



Public Asset Utilization and Maintenance Strategy on Community Satisfaction: The Mediating Role of Service Quality at the Denpasar City Civil Registry Office

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Abstract

Background: The commitment of the Head of *Disdukcapil* to continue optimizing various public services in Denpasar City, especially *SIAK* (Regional/City Information System), remains strong; however, the utilization of regional assets is still suboptimal (approximately 38%), and inconsistent maintenance strategies are among the factors contributing to fluctuations in these indices. This condition requires stronger asset governance to improve services.

Objective: The purpose of this study is to analyze the influence of utilization and maintenance strategies on community satisfaction, with service quality as a mediating variable.

Methods: This study uses an associative quantitative method with an explanatory research design. From a population of 20,169 service users, Slovin's formula was used to determine a sample of 156 respondents. The PLS-SEM method was used in the data analysis to test the proposed hypotheses.

Results: The results show that asset utilization and maintenance significantly influence service quality. Among these, the maintenance strategy was the most influential determinant (coefficient = 0.430). In addition, the relationship between asset governance and community satisfaction was partially mediated by service quality.

Conclusion: There are critical periods in operating assets during which extra caution is required, as there may be factors not immediately visible that affect maintenance strategies. Moreover, it is important to strengthen cybersecurity to ensure the reliability of service assurance and, consequently, enhance community satisfaction.

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INTRODUCTION

Management of public assets is a strategic component of local governance, as it underlies the actions taken and the outcomes achieved in community service (Kloot & Martin, 2000). From a macroeconomic perspective within the public sector, regional assets should not be regarded merely as balance-sheet entries or idle capital, but rather as economic resources requiring productive utilization (Yousefi, 2019). Rahmawati (2019) assert that regional assets must be managed based on value-for-money principles to achieve maximum economic and social benefits for the public.

Denpasar City, as a primary agent of the Smart City program, possesses characteristics representative of a high opportunity-cost community. Failures or inaction by the owners and operators of various assets—such as downed service systems or unsustainable facilities—

translate into tangible bottom-line losses for individuals. However, empirical evidence indicates that allocative inefficiency persists. Denpasar itself reported that 38 percent of regional assets, based on audit data from the Financial and Development Supervisory Agency (BPKP), have not been utilized optimally. Such idle assets represent capital waste within the economy, where public funds depreciate without generating returns through the provision of public services.

This issue is particularly critical for the Denpasar City Population and Civil Registration Office (Disdukcapil). In the current era of digitalization, these agencies are highly dependent on the stability of technological resources (servers, networks, and applications) as well as physical infrastructure. In practice, maintenance is often underprioritized compared to the acquisition of new assets. According to BPKP data (2023), nationally, only about 42 percent of local government agencies have formal Standard Operating Procedures (SOPs) for routinely implemented asset maintenance.

This condition is reflected in the lack of preparedness of systems and facilities, which contributes to fluctuations in the Community Satisfaction Index (IKM). The IKM value for Denpasar City Disdukcapil decreased from 90.75 in 2020, increased to 94.75 in 2023, and then declined again to 93.25 in 2024. This decline indicates public dissatisfaction associated with suboptimal maintenance of public service assets.

Despite the urgency of this issue, most prior research remains partial in scope. Studies on regional asset governance tend to focus on administrative and inventory aspects, with limited literature quantitatively measuring their impact on service outcomes (Kusnawati et al., 2019; Sumaryana et al., 2024). Meanwhile, research on physical facilities largely adopts a qualitative descriptive approach and lacks robust statistical modeling of relationships between variables.

A research gap is identified in the limited work modeling asset utilization and maintenance strategies (both physical and digital) simultaneously using a Whole-of-Life Cycle Costing approach (Lase et al., 2025). Therefore, this study introduces a novel contribution by integrating Public Asset Utility Theory into a service quality model. As argued by Muthmainnah (2025), asset utility should not be assessed solely based on administrative control, but rather on its conversion rate into service quality value that fulfills community needs.

This paper contributes to the service quality literature by positioning SERVQUAL dimensions as a mediating mechanism between asset governance and citizen satisfaction. It offers an integrated framework combining financial theory (Whole-of-Life Cycle Costing) and service quality theory (Expectancy Disconfirmation Theory) within a PLS-SEM structural model. The empirical findings reveal that maintenance strategy ($\beta = 0.430$) has a comparatively stronger effect than asset utilization ($\beta = 0.278$) as a driver of service quality. This finding addresses a gap in the literature, which has predominantly focused on procurement and utilization [12, 42–44]. The findings provide an evidence-based, quantitative assessment of areas offering the greatest return on investment for enhancing citizen satisfaction in government service offices, thereby enabling data-driven budget reallocation by public administration decision-makers.

Hypothesis Development

This study contributes towards the theoretical integration of Public Asset Utility Theory as well as Whole of Life Cycle Costing Hastings (2010) and SERVQUAL-based service quality measurement inside a single PLS-SEM model. It empirically confirms that governance of public assets (use and upkeep) acts in the role as a former/proper prior causative of service quality which then mediates citizen satisfaction results — this is the first time such a cause-and-effect link has been interrogated in the Indonesian research-based literature on public sector asset management.

Theory of Public Asset Utility and Asset Utilization

This research utilizes Public Asset Utility Theory as the larger theory. This is in stark contrast to market asset management theory on which most literature on the topic rests, that often has a myopic view of the problem limiting itself to administrative records and purely physical life cycles and not taking into account the utility value dimension outside of individual organisation assets for a wider societal or community purpose. Public assets are not classified as dead capital that has been draining maintenance budgets, but rather treated as strategic resources that must be transformed into public services (Giglio et al., 2018). The core is that asset

management works better if it can lower cost in entering the door whereby creating an opportunity for engagement between government and citizens (Lin & Shen, 2024).

If digital assets (service applications) and physical assets (supporting apparel) are optimally utilized, the utility of the service, in addition to its perception as a quality one is enhanced. Moreover, ensuring value for money directly brings the public a positive response to government performance through (Government output = Efficiency + Use) With this, the hypothesis that can be proposed is:

H1: The Utilization of Public Assets has a positive and significant effect on the Quality of Public Services.

H3: The Utilization of Public Assets has a positive and significant effect on Community Satisfaction.

Public Asset Maintenance Strategy (Whole of Life Cycle Costing)

Migration strategies include preventive maintenance and corrective maintenance for damage prevention, which is the act of extending the technical life of assets. Maintenance strategies in modern public asset management can hardly be separated from Whole of Life Cycle Costing (WLC) concepts that calculate the total cost of ownership over an asset's entire lifecycle, from procurement to disposal. The WLC principle teaches us that capex is commonly the tip of an iceberg and most Opex behind sustainability of asset functions are related to the maintenance.

Allocation Mishmash: The imbalance in allocation between agencies (more Capex without enough Opex) will lead to early depreciation. In the era of digitalization (servers, ADM machines), predictive maintenance is essential to ensure very high availability with limited downtimes. This maintenance continuity contributes to creating a dimension of security and reliability (Reliability and Assurance dimensions) for the service users, and will also directly affect the evaluation made by the clients regarding public satisfaction regarding maintenance of facilities. Therefore, a hypothesis is formulated:

H2: Public Asset Maintenance Strategy has a positive and significant effect on the Quality of Public Services.

H4: The Public Asset Maintenance Strategy has a positive and significant effect on Community Satisfaction.

Quality of Public Services as a Variable of Mediation and Public Satisfaction

Public service quality that bridges the transformation of resource inputs (assets) into outcomes in the form of community satisfaction. This is underpinned by the Public Service Triangle from Albrecht (1985), whereby Public Assets, both physical and digital, represents the 'System' component that enables human resources to deliver services. The SERVQUAL (Tangibles, Reliability, Responsiveness, Assurance and Empathy) instrument was used as a measure of the quality of service.

Expectancy Disconfirmation Theory (1980) is the framework that accounts for community satisfaction, based on a cognitive evaluation of how well communities are meeting expectations, where actual performance of services is compared against initial expectations. Well managed assets to needed to Alternative meets many criteria, but only if the alternatives effectively delivered as a responsive & reliable service (service delivery). This implies that service quality can be mediating variable. According to this theoretical integration, we have based the hypotheses as follows:

H5: The quality of Public Services has a positive and significant effect on Community Satisfaction.

H6: The Quality of Public Services mediates the influence of Public Asset Utilization on Public Satisfaction.

H7: Quality of Public Services mediates the influence of Public Asset Maintenance Strategy on Public Satisfaction.

Conceptual Framework

Constructs a model of Figure 1 This is the conceptual framework explained in this study based on the theory and hypothesis that has been built regarding exogenous, intervening, and endogenous variables.

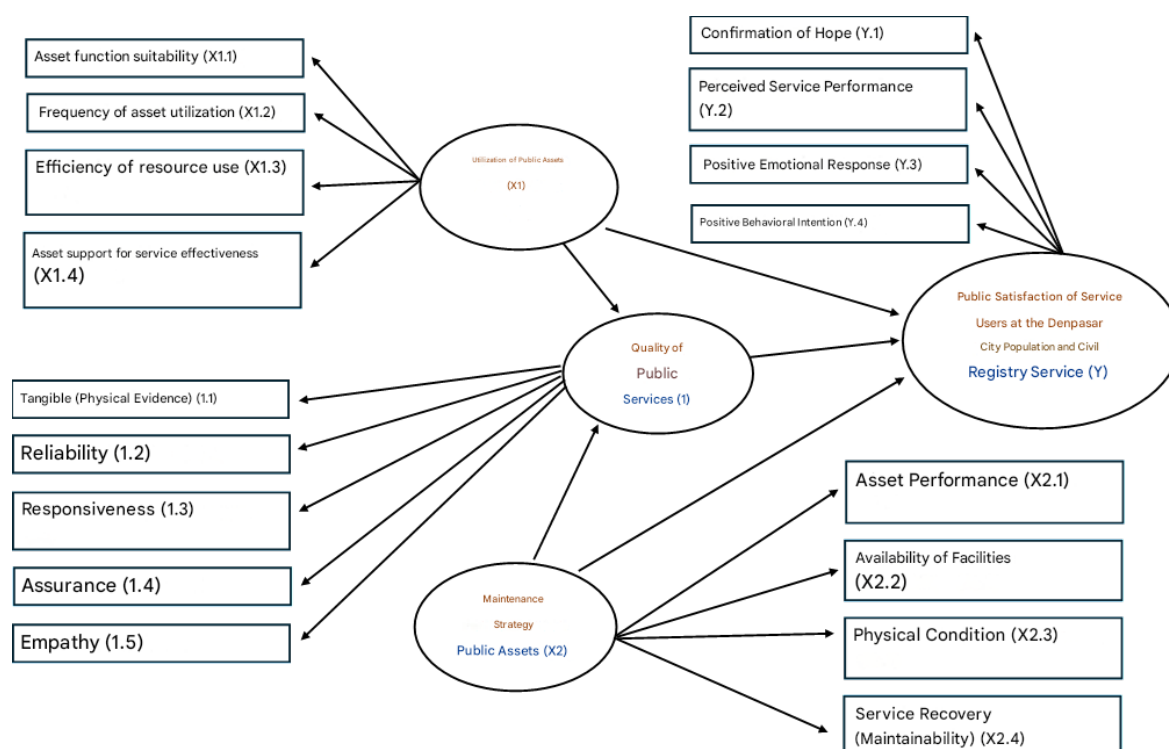


Figure 1. Research Concept

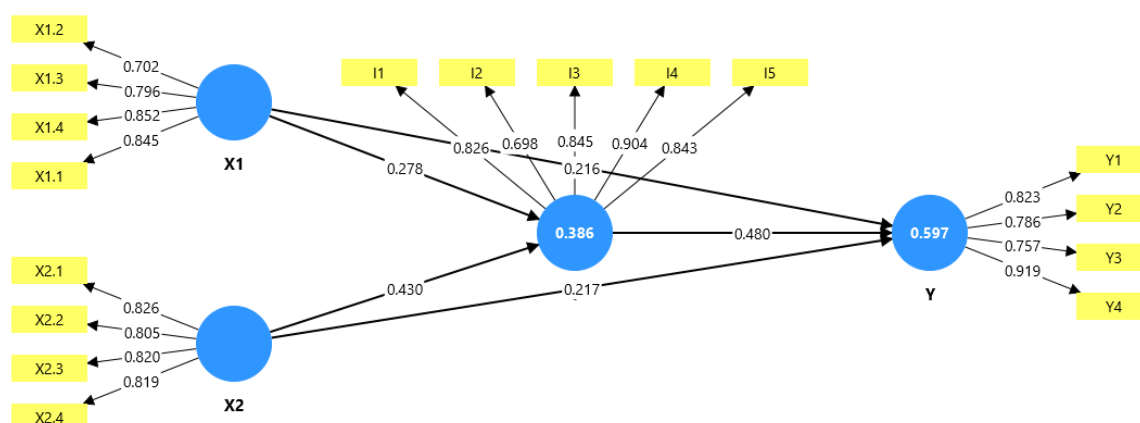


Figure 2. Structural Model of SmartPLS Analysis Results

METHOD

Research Design

This is associative quantitative research, with explanatory research design. This approach is selected because this research is to explain the position of research variables and testing what causal relationship (cause-effect) has between Public Asset Utilization and Asset Maintenance Strategy on Community Satisfaction, with Public Service Quality as an intervening variable (Sari et al., 2022).

Population and Sample

This research location is a Denpasar City Population and Civil Registration Office (Disdukcapil). The determination of this location is based on the phenomenon of fluctuations in Community Satisfaction Index (IKM) and the urgency regarding the reliability of public service assets owned by that agency. Population in this study are all people in Denpasar City who have used Disdukcapil service (online and hybrid) within the last five months (August–December 2025) from a total of 20,169 people.

The sample size was computed based on the Slovin formula at an 8% margin of error due

to large population. Based on this calculation, the least sample number as determined was that or 158 respondents. This research has sample extraction technique by using Simple Random Sampling that is distributing questionnaire online (e-survey) via Google Forms whose link were sent to representative service users.

Variable Measurement

This study had four major variables that were measured through a questionnaire instrument with the help of 5-point Likert Scale (1 = Strongly Agree to 5 = Strongly Agree). This scale is used uniformly for the four variables Public Asset Utilization (X1), Public Asset Maintenance Strategy (X2), Public Service Quality (I) and Community Satisfaction (Y).

1. Asset Utilization (X1): Measured through indicators of usage intensity, function accuracy, and asset contribution to service acceleration (adapted from asset utility theory).
2. Asset Maintenance Strategy (X2): Measured through indicators of preventive maintenance, corrective maintenance, budget allocation (Opex), and system reliability (minimal downtime).
3. Quality of Public Services (I): Acting as a mediating variable, measured using the five dimensions of SERVQUAL from Parasuraman (1988), namely Tangibles, Reliability, Responsiveness, Assurance, and Empathy.
4. Community Satisfaction (Y): Measured through indicators of suitability of expectations, interest in recommending services, and overall satisfaction.

Table 1. Research Instruments

Variable	Indicator	Description
Public Asset Utilization (X₁)	Asset function suitability	Assets are used according to their intended purpose to support public service functions.
	Frequency of asset utilization	The level of routine asset usage in operational activities, reflecting functional optimization.
	Efficiency of resource use	The ratio between inputs (costs) and outputs (services) in utilizing assets efficiently.
	Support for service effectiveness	The contribution of assets to improving the quality and outcomes of public services.
Public Asset Maintenance Strategy (X₂)	Asset Performance	Reflects well-planned maintenance, where functional failures are minimized.
	Availability	Reflects the effective implementation of periodic (preventive) maintenance, resulting in low downtime.
	Physical Condition	Optimal physical condition serves as observable evidence of adequate maintenance budget support.
	Maintainability	Reflects evaluation and quick corrective maintenance responses.
Public Service Quality (I)	Tangibles	Physical conditions such as service facilities, equipment, and cleanliness that influence user perception.
	Reliability	The ability to deliver services accurately and on time according

	to procedures.
Responsiveness	The promptness of staff in responding
Data source: data processed	

Data Analysis Methods

The analysis used for the research data was variance-based Structural Equation Modeling using Partial Least Square (PLS-SEM) method with SmartPLS version 4. PLS-SEM was selected primarily due to its capacity to analyze complex structural models including mediating variables, –without the stringent assumptions of normality (Hair et al., 2019).

The stages of data analysis include two main steps: 1) Evaluation of the Measurement Model (Outer Model): Aims to test the validity and reliability of the instrument. Convergent validity was assessed from the outer loading value (>0.60) and Average Variance Extracted / AVE (>0.50). Discriminant validity was evaluated using the Heterotrait-Monotrait Ratio (HTMT) criterion (<0.90). Meanwhile, the reliability of the construct was measured using Cronbach's Alpha and Composite Reliability (CR) with a recommended threshold of >0.70 . 2) Structural Model Evaluation (Inner Model): Aims to test the research hypothesis. The evaluation was carried out by looking at the value of the Coefficient of Determination (R-Square) to measure how much variance of endogenous variables can be explained by exogenous variables, as well as Cross-Validated Redundancy (Q-Square) to test the predictive relevance of the model. Hypothesis testing (direct influence and mediation) was performed through a bootstrapping procedure with 5,000 subsamples and a significance level of 5% (p-value < 0.05).

RESULTS AND DISCUSSION

Results

Respondent Characteristics

This study involved 156 respondents who were representatives of digital and physical service users at the Denpasar City Disdukcapil. Based on demographic data, most respondents are male (65.4%), in the productive age group of 26-35 years (34.0%), and have the last education of Strata 1/Bachelor (63.5%). Most respondents work as private employees (43.6%). This profile indicates that service users are dominated by educated and tech-savvy people who have high expectations of time efficiency, online system reliability, and comfort of physical facilities.

Evaluation of Measurement Models (Outer Model)

External model evaluation is carried out to ensure that the indicators used are valid and reliable in measuring latent variables.

1. Convergent Validity: The results of the analysis show that all indicators have an outer loading value above the threshold of 0.60 (even the majority above 0.70) and the Average Variance Extracted (AVE) value for all variables is above 0.50. This confirms that latent constructs are able to explain more than half of the variance of the indicator.
2. Discriminant Validity: Measured using the Heterotrait-Monotrait Ratio of Correlations (HTMT) criteria. The entire inter-variable HTMT value is below the critical threshold of 0.90, which proves that each variable is unique and empirically different from each other.
3. Construct Reliability: Internal consistency is measured using Cronbach's Alpha and Composite Reliability (CR). All variables recorded a $>$ value of 0.70 (the majority > 0.80), which indicates that the research instrument has very high reliability.

Table 2. Outer Loadings

Indicator	X1	X2	I	Y
Asset Function Suitability (X1.1)	0.845			
Frequency of Asset Utilization (X1.2)	0.702			
Efficiency of Resource Use (X1.3)	0.796			
Asset Support for Service Effectiveness (X1.4)	0.852			
Asset Performance (X2.1)		0.826		

Facility Availability (X2.2)	0.805
Physical Condition (X2.3)	0.820
Maintainability (X2.4)	0.819
Tangibles (I.1)	0.826
Reliability (I.2)	0.698
Responsiveness (I.3)	0.845
Assurance (I.4)	0.904
Empathy (I.5)	0.843
Expectation Confirmation (Y.1)	0.823
Perceived Service Performance (Y.2)	0.786
Positive Emotional Response (Y.3)	0.757
Positive Behavioral Intention (Y.4)	0.919

Data source: data processed

Table 3. Average Variance Extracted (AVE)

Variable	AVE	Description
Public Service Quality (I)	0.682	Valid
Public Asset Utilization (X1)	0.642	Valid
Public Asset Maintenance Strategy (X2)	0.669	Valid
Community Satisfaction (Y)	0.678	Valid

Data source: data processed

Table 4. Reliability Test Results

Variable	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Description
Public Asset Utilization (X1)	0.812	0.822	0.877	Reliable
Public Asset Maintenance Strategy (X2)	0.836	0.841	0.890	Reliable
Public Service Quality (I)	0.882	0.900	0.914	Reliable
Community Satisfaction (Y)	0.839	0.848	0.893	Reliable

Data source: data processed

Evaluation of Structural Models (Inner Model)

After the measurement model is confirmed in terms of validity and reliability, one step further is to calculate the inner model to determine predictive strength and relationships between variables respectively. Coefficient of Determination (R-Square): The results to the test provided an R^2 value for alternate Public Service Quality variable (I) = 0.386. This implies that Asset Utilization and Maintenance Strategy accounts for 38.6% of the explanation of service quality variability. Community Satisfaction mean variable has an R^2 value of 0.597 it means that the variation of Community Satisfaction amounting to 59.7% is explained by this model, while the rest is explained by factors other than those studied. Predictive Relevance (Q-Square): The Q^2 that is obtained from the PLSpredict test > 0, therefore this structural model has good and robust predictive relevance (out-of-sample prediction).

Table 5. R-Square Test Results

Variable Endogen	R-Square (R^2)	R-Square Adjusted	Description
Public Service Quality (I)	0,386	0,378	Moderate

Community Satisfaction (Y)	0,597	0,589	Strong
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Data source: data processed

Hypothesis Testing Results

Hypothesis testing via bootstrapping (fine-tuning 5,000 subsamples; $\alpha = 0.05$). When the T-Statistic value becomes greater than 1.96 and P-Value becomes less than 0.05, we acceptance of hypothesis is required. Public Asset Utilization significantly and positively influences Service Quality (Coefficient = 0.278; P-Value < 0.05), supports H1 CM_A also positively and significantly affects Service Quality (Coefficient = 0,430; P-Value < 0,05) confirming H2 and thus registering the stronger effect direct on this construct in the model. In addition, Public Asset Utilization has a positive and significant effect on Community Satisfaction (Coefficient = 0.216; P-Value < 0.05), thus supporting H3. Asset Maintenance Strategy has a positive and significant effect on Community Satisfaction (Coefficient = 0.217; P-Value < 0.05) confirming the hypothesis H4 Moreover, Public Service Quality exhibited a significant positive effect on the Community Satisfaction (Coefficient = 0.480; P-Value < 0.05) which supports H5.

a. Indirect Effect / Mediation Test

1. H6: Public Service Quality is proven to significantly mediate the influence of Asset Utilization on Community Satisfaction (Coefficient = 0.134; P-Value < 0.05). Because the direct influence (H3) is also significant, Partial Mediation occurs. Hypothesis 6 is accepted.
2. H7: Public Service Quality is proven to significantly mediate the influence of Asset Maintenance Strategy on Community Satisfaction (Coefficient = 0.206; P-Value < 0.05). Because the direct influence (H4) is also significant, Partial Mediation occurs. Hypothesis 7 is accepted.

Table 6. Hypothesis Test Results (Direct Influence)

Hypothesis	Relationship Pathway	Coefficient	T-Statistics	P-Values	Decision
H1	Asset Utilization (X1) -> Service Quality (I)	0,278	2,558	0,011	Accepted
H2	Maintenance Strategy (X2) -> Service Quality (I)	0,430	4,544	0,000	Accepted
H3	Asset Utilization (X1) -> Community Satisfaction (Y)	0,216	2,171	0,030	Accepted
H4	Maintenance Strategy (X2) -> Community Satisfaction (Y)	0,217	2,194	0,028	Accepted
H5	Service Quality (I) -> Community Satisfaction (Y)	0,480	3,827	0,000	Accepted

Data source: data processed

Table 7. Results of Indirect Hypothesis Testing and Mediation Types

Mediation Path	Direct Effect (P-Value)	Indirect Effect (O)	T-Stats	P-Values	Hypothesis Conclusion	Mediation Type
X1 -> I -> Y	Sig (0.030)	0.133	1.993	0.046	Accepted	Partial Mediation
X2 -> I -> Y	Sig (0.028)	0.207	3.188	0.001	Accepted	Partial Mediation

Data source: data processed

Discussion

The Effect of Public Asset Utilization on Service Quality and Community Satisfaction

The results of the hypothesis test prove that the use of public assets has a positive and significant effect on both service quality and direct community satisfaction. These findings are in

line with Public Asset Utility Theory (Chien & Thanh, 2022). In the Denpasar City Disdukcapil, the use of digital instruments such as online service applications and Independent Dukcapil Pavilion (ADM) facilities has been proven to be able to cut waiting time and reduce bureaucratic access barriers. Assets that are not idle and function according to their intended purpose significantly increase public perception of responsiveness and ultimately lead to increased service user satisfaction (Bentley et al., 2025; Khan, 2025).

The Influence of Asset Maintenance Strategy on Service Quality and Community Satisfaction

The most interesting finding in this study is that Asset Maintenance Strategy is the strongest determinant of shaping Public Service Quality (with the highest path coefficient of 0.430). This provides a strong empirical affirmation of the Whole of Life Cycle Costing (WLC) principle from (Hastings, 2010). For urban communities such as Denpasar which has high mobility, system reliability such as servers that are not easily downed and printing devices that are always functioning are much more valuable than just the procurement of new assets that are sophisticated but prone to damage. Preventive maintenance strategies have been proven to not only prevent asset value depreciation, but also provide certainty of services to the community, which leads to a high Community Satisfaction Index (IKM) (Alfiyani et al., 2023; Campagna et al., 2025).

The Role of Public Service Quality Mediation

The results of the path analysis prove that Public Service Quality plays a role as a partial mediator that bridges the relationship between asset governance (utilization and maintenance) and community satisfaction. These findings support the Expectancy Disconfirmation Theory Oliver (1980) and confirm that government assets—both physical and digital—are essentially back-office resources. The procurement and maintenance of assets will not automatically result in public satisfaction if they are not converted first into excellent service delivery on the front-line (front-office) (Lanin et al., 2023). Good asset management enables the state civil servants (ASN) to provide faster, more accurate, and safer services, which in turn exceeds public expectations and creates satisfaction.

CONCLUSION

Based on the results of data analysis and discussion, this study concludes that the utilization of public assets and asset maintenance strategies have a positive and significant effect on the quality of public services at the Denpasar City Disdukcapil, with maintenance strategy as the most dominant factor in shaping service quality. In addition, the utilization of public assets, asset maintenance strategies, and the quality of public services also have a direct, positive, and significant effect on public satisfaction. The quality of public services has been shown to partially mediate the relationship between the utilization of public assets and asset maintenance strategies and public satisfaction, indicating that the benefits of assets will only be realized if they are translated into reliable and responsive services. Practically, this study suggests the need to reorient the government budget from capital expenditure (CapEx) to operational expenditure (OpEx) by focusing on preventive maintenance to sustain asset performance, implementing periodic asset utilization audits to optimize idle assets, and increasing investment in cybersecurity to ensure the protection of citizens' personal data as an essential component of service quality.

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AUTHOR CONTRIBUTION STATEMENT

I Nyoman Ega Beerawa contributed to the conceptualization of the study, research design, data collection, data analysis, and preparation of the original manuscript draft. Made Dwi Setyadhi Mustika contributed to the development of the methodology, validation of the research findings, and critical review and editing of the manuscript. Both authors have read and approved the final version of the manuscript.

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