ICT development data—were also considered to contextualise and enrich the interpretation of the evaluation findings.

2.5. Data Validation

Data validation was conducted to ensure accuracy, consistency, and relevance of the data. The verification process involved cross-checking the collected documents and triangulating information from interviews and observations[7] [16].

In this data validation process, researchers utilized two main techniques: interviews and observations. These techniques were applied as follow:

1. Interviews: Deepened insights into the existence and completeness of process-related documents.
2. Observation: Conducted directly at BPS Palu City to verify the implementation of digital service processes in real time.

2.6. Process Attribute Level

The process attribute level refers to the evaluation of key characteristics that determine how well a process is implemented and managed within an organisation. In this study, the capability of four selected COBIT 5 processes—DSS01, DSS02, DSS06, and MEA01—was assessed using the COBIT 5 Process Assessment Model (PAM), as referenced in ISO/IEC 15504[17], which serves as the framework for evaluating processes.

Each process was assessed by determining the degree to which its specific attributes were realised. This evaluation utilised a standardised four-level rating system, as outlined in Table 6.

Table 6. Process Attribute Rating Scale [17]

Code	Achievement Level	Range	Description
N	Not Achieved	0% – 15%	No sufficient evidence of attribute implementation.
P	Partially Achieved	>15% – 50%	Limited and inconsistent implementation.
L	Largely Achieved	>50% – 85%	Systematic implementation with minor gaps.
F	Fully Achieved	>85% – 100%	Consistent and complete implementation.

The capability level for each assessed process was derived from the results of attribute evaluation, based on the assessment standards outlined in Table 7:

Table 7. Capability Level Requirements [17]

Leval	Achievement Level
1	PA 1.1 ≥ L
2	PA 1.1 = F and PA 2.1 & 2.2 ≥ L
3	PA 1.1, 2.1, 2.2 = F and PA 3.1 & 3.2 ≥ L
4	All attributes up to PA 3.2 = F and PA 4.1 & 4.2 ≥ L
5	All attributes up to PA 4.2 = F and PA 5.1 & 5.2 ≥ L

The process maturity levels are categorised as follows[17]:

1. Level 0 – Incomplete: The process is either not implemented or does not fulfil its intended purpose.
2. Level 1 – Performed: The process is carried out, but lacks systematic management.
3. Level 2 – Managed: The process is not only performed but also controlled and documented.
4. Level 3 – Established: There is a standardised and consistent implementation of the process.
5. Level 4 – Predictable: The process is quantitatively measured and monitored.
6. Level 5 – Optimizing: Continuous process improvement is actively pursued to meet future objectives.

2.7. Reporting The Result

The final stage involved analysing and reporting the evaluation results. The outcomes were grouped into three main categories:

1. Capability Level Analysis: Measured using ISO/IEC 15504 rating scales, with average level calculated using the formula [18] [19]:

(1) $$Capability\ level = \frac{(y0 * 0) + (y1 * 1) + \cdots + (y5 * 5)}{4}$$

Description

yn = the number of processes assessed at capability level n

z = the total number of evaluated processes

2. Gap Analysis: Compared current capability levels with expected benchmarks to identify areas needing improvement[20].
3. Recommendation: Developed based on findings, suggesting technical and strategic improvements for DSS01, DSS02, DSS06, and MEA01 to align BPS IT governance with COBIT 5 standards.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Capability Level Assessment

This study assesses the capability of IT service processes on the BPS Palu City website by applying the COBIT 5 framework. The assessment includes four specific processes: DSS01 (Manage Operations), DSS02 (Manage Service Requests and Incidents), DSS06 (Manage Business Process Controls), and MEA01 (Monitor, Evaluate, and Assess Performance and Conformance). Each process was evaluated based on the performance of the following process attributes: PA 1.1, PA 2.1, and PA 2.2, by ISO/IEC 15504 standards [17].

Table 8. Evaluation Of Process Attributes And Capability Levels

Process	PA 1.1	PA 2.1	PA 2.2	Level As- Is	Level To-Be	Gap
N	F (87%)	L (50%)	L (75%)	2	3	1
P	L (81%)	-	-	1	3	2
L	L (73%)	-	-	1	3	2
F	F (100%)	L (50%)	L (50%)	2	3	1
Legend [17]: N (Not Achieved, 0-15%) P (Partially Achieved, > 15-50%) L (Largely Achieved, > 50% - 85%) F (Fully Achieved, > 85%-100%)						

These results indicate that DSS01 and MEA01 have reached capability level 2, meaning that they are documented and partially standardised. In contrast, DSS02 and DSS06 remain at level 1, indicating a reactive approach and inconsistent process execution.

3.2. Average Capability Level

To determine the overall maturity of IT service processes, a weighted average calculation was applied:

$$Capability\ level = \frac{(0 * 0) + (2 * 1) + (2 * 2)}{4} = 1.5 \quad (2)$$

The result shows that the average capability level is 1.5, while the expected minimum is level 3. The calculated average capability level of 1.5—below the expected level 3—indicates that the organisation is in a transitional stage, requiring improvements in several areas to achieve standardised governance.

3.3. Analysis Gap

A comparison of current and target capability levels reveals key insights

1. DSS02 and DSS06 exhibit the most significant gaps (2 levels), primarily due to the absence of standardised procedures and formal documentation. The lack of a structured incident management system in DSS02 and the weak internal control mechanisms in DSS06 significantly contribute to these deficiencies. Although assessed through a maturity perspective, a study by Yunita et al. in the hospitality sector also reported low process effectiveness in PO5 and DS6. The findings align with the observation that internal control and service delivery processes often face challenges across different sectors.
2. DSS01 and MEA01, despite being better documented, still demonstrate implementation inconsistencies. Their processes have partially achieved standardisation but require more vigorous enforcement to improve performance consistency.

The gap pattern is visualised in Figure 2, which emphasises that all processes remain below the target, with the most significant performance deficits seen in DSS02 and DSS06.

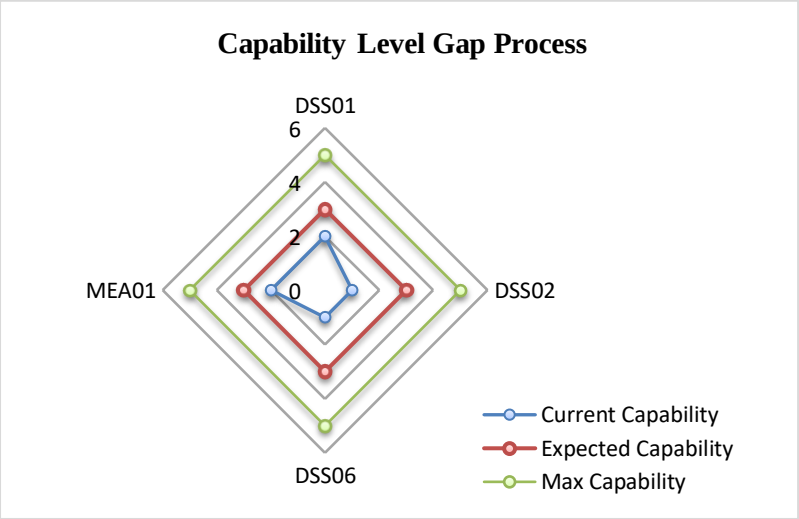

Figure 2. Capability Level Gap Process.

These findings underscore the importance of strategic interventions to enhance IT service quality and efficiency within BPS Palu City. While the internal capability levels indicate that the BPS Palu website management team has yet to implement standardised IT service practices fully, it is equally important to consider external contextual factors that may contribute to these outcomes. The evaluation results should therefore be interpreted not only as reflections of operational inefficiencies but also in light of the broader socio-technological environment in Palu City. Although Palu recorded the highest Human Development Index (HDI) score in Central Sulawesi in 2023 (83.71), its HDI growth rate was the lowest in the region, at just 0.54%[22]. This stagnation may reflect latent structural barriers, including limited public engagement with digital platforms and insufficient digital awareness. Despite improvements in educational attainment, public familiarity and trust in online services remain uneven. These dynamics can indirectly affect organisational prioritisation and performance,

reinforcing the need for strategies that combine internal governance improvements with external community-focused digital literacy initiatives.

3.4. Benchmarking with Other Studies

When compared to similar evaluations in other public institutions, the findings from BPS Palu City reveal lower maturity levels. For instance, a study at the Jayapura City Office of Communication and information Technology reported that several COBIT 5 processes had reached level 4, indicating well-documented and consistently applied governance practices [12]. Strong leadership involvement and comprehensive documentation are key enablers of higher IT governance capability. Another study applying COBIT 5 to the e-Government services of the Palembang Communication and information Office showed that structured management improved service performance [11]. In another case, PT. Pelindo TPK Bitung adopted COBIT 2019 to enhance IT governance, achieving a capability level 3 in managed security services (DSS05), demonstrating a structured implementation with measurable gains [23]. These benchmarks highlight the need for BPS Palu City to enhance its internal controls, documentation, and service monitoring mechanisms to remain competitive with comparable government entities.

However, it is also important to note that these organisations may operate under different contextual conditions. Unlike institutions in larger or more digitally mature regions, BPS Palu operates within a socio-technological environment where public adoption of digital services is still limited. These contextual disparities suggest that IT governance improvements in BPS Palu should be tailored not only to framework standards but also to the region's digital readiness and community engagement levels.

3.5. Strategic Recommendation

Based on the capability evaluation and gap analysis, the following improvement strategies are recommended:

1. DSS01 (Manage Operations)
   - Develop complete and enforceable SOPs for website operations.
   - Conduct periodic training to strengthen implementation consistency.
2. DSS02 (Manage Service Requests and Incidents)
   - Design and implement a structured incident and request handling system.
   - Promote clear and accessible reporting procedures to users and staff.
3. DSS06 (Manage Business Process Controls)
   - Establish formal control documentation and internal audit mechanisms.
   - Integrate periodic evaluations to assess control effectiveness.
4. MEA01 (Monitor, Evaluate, and Assess Performance and Conformance)
   - Expand monitoring to include quantitative performance metrics.
   - Enhance reporting with compliance-based indicators for better governance.

These strategic recommendations are expected to guide BPS Palu City toward more structured, accountable, and efficient digital service delivery aligned with COBIT 5 best practices.

4. CONCLUSION

This research employed the COBIT 5 framework to evaluate the IT service capability of the Central Bureau of Statistics (BPS) in Palu City. Four main processes, DSS01, DSS02, DSS06, and MEA01, were assessed using the Process Assessment Model (PAM). The key conclusions are summarised below:

1. DSS01 (Manage Operations) and MEA01 (Monitor, Evaluate, and Assess Performance and Conformance) reached Capability Level 2, signifying that while these processes are defined, they are not yet fully managed.
2. DSS02 (Manage Service Requests and Incidents) and DSS06 (Manage Business Process Controls) remained at Capability Level 1, indicating a reactive and insufficiently documented execution, especially concerning service requests and internal controls.
3. The average capability level across all processes is 1.5, which is below the desired Level 3, highlighting a maturity gap in IT service management

This capability shortfall highlights the importance of improving documentation, enhancing standardization practices, and implementing continuous monitoring to ensure the reliability and efficiency of digital public services. To address these needs, this study advocates for the formalization of Standard Operating Procedures (SOPs), the development of structured tracking systems, and the application of performance indicators to ensure accountable and consistent IT service delivery. Moreover, the analysis emphasizes that IT governance capability should be interpreted within the context of local digital readiness and user engagement in Palu City.

5. SUGGESTED

To overcome current limitations and guide future research in this field, the following recommendations are proposed:

1. Broaden the scope to incorporate additional COBIT 5 domains, such as BAI (Build, Acquire, and Implement) and EDM (Evaluate, Direct, and Monitor), to gain a broader perspective of IT governance capability.
2. Conduct comparative studies across different government agencies to identify best practices and maturity gaps in IT governance implementation.
3. Perform longitudinal studies to assess the impact of implementing governance improvements on service quality over time.

These directions are expected to enrich future investigations and contribute to more robust IT governance practices in the public sector

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