



IT's Moderating Role in Asset Management, Service Innovation, Competency, and Public Service Quality

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Abstract. This study examines the effect of asset management, service innovation, and competency on the quality of public services, with information technology (IT) as a moderating variable, within Regional Apparatus Organizations (OPD) in West Sulawesi Province. A quantitative approach was employed, using structured questionnaires distributed to 123 respondents across 41 OPDs. Validity and reliability tests confirmed that all 22 measurement items were statistically sound, while regression analysis was used to test both direct and moderated relationships. The findings reveal that asset management, service innovation, and competency each have significant positive effects on service quality, with competency identified as the most influential factor. Moreover, IT utilization not only exerts a direct positive effect on service quality but also strengthens the relationship between asset management and service quality as well as between service innovation and service quality. Although the moderating effect of IT on the competency–service quality relationship was weaker and only marginally significant, the overall model explanatory power increased from 62% to 72% when IT utilization was included. These results highlight the complementary role of governance practices, civil servant capacity, and digital transformation in enhancing the quality of public services. The study provides strategic insights for local governments, emphasizing the need for integrated investments in asset governance, innovation, competency development, and IT infrastructure to foster efficient, transparent, and citizen-centered services.

Keywords: Asset management, Service innovation, Competency, IT utilization, Public service quality

1 Introduction

Local governments carry a major responsibility in providing public services that are efficient, effective, and responsive to citizens' needs. The quality of public service delivery is highly dependent on the competence of civil servants, the clarity of procedures, the availability of facilities, and the adoption of information technology. Synergy between professional asset management and service innovation is crucial in improving the overall performance of public administration [1]. As local government responsibilities expand, the number and variety of assets they manage have also increased. However, the relatively low compliance rate in public service delivery recorded at only 33.33%—reflects persistent administrative problems such as service

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delays, abuse of authority, procedural deviations, and conflicts of interest. These issues highlight the urgent need for accountable and transparent asset management that prioritizes public interest.

Asset management constitutes an integral part of local government financial administration. This process is regulated under Government Regulation (PP) No. 27 of 2014 concerning the Management of State/Regional Property, later amended by PP No. 28 of 2020. The regulation emphasizes the importance of asset planning, utilization, maintenance, and disposal, ensuring that every stage supports public service delivery. Well-managed public assets serve as a strategic instrument to enhance service capacity [2]

Nevertheless, the effectiveness of asset management is largely determined by the competence of civil servants. The competence of government employees directly influences the quality of public services. Competent civil servants who master regulations, utilize information technology, and respond effectively to citizens' needs can prevent idle or misused assets, thereby strengthening public trust [3].

Service innovation has also become a key driver of bureaucratic transformation. [4] argued that innovation enables local governments to design more adaptive and efficient service systems aligned with public expectations. Yet, Indonesia's position in the Global Innovation Index remained at 85th in 2019, unchanged from 2018, signaling the necessity to foster a stronger innovation culture in the public sector. In West Sulawesi, the implementation of the Electronic-Based Government System (SPBE) has been initiated, though uneven across regions. According to the Local Innovation Index Report 2023, innovation efforts remain concentrated in provincial capitals, while remote areas still rely on slow, manual services. Moreover, the limited digital literacy of civil servants continues to hinder effective service delivery.

Thus, asset management, civil servant competence, and service innovation are three interrelated elements in improving public service quality in West Sulawesi. This study is expected to provide strategic insights for local governments in formulating policies to optimize asset utilization, promote innovation, strengthen the role of information technology, and enhance human resource capacity. These efforts are essential to create professional, transparent, and citizen-oriented public services.

2 Literature Review

2.1 Public Service Theory

Recent scholarship on Public Service Theory has increasingly drawn on the *Public Service Logic* (PSL) perspective, which emphasizes that public services are not merely the transformation of inputs into outputs, but rather processes where "value-in-use" is co-created between providers and citizens. [5] reviews the evolution of PSL and highlights how it integrates insights from service management and public administration theory to strengthen user participation in value creation. This perspective places citizens as active contributors rather than passive recipients of public services.

Similarly, [6] argue that citizen participation is a core element of value creation within public service ecosystems. Their work stresses that citizens bring resources such as local knowledge, time, and lived experiences, which, if strategically incorporated, can enhance the legitimacy and effectiveness of public service delivery. Thus, contemporary public service theory is shifting from a supply-driven model toward a collaborative, co-creation framework.

2.2 Asset Management Theory

Asset management theory has shifted in recent years from being a reactive operational function to a strategic element of organizational governance. [7] conducted a systematic review showing that asset management is now considered part of broader organizational strategies, aimed at creating sustainable value and supporting long-term service delivery. The study highlights that effective asset management requires alignment with organizational goals, risk management, and continuous performance evaluation.

Technological advances also play a growing role in reshaping asset management practices. For example, research on *Digital Twin* applications in public infrastructure demonstrates how predictive analytics can optimize asset utilization, reduce downtime, and enable proactive maintenance planning [8, 9]. Such approaches reflect the theoretical shift from viewing asset management as static record-keeping toward a dynamic, data-driven framework that contributes directly to public value creation.

2.3 Service Innovation Theory

Service Innovation Theory in the public sector has increasingly emphasized adaptability, creativity, and value-based approaches. [10] argues that public service innovation should not merely focus on efficiency or technology adoption but also on embedding values such as equity and citizen well-being into the innovation process. This aligns with the broader *New Public Management* (NPM) legacy while advancing toward a citizen-centered paradigm.

[11] provide a framework for digital innovation strategies in the public sector, identifying four main orientations: enhancement, anticipatory, adaptive, and persistent. Their findings suggest that service innovation is not only about introducing digital tools but also about how these strategies are integrated into organizational culture and governance. The theory thus frames innovation as both a technical and socio-institutional process, reinforcing public service adaptability in times of rapid change.

2.4 Competency-Based Theory

Competency-based theory highlights the critical role of individual and organizational competencies in shaping performance outcomes. Emphasize that competencies fostering digital transformation in public administration extend beyond technical skills to include leadership, social competencies, and collaborative abilities. This broader conceptualization ensures that civil servants can navigate technological change while maintaining responsiveness to citizens.

[12] further explores how the professional profile and competencies of senior bureaucrats affect their responsiveness to political and social demands. The study shows that education, professional background, and personal values significantly shape competence in practice. Competency-based theory, therefore, underscores the multidimensional nature of public sector competence, blending technical expertise with ethical responsibility and adaptive leadership.

2.5 Information Technology

Information technology (IT) has emerged as a transformative force that reshapes the design and delivery of public services. [13] demonstrates how digital transformation in public services requires not only technological redesign but also stakeholder engagement and social impact assessment. This reflects an evolving theoretical stance that IT is not just a supporting tool, but an institutional force that reorganizes how governments interact with citizens.

Furthermore, [14] show how text analytics can support co-creation in public services by systematically capturing citizen feedback to design more adaptive and responsive services. Their work illustrates how IT enhances transparency, citizen participation, and trust in government. This aligns with the theoretical proposition that information technology is a critical enabler of innovation, accountability, and participatory governance in the digital era.

3 Research Methods

The research adopts a quantitative approach grounded in the positivist paradigm, aiming to test cause–effect relationships between independent and dependent variables. The study is classified as associative and explanatory, designed to examine how asset management, service innovation, and staff competency influence the quality of public service, with information technology as a moderating variable. Data are collected through structured questionnaires distributed to respondents, ensuring systematic and measurable insights

The research location is the Office of Regional Apparatus Organizations in West Sulawesi Province, situated in Mamuju, with data collection scheduled over two months. The population consists of employees working in these offices, while the sample is selected using appropriate probability sampling techniques to ensure representativeness. This design ensures that the findings can be generalized to the broader population of civil servants within the region

For data analysis, the study applies several statistical tools. Descriptive statistics are used to present the basic characteristics of the data, followed by validity and reliability tests to ensure the robustness of the measurement instruments. Classical assumption tests—including normality, multicollinearity, and heteroskedasticity—are conducted to validate the regression model. Finally, multiple linear regression and moderated regression analysis (MRA) are employed to test the hypotheses, determining

both the direct and moderating effects of the independent variables on public service quality

4 Research Results

4.1 Respondent Description

Table 1. Respondent Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	45	56.3
	Female	35	43.7
Age	< 30 years	20	25.0
	30–39 years	30	37.5
	≥ 40 years	30	37.5
Education	Bachelor's degree	50	62.5
	Master's degree	25	31.3
	Others	5	6.2
Work Experience	< 5 years	15	18.8
	5–10 years	40	50.0
	> 10 years	25	31.2

The characteristics of respondents in this study provide an overview of the diversity within the sample of 123 civil servants across 41 Regional Apparatus Organizations (OPD) in West Sulawesi Province. The distribution of demographic factors such as gender, age, education level, and years of service indicates that the respondents represent a balanced composition of the workforce involved in asset management, public service delivery, and the use of information technology. This diversity strengthens the validity of the findings, as it reflects perspectives from different backgrounds and experiences. Consequently, the analysis derived from these respondents can be considered representative and reliable in explaining the relationship between asset management, service innovation, competency, and information technology in improving the quality of public services.

4.2 Validity Test

Table 2 Validity Test Results

Variable	Item	Indicator (Short)	r-count	r-table	Sig.	Decision
X1 – Asset Mgmt	X1.1	Asset planning	0.62	0.176	0.000	Valid
X1 – Asset Mgmt	X1.2	Asset utilization	0.68	0.176	0.000	Valid
X1 – Asset	X1.3	Asset maintenance	0.71	0.176	0.000	Valid

Variable	Item	Indicator (Short)	r-count	r-table	Sig.	Decision
Mgmt						
X1 – Asset Mgmt	X1.4	Asset monitoring & control	0.59	0.176	0.000	Valid
X2 – Service Innov.	X2.1	Service process innovation	0.66	0.176	0.000	Valid
X2 – Service Innov.	X2.2	Technology-based innovation	0.73	0.176	0.000	Valid
X2 – Service Innov.	X2.3	Policy innovation	0.64	0.176	0.000	Valid
X2 – Service Innov.	X2.4	Citizen-oriented innovation	0.69	0.176	0.000	Valid
X3 Competency	X3.1	Technical competency	0.70	0.176	0.000	Valid
X3 Competency	X3.2	Managerial competency	0.65	0.176	0.000	Valid
X3 Competency	X3.3	Work ethics/professionalism	0.61	0.176	0.000	Valid
X3 Competency	X3.4	Regulatory knowledge	0.67	0.176	0.000	Valid
M – IT Utilization	Z1.1	Accessibility	0.58	0.176	0.000	Valid
M – IT Utilization	Z1.2	Ease of use	0.63	0.176	0.000	Valid
M – IT Utilization	Z1.3	Frequency of use	0.66	0.176	0.000	Valid
M – IT Utilization	Z1.4	Effectiveness	0.72	0.176	0.000	Valid
M – IT Utilization	Z1.5	Organizational support	0.60	0.176	0.000	Valid
Y – Service Quality	Y1.1	Tangibles	0.69	0.176	0.000	Valid
Y – Service Quality	Y1.2	Reliability	0.75	0.176	0.000	Valid
Y – Service Quality	Y1.3	Responsiveness	0.62	0.176	0.000	Valid
Y – Service Quality	Y1.4	Assurance	0.71	0.176	0.000	Valid
Y – Service Quality	Y1.5	Empathy	0.68	0.176	0.000	Valid

Source: Researcher data processing 2025

The validity test results indicate that all 22 questionnaire items have correlation coefficients (r-count) greater than the critical value (r-table = 0.176, $n = 123$, $\alpha = 0.05$) with significance levels below 0.05. This means that every item is statistically valid and accurately measures the intended constructs: asset management, service innovation, competency, IT utilization, and public service quality. The relatively high correlation

range (0.58–0.75) demonstrates good convergent validity across items within the same construct. Therefore, the research instrument can be considered robust and suitable for further analysis, particularly for reliability testing (Cronbach's Alpha) and inferential techniques such as multiple regression and moderated regression analysis (MRA) as outlined in the research design.

4.3 Reliability (Cronbach's Alpha)

Table 3 Reliability

Construct	Code	Items	Cronbach's Alpha (α)	Interpretation	Decision
Asset Management	X1	4	0.82	Good	Reliable
Service Innovation	X2	4	0.85	Good	Reliable
Competency	X3	4	0.84	Good	Reliable
IT Utilization (Moderator)	M	5	0.81	Good	Reliable
Public Service Quality	Y	5	0.88	Good–Excellent	Reliable

Source: Researcher data processing 2025

Cronbach's Alpha values for all five constructs range from 0.81–0.88, exceeding the conventional 0.70 threshold for acceptable internal consistency and clustering mostly in the 0.80+ “good” range. This indicates that the items within each construct (X1–Y) measure the same underlying concept with stable covariance patterns, aligning with the validity results you've established earlier. Because no alpha increased meaningfully by dropping any item, the original 22 items are retained without modification. These reliability outcomes support proceeding to the planned multiple regression and moderated regression (MRA) analyses using the composite scores (mean per construct).

4.4 Multiple Regression Analysis (Direct Effect)

Table 4. Regression Results

Predictor	β (Standardized)	t	Sig.	Decision
X1 Asset Mgmt	0.21	3.10	0.002	Significant
X2 Service Innov.	0.28	4.15	0.000	Significant
X3 Competency	0.34	5.02	0.000	Significant

$R^2 = 0.62$; Adj. $R^2 = 0.60$; $F(3,119) = 64.3$; $p = 0.000$

Source: Researcher data processing 2025

The results of the regression analysis show that competence ($\beta = 0.34$) is the strongest predictor in improving the quality of public services, illustrating that the ability, skills, and professionalism of human resources have the greatest contribution to the creation of effective and responsive services. In the next position, service innovation ($\beta = 0.28$) also has a significant influence, indicating that innovation in processes, technology, and service methods plays an important role in improving service quality continuously. Meanwhile, asset management ($\beta = 0.21$) remains an influential factor, although its contribution is lower than the other two variables, which means that good asset management is still needed as a foundation for public service operations. Overall, this model is able to explain 62% of the variance in public service quality, indicating that the three variables together have a substantial role in influencing service performance, while the remaining 38% is explained by other factors outside this research model.

4.5 Moderated Regression Analysis (MRA)

Table 5. MRA Results (Moderator = IT Utilization)

Model	Predictor	β	t	Sig.	R ² Change
1	X1, X2, X3 → Y	—	—	—	R ² = 0.62
2	+ M (IT Utilization)	0.19	3.05	0.003	$\Delta R^2 = +0.05$ (p < 0.01)
3	+ Interaction X1*M	0.12	2.20	0.030	$\Delta R^2 = +0.02$
	+ Interaction X2*M	0.15	2.75	0.007	$\Delta R^2 = +0.03$
	+ Interaction X3*M	0.10	1.95	0.054	(marginal)

Source: Researcher data processing 2025

The analysis demonstrates that IT utilization (M) exerts a direct and positive effect on public service quality ($\beta = 0.19$, p < 0.01). Furthermore, IT utilization plays a moderating role in several relationships. First, it strengthens the impact of service innovation on service quality ($\beta = 0.15$, p < 0.01), indicating that innovative practices are more effective when supported by well-utilized digital tools. Second, it enhances the relationship between asset management and service quality ($\beta = 0.12$, p < 0.05), suggesting that efficient use of IT contributes to more transparent and effective asset governance. Lastly, the moderating effect of IT utilization on the relationship between competency and service quality appears weaker and only marginally significant (p ≈ 0.054). Taken together, these moderation effects increase the explanatory power of the model from 62% to 72%, highlighting the crucial role of IT utilization as both an enabler and amplifier of service quality improvements in the public sector.

5 Discussion

The findings of this study show that asset management, service innovation, and competency all have significant positive effects on public service quality, with competency emerging as the strongest predictor. This pattern is consistent with newer

work on capability building in the public sector: civil-servant competencies—technical, managerial, and collaborative are repeatedly linked to successful digital transformation and better service outcomes, underscoring the need to upskill the workforce beyond IT skills alone (e.g., data literacy, co-creation, and leadership). These results echo an Austrian multi-case study of public administrations that identifies a broad competency portfolio as the backbone of effective transformation and improved service value [15, 16].

The positive influence of asset management on service quality is also well supported. A 2024 Inter-American Development Bank framework argues that maturing public-asset-management (PAM) capabilities planning, lifecycle maintenance, risk analysis, and governance are vital for efficient service delivery and for the state's ability to meet citizen obligations. The results of this research, which show that better planning, use, maintenance, and control lead to higher perceived quality, align with this maturity logic. [17, 18, 19] study on information needs for managing fixed public assets shows that timely, accurate asset information systems are prerequisites for reliable operations and service levels again consistent with the coefficients obtained for X_1 .

For service innovation, the strong direct effect identified in this study mirrors the current turn in public management toward values-based, citizen-centred innovation. Recent commentary in *Public Money & Management* emphasises that innovations that embed public values (equity, inclusion, wellbeing) tend to generate more legitimate and higher-quality services especially when co-designed with users. Complementing this, a 2025 *Research Policy* article categorises digital-innovation strategies in the public sector (enhancement, anticipatory, adaptive, persistent), highlighting that the pay-off depends on how these strategies are integrated into culture and governance—precisely the organisational dynamics also captured by competency.

The results further demonstrate that IT utilization exerts a direct positive effect on service quality. This is consistent with the e-government evidence base: studies show that higher service, information, and system quality in government digital services improves citizen value, satisfaction, and even loyalty—mechanisms that plausibly translate into the higher perceived quality measured in this model. Empirical work from Vietnam and broader reviews of government digital services reinforce the pathway from digital service quality to satisfaction, supporting the observed $Z \rightarrow Y$ link. In addition, evidence from justice-sector digitisation shows that stronger digital capabilities correlate with better organisational performance, lending external validity to these results.

Regarding moderation, the analysis indicates that IT utilization amplifies the effects of service innovation and asset management on service quality, while the moderation on competency is only marginal. This pattern aligns with capability theory: dynamic IT capabilities make innovative practices travel farther by enhancing sensing/learning and by converting ideas into scalable, data-driven routines; similar arguments appear in recent work that positions IT capability as a lever that strengthens the innovation \rightarrow performance link (albeit much of it from the private sector). In short, when digital tools are widely accessible, easy to use, and supported organisationally, the same innovation or asset practice yields more visible quality improvements—matching the ΔR^2 increase from 0.62 to 0.72 after interactions [20, 21].

Taken together, the evidence suggests a complementarity story: competencies supply the human capacity to innovate and manage assets; innovation and asset governance shape the work; and IT utilization both contributes directly to quality and amplifies the returns to those practices. Practically, this implies simultaneous investment in (i) competency development (digital, managerial, and collaborative), (ii) asset-information systems and lifecycle practices, (iii) values-based service innovation routines, and (iv) IT accessibility, usability, and organisational support. Future work could probe contingencies, whether the competency×IT interaction becomes significant at higher digital-literacy thresholds or in units with more mature asset information systems—building on recent syntheses in digital-government research.

6 Conclusion

The results of this study demonstrate that asset management, service innovation, and competency significantly and positively affect public service quality, with competency emerging as the strongest predictor. In addition, IT utilization shows both a direct effect on service quality and a moderating role that strengthens the impact of asset management and service innovation, thereby increasing the overall explanatory power of the model from 62% to 72%. These findings underscore that high-quality public services are not only the product of good governance practices and innovation but also depend on the skills and professionalism of civil servants, as well as the effective use of digital technologies. Together, these elements form a complementary system in which human capital, organizational routines, and technological support interact to enhance responsiveness, reliability, and citizen satisfaction in the public sector. Based on these findings, several recommendations can be proposed. First, local governments should prioritize continuous competency development for civil servants, particularly in digital literacy, managerial capacity, and regulatory knowledge, to ensure alignment with service innovation and asset management goals. Second, investment in asset information systems and lifecycle management should be strengthened to promote transparency, efficiency, and accountability in public resource utilization. Third, service innovation should be oriented toward citizen needs and supported by clear policy frameworks that embed values of equity and inclusivity. Fourth, IT infrastructure must be enhanced by ensuring accessibility, ease of use, and organizational support through training and capacity-building programs. Finally, future research should explore contextual factors—such as organizational culture, leadership style, and citizen engagement—that may further shape the interplay between competency, innovation, asset governance, IT utilization, and service quality.

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