International Journal of Management and Business Intelligence (IJBMI)
Vol. 4 No. 5, 2026: 1399-1416

The Influence of SALAM Application Implementation on Public Value Creation through User Satisfaction as an Intervening Variable at KPPBC TMP A Marunda

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A R T I C L E I N F O

Keywords: E-Government, Delone & Mclean Information System Success, Public Value, User Satisfaction, Customs and Excise

Received : 27, Agustus
Revised : 28, September
Accepted: 30, Oktober

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A B S T R A C T

This study evaluates the impact of implementing e-government on public service, called Sistem Aplikasi Layanan Mandiri (SALAM application) at Customs and Excise Supervision and Services Office Type Madya Pabean (KPPBC TMP) A Marunda on Public Value creation through User Satisfaction. Integrating the DeLone & McLean Information Systems Success Model and Public Value Theory, this quantitative research analyzes 33 clean responses from active external stakeholders using PLS-SEM via SmartPLS 4. Empirical findings reveal that Service Quality is the strongest direct predictor of User Satisfaction, followed by System Quality, whereas Information Quality shows no significant effect. Furthermore, User Satisfaction significantly mediates the impacts of Service Quality and System Quality on Public Value. Practical recommendations emphasize optimizing system reliability, enforcing strict helpdesk Service Level Agreements, and expanding interactive digital features to enhance customs public service quality.

DOI: https://doi.org/10.59890/ijmbi.v4i5.75
ISSN-E: 3025-5589
https://journalijmbi.my.id/index.php/ijmbi

INTRODUCTION

Digital transformation has reshaped public sector governance over the past two decades. Modern governments increasingly rely on information and communication technology (ICT) to raise the efficiency, accountability, and quality of public services, a shift commonly referred to as e-government or digital government (Deng et al., 2018). In the digital society, speed of service and ease of access have become the primary expectations of public service users, and the United Nations E-Government Survey 2024 reports that Asia recorded the fastest regional improvement in the E-Government Development Index, rising from 0.6102 in 2022 to 0.6382 in 2024 (United Nations, 2024). In Indonesia, this global trend is institutionalized through the Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik/SPBE) mandated by Presidential Regulation No. 95 of 2018, which requires every government agency to develop integrated information systems for higher-quality public services (Peraturan Presiden, 2018).

The Directorate General of Customs and Excise (DJBC), under the Indonesian Ministry of Finance, has pursued this digital agenda through its national customs platform, CEISA, first built in 2012 and upgraded to CEISA 4.0 in 2018. However, the shift from manual to automated service formats has not automatically translated into proportional gains in user satisfaction. At the local level, the Customs and Excise Supervision and Services Office Type Madya Pabean (KPPBC TMP) A Marunda launched the Sistem Aplikasi Layanan Mandiri (SALAM) in February 2025 as a single-gateway web portal that bridges correspondence, licensing, and complaint-handling services not yet fully accommodated by CEISA 4.0. SALAM integrates artificial intelligence and big-data features to reduce redundant document requirements and provides modules for company and employee data management, self-service applications, customs guarantee management, complaint and feedback handling, online consultation, and regulatory documentation.

Despite this innovation, the Community Satisfaction Survey (Survei Kepuasan Masyarakat/SKM) conducted quarterly by KPPBC TMP A Marunda shows a fluctuating trend, dropping to its lowest point of 3.63 (of a 5-point scale) in the fourth quarter of 2024 before recovering. Disaggregation of that survey reveals persistently low scores on four elements: system and procedure, completion-time certainty, service-product specification, and complaint handling. These weaknesses signal that digitalization through SALAM has not yet fully translated into Public Value, defined by Moore (1995) as the real benefit that government produces, protects, and sustains on behalf of the community, encompassing high-quality service delivery, beneficial outcomes, and public trust (Kelly et al., 2002).

Conceptually, the Information Systems Success Model developed by DeLone and McLean offers a well-established lens for evaluating whether a system is used effectively, satisfies its users, and produces genuine benefits (net benefits). In its 2003 update, the model positions system quality, information quality, and service quality as antecedents of user satisfaction, which in turn drives net benefits (Delone & Mclean, 2003). Because SALAM is a mandatory application for which service users have no alternative channel, the

use/intention-to-use construct loses its diagnostic value as a success indicator (Al-Hattami, 2021); evaluation should instead concentrate on technical quality, service quality, information quality, and end-user satisfaction. Moreover, because private-sector notions of net benefits (e.g., return on investment) do not fit the public sector's mission of providing fair, efficient, and socially beneficial services (Kelly et al., 2002), several studies have proposed replacing net benefits with Public Value as the ultimate outcome construct of the DeLone and McLean model in e-government research (Abdulkareem & Mohd Ramli, 2022; Benmohamed et al., 2024; Buyannemekh et al., 2024; Scott et al., 2016).

Empirically, this study addresses three gaps in the literature. First, most tests of the DeLone and McLean model in the public sector concern the banking, healthcare, or higher-education sectors (Al-Hattami, 2021; Al Naqbi, 2024; Almuqrin et al., 2023). Second, prior studies that model user satisfaction as a mediator between system/information/service quality and public value report inconsistent results: Benmohamed et al. (2024) and Buyannemekh et al. (2024) find that satisfaction positively mediates these relationships, whereas Iskandar and Amriani (2021), testing Indonesia's SAKTI financial system, find that satisfaction does not significantly bridge net-benefit creation. Third, and most importantly, no prior academic study has evaluated SALAM, a newly launched, locally developed, and mandatory e-government portal used exclusively within the KPPBC TMP A Marunda service area, making it a novel and timely object of investigation.

Building on this background, the present study integrates the DeLone and McLean Information Systems Success Model with Mark Moore's Public Value Theory to analyze how system quality, information quality, and service quality influence the user satisfaction of SALAM, and how user satisfaction, in turn, mediates the creation of public value among the application's external service users at KPPBC TMP A Marunda.

LITERATURE REVIEW

E-Government and Public Value Theory

E-government refers to the strategic and coordinated use of information and communication technology in public administration and decision-making to support good governance (Von Haldenwang, 2004); it is directed simultaneously at improving administrative efficiency, enhancing service delivery, and strengthening transparency and accountability. In Indonesia, this concept is operationalized through the SPBE policy, which mandates integrated, effective, efficient, and accountable electronic governance (Peraturan Presiden, 2018).

Public Value Theory, introduced by Moore (1995), holds that public organizations exist to create tangible benefits for citizens, not merely to perform administrative functions. Kelly et al. (2002) further specify that public value is generated across three overlapping domains: the quality of services delivered, the outcomes achieved, and the trust and legitimacy built between citizens and institutions. In digital government contexts, Twizeyimana and Andersson (2019) argue that public value must be evaluated through a citizen-centered

lens that captures the experience and benefits perceived by service users rather than purely technical performance. Because the dimensions of public value are inherently broad, context-specific, and often overlapping (Abdulkareem & Mohd Ramli, 2022), this study adopts the micro-level, transaction-oriented operationalization proposed by AbdulKareem et al. (2024) for a mandatory government-to-business e-recruitment portal, which is conceptually closer to SALAM than macro-level, national e-government indices. Five dimensions are adapted: efficiency, cost savings, transparency, participation, and trust.

The DeLone and McLean Information Systems Success Model

DeLone and McLean (1992) originally proposed six interrelated constructs of information systems success: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. In the 2003 update, the model added service quality to reflect the growing role of IT departments as internal service providers, and it consolidated individual and organizational impact into a single construct, net benefits (Delone & Mclean, 2003). Because net benefits are explicitly context-dependent, several public-sector studies substitute public value for net benefits when evaluating government information systems (Abdulkareem & Mohd Ramli, 2022; Benmohamed et al., 2024; Buyannemekh et al., 2024). This study therefore models five constructs: system quality, information quality, and service quality as independent (exogenous) variables; user satisfaction as the intervening (mediating) variable; and public value as the dependent (endogenous) variable, while deliberately excluding use/intention to use, consistent with the mandatory nature of SALAM (Al-Hattami, 2021). Evidence from a university student-account mobile application likewise indicates that user satisfaction is shaped collectively by system, information, and service quality (Darmawan & Pasaribu, 2024).

System quality (X1) captures the technical performance characteristics of an information system and is operationalized through reliability, flexibility, ease of use, and response time, adapted from Al-Hattami (2021). Information quality (X2) reflects the extent to which system output is relevant, accurate, timely, and complete (Delone & Mclean, 2003). Service quality (X3) concerns the support that users receive from system administrators or help-desk staff, adapted from SERVQUAL (Parasuraman et al., 1988), and is operationalized through responsiveness, assurance, service reliability, and empathy. Service quality is also regarded as a primary instrument for creating customer value and satisfaction (Orientani & Jumhur, 2017). User satisfaction (Z), grounded in Expectation Confirmation Theory, is the affective evaluation users form after comparing perceived system performance against their expectations (Delone & Mclean, 2003; Kotler & Keller, 2016; Orientani & Jumhur, 2017). Public value (Y) is measured through the five dimensions of efficiency, cost savings, transparency, participation, and trust in ICT, adapted from AbdulKareem et al. (2024).

Hypothesis Development

System quality is widely reported as a significant positive predictor of user satisfaction in e-government studies (Abdulkareem & Mohd Ramli, 2022; Buyannemekh et al., 2024; Rahmatullah et al., 2025); however, Al-Hattami (2021) and Amalia et al. (2026), studying mandatory banking and government financial systems respectively, find no significant relationship, arguing that technical reliability is treated by expert users as a baseline requirement rather than a satisfaction driver. Similar evidence from mobile banking indicates that ease of use, covering accessibility and the clarity of application functions, significantly increases user satisfaction (Felix & Sugiat, 2024). Given this unresolved contradiction, the following hypothesis is proposed:

H1: System quality has a positive and significant effect on the user satisfaction of the SALAM application at KPPBC TMP A Marunda.

Information quality is theorized as a core determinant of user satisfaction (Delone & Mclean, 2003), and empirical support is reported by Al-Hattami (2021), Abdulkareem and Mohd Ramli (2022), Amalia et al. (2026), Darmawan and Pasaribu (2024) and Buyannemekh et al. (2024). Yet Iskandar and Amriani (2021), evaluating Indonesia's SAKTI financial system, find a positive but non-significant relationship, suggesting that in mandatory, rule-bound public systems, accurate and complete information may be regarded as an obligatory baseline rather than a value-adding attribute. This contradiction motivates the second hypothesis:

H2: Information quality has a positive and significant effect on the user satisfaction of the SALAM application at KPPBC TMP A Marunda.

Service quality reflects the responsiveness, competence, reliability, and empathy of the personnel supporting a system. Abdulkareem and Mohd Ramli (2022), Benmohamed et al. (2024) and Felix and Sugiat (2024) report a significant positive effect of service quality on satisfaction, particularly through assurance and staff responsiveness, whereas Al-Hattami (2021), Buyannemekh et al. (2024), and Iskandar and Amriani (2021) find no significant, or even a negative, relationship. Because customs clearance is highly time-sensitive and carries direct financial consequences for service users (e.g., container demurrage and warehousing costs), this study proposes:

H3: Service quality has a positive and significant effect on the user satisfaction of the SALAM application at KPPBC TMP A Marunda.

Finally, in the integrated DeLone and McLean-Public Value framework, user satisfaction is theorized to mediate the path from system, information, and service quality toward net benefits, here operationalized as public value (Abdulkareem & Mohd Ramli, 2022; AbdulKareem et al., 2024; Benmohamed et al., 2024; Buyannemekh et al., 2024). Benmohamed et al. (2024) and Buyannemekh et al. (2024) provide empirical support for this mediating mechanism. In digital banking, Amin (2016) likewise found that service quality did not significantly affect loyalty directly, but strongly influenced satisfaction which in turn drove loyalty and Felix and Sugiat (2024) also reported a mediating role of satisfaction for loyalty outcomes. However, Iskandar and Amriani (2021) and Saputri et al. (2024) find that user satisfaction fails to

significantly bridge quality dimensions and net benefits, underscoring the need to re-test this mediating role in the SALAM ecosystem:

H4: User satisfaction mediates the effect of system quality, information quality, and service quality on the public value created by users of the SALAM application at KPPBC TMP A Marunda.

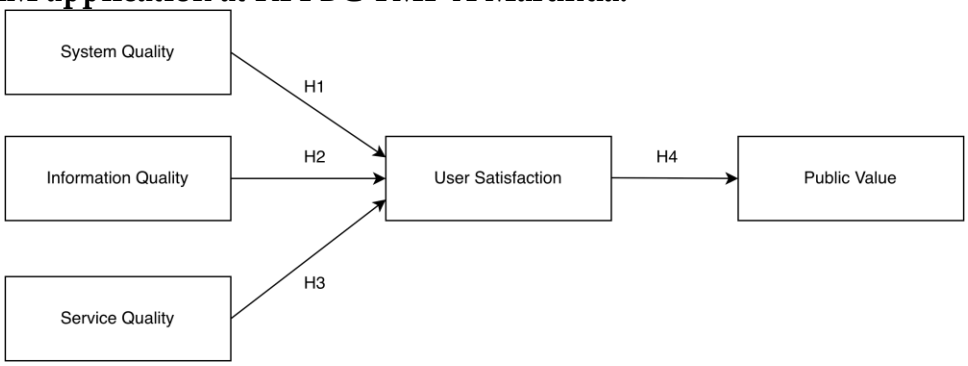


Figure 1. Conceptual Framework

METHODOLOGY

This study is descriptive in purpose and adopts a positivist paradigm, viewing reality as objectively measurable through empirical data (Creswell & Creswell, 2018). It follows a deductive approach, deriving hypotheses from the integrated DeLone and McLean-Public Value framework before testing them against field data (Saunders et al., 2019). Methodologically, the study is quantitative and uses a single cross-sectional survey strategy, with the individual service user as the unit of analysis, conducted in a noncontrived (natural) field setting with minimal researcher interference (Sekaran & Bougie, 2016).

The population comprises all 147 companies registered with a SALAM account at KPPBC TMP A Marunda as of May 2026. A purposive-sampling filter was first applied to retain only companies that had actively used SALAM, yielding a target population of 83 companies spanning bonded-zone operators, bonded-warehouse operators, bonded-logistics-center operators, excise importers, and customs clearance agents (PPJK). Because this target population is small and fully reachable, a census (total sampling) technique was applied, treating all 83 companies as the sample. Sample adequacy for SEM-PLS was further verified using the Inverse Square Root method (Kock & Hadaya, 2018, as cited in Hair et al., 2021), which requires a minimum of 69 respondents to detect a minimum path coefficient in the 0.21-0.30 range at 80% statistical power and a 5% significance level; the achieved sample of 83 exceeds this threshold.

The questionnaire used a 5-point Likert scale and was initially composed of 39 items adapted from Al-Hattami (2021) for system quality, information quality, service quality, and user satisfaction, and from AbdulKareem et al. (2024) for public value. Content validity was assessed by a panel of four experts (one senior academic and three KPPBC TMP A Marunda supervisory officials) using the Content Validity Index (I-CVI/S-CVI) procedure of Polit et al. (2007). The instrument achieved an excellent overall S-CVI/Ave of 0.90; however, 12 public-value items that did not reach the required I-CVI of 1.00 for a four-expert panel were removed, yielding a final instrument of 27 items (four each for

system quality, information quality, service quality, and user satisfaction, and twelve, re-coded PV1-PV12, for public value).

Primary data were collected in August 2026 through an online (Google Forms) questionnaire distributed via WhatsApp groups and email to the 83 registered active SALAM users. Sixty-eight responses were received (81.93% response rate). Following the strict data-screening guidelines of Hair et al. (2022), two responses were excluded at the screening stage (no SALAM account; never used the application), and a straight-lining check on the remaining 66 responses evaluating row-wise variance across the 27 items identified 33 respondents whose answers showed zero variance (constant identical scores). These were removed as unthoughtful responses, leaving 33 usable responses (an active response rate of 39.76%). This final sample size is consistent with Roscoe's (1982, as cited in Sekaran & Bougie, 2016) guideline that 30-500 respondents is adequate for most business and management research, and it exceeds the 37.20% response rate recorded in DJBC's official 2024 Service User Satisfaction Survey (Direktorat Jenderal Bea dan Cukai, 2024).

Data were analyzed using Structural Equation Modeling - Partial Least Squares (SEM-PLS) in SmartPLS 4, chosen for its robustness with complex mediation models and small, non-normally distributed samples (Hair et al., 2021). Analysis proceeded through descriptive statistics, followed by outer-model evaluation (convergent validity via outer loadings ≥ 0.70 and AVE ≥ 0.50; discriminant validity via the Heterotrait-Monotrait ratio [HTMT < 0.90]; and reliability via Cronbach's alpha and composite reliability ≥ 0.70), and inner-model evaluation (multicollinearity via variance inflation factor [VIF < 5, ideally < 3.30]; coefficient of determination [R^2]; effect size [f^2]; and hypothesis testing via bootstrapping with 5,000 resamples, with paths accepted at T-statistics > 1.96 and $p < 0.05$). The mediating effect (H4) was assessed directly through the specific indirect effects generated by bootstrapping, rather than the Sobel test, which performs poorly with small samples (Hair et al., 2021).

Table 1. Operationalization of Research Variables

Variable	**Dimension**	**Sample Indicator**	**Source**
System Quality (X1)	Reliability, Flexibility, Ease of Use, Response Time	SALAM operates stably with minimal error; is accessible with fast loading time	Al-Hattami (2021)
Information Quality (X2)	Relevance, Accuracy, Timeliness, Completeness	Information provided by SALAM is accurate, up-to-date, and relevant to service needs	Al-Hattami (2021)
Service Quality (X3)	Responsiveness, Assurance, Service Reliability, Empathy	SALAM help-desk staff respond quickly and competently to user complaints	Al-Hattami (2021)
User Satisfaction	Meeting Expectations,	SALAM performance meets my expectations	Al-Hattami (2021)

(Z)	Support, Overall Satisfaction	of a digital government service	
Public Value (Y)	Efficiency, Cost Savings, Transparency, Participation, Trust	SALAM accelerates document processing and reduces printing/courier costs; builds trust in KPPBC Marunda	AbdulKareem et al. (2024)

Source: Adapted and processed by the authors (2026).

RESULT AND DISCUSSION

Respondent Profile

Table 2 summarizes the demographic and usage profile of the 33 respondents whose data passed the screening process.

Table 2. Respondent Profile (N = 33)

Dimension	**Category**	**n**	**%**
Gender	Male	21	63.64%
	Female	12	36.36%
Age	≤ 30 years	7	21.21%
	31–40 years	11	33.33%
	41–50 years	8	24.24%
	≥ 51 years	7	21.21%
Education	Senior High School	4	12.12%
	Diploma (D1–D3)	9	27.27%
	Bachelor's Degree (D4/S1)	20	60.61%
Company type	Bonded Zone (KB)	21	63.64%
	Bonded Warehouse (GB)	2	6.06%
	Bonded Logistics Center (PLB)	8	24.24%
	Customs Broker (PPJK)	1	3.03%
	Exporter / Goods Owner	1	3.03%
Usage duration	< 1 month	1	3.03%
	1–3 months	4	12.12%
	> 3 months	28	84.85%
Usage frequency	1–2 times / month	10	30.30%
	≥ 3 times / month	23	69.70%

Source: Primary data, processed (2026).

Male respondents accounted for 63.64% of the sample, reflecting the male-dominated composition of field and document-handling staff in Marunda's logistics and manufacturing sector. The 31–40 age group formed the largest share (33.33%). Educational attainment skewed high, with 60.61% holding a bachelor's degree, together with diploma holders reaching 87.88% of the sample, suggesting respondents had the literacy needed to evaluate SALAM objectively. Bonded-zone companies made up 63.64% of respondents, consistent with the office's service area, and most respondents were experienced users:

84.85% had used SALAM for more than three months and 69.70% used it three or more times per month.

Descriptive Statistics

Table 3 presents the mean scores for each latent construct.

Table 3. Descriptive Statistics of Main Constructs (N = 33)

Latent Variable	Min	Max	Mean	SD	% Achievement	Category
System Quality (X1)	1.00	5.00	4.326	0.791	86.52%	Very High
Information Quality (X2)	2.00	5.00	4.379	0.741	87.58%	Very High
Service Quality (X3)	2.00	5.00	4.364	0.662	87.27%	Very High
User Satisfaction (Z)	3.00	5.00	4.384	0.665	87.68%	Very High
Public Value (Y)	2.00	5.00	4.545	0.632	90.91%	Very High

Source: Primary data, processed (2026).

All five constructs scored in the very-high category (mean > 4.20; achievement above 85%), with public value recording the highest mean (4.545; 90.91%). Standard deviations above 0.60 indicate meaningful variability in individual perceptions, yet the overall pattern confirms that service users perceive SALAM's implementation positively and associate it with tangible public value.

Measurement Model (Outer Model) Evaluation

Convergent validity was assessed through outer loadings and Average Variance Extracted (AVE). Of the 27 reflective indicators, 26 recorded outer loadings above the 0.70 threshold; only KS4 (system accessibility/response time) recorded 0.611, which was retained because the System Quality construct's AVE (0.610) exceeded 0.50 and the indicator had already passed content-validity screening (Hair et al., 2022). AVE values ranged from 0.610 (System Quality) to 0.852 (User Satisfaction), confirming that convergent validity was fully satisfied across all constructs (Table 4).

Table 4. Convergent Validity and Reliability of Constructs

Construct	Outer Loading Range	AVE	Cronbach's Alpha	Composite Reliability	Result
System Quality (X1)	0.611–0.847	0.610	0.787	0.860	Valid & Reliable
Information Quality (X2)	0.798–0.952	0.784	0.926	0.948	Valid & Reliable
Service Quality (X3)	0.856–0.905	0.820	0.909	0.935	Valid & Reliable
User Satisfaction (Z)	0.905–0.938	0.852	0.913	0.945	Valid & Reliable
Public Value (Y)	0.773–0.929	0.700	0.961	0.965	Valid & Reliable

Source: SmartPLS 4 output, processed by the authors (2026).

Discriminant validity was evaluated using Heterotrait-Monotrait ratio (HTMT). As seen in Table 5, all HTMT values remained below the conservative 0.90 threshold (the highest value being 0.894, between System Quality and User Satisfaction). Reliability testing showed that all constructs exceeded the 0.70 threshold for both Cronbach's alpha (0.787–0.961) and composite reliability (0.860–0.965), indicating excellent internal consistency (Table 4).

Table 5. Discriminant Validity – Heterotrait-Monotrait Ratio (HTMT)

Construct	**Information Quality**	**Service Quality**	**User Satisfaction**	**System Quality**	**Public Value**
Information Quality (X2)	—				
Service Quality (X3)	0.702	—			
User Satisfaction (Z)	0.815	0.831	—		
System Quality (X1)	0.883	0.676	0.894	—	
Public Value (Y)	0.830	0.849	0.850	0.864	—

Source: SmartPLS 4 output, processed by the authors (2026).

Structural Model (Inner Model) Evaluation

Collinearity diagnostics showed that all inner VIF values (1.000–3.025) were well below the conservative threshold of 3.30, indicating that the structural model was free of multicollinearity problems. The model explained 78.1% of the variance in User Satisfaction ($R^2 = 0.781$, a substantial/strong level of explanatory power) and 66.2% of the variance in Public Value ($R^2 = 0.662$, a moderate-to-strong level), demonstrating that the integrated DeLone and McLean-Public Value model has strong explanatory and predictive power in this context.

Effect-size (f^2) analysis showed that User Satisfaction exerted a very large effect on Public Value ($f^2 = 1.956$); Service Quality exerted a large effect on User Satisfaction ($f^2 = 0.462$); System Quality exerted a medium effect ($f^2 = 0.290$); and Information Quality exerted only a small effect ($f^2 = 0.045$), foreshadowing its non-significant path coefficient.

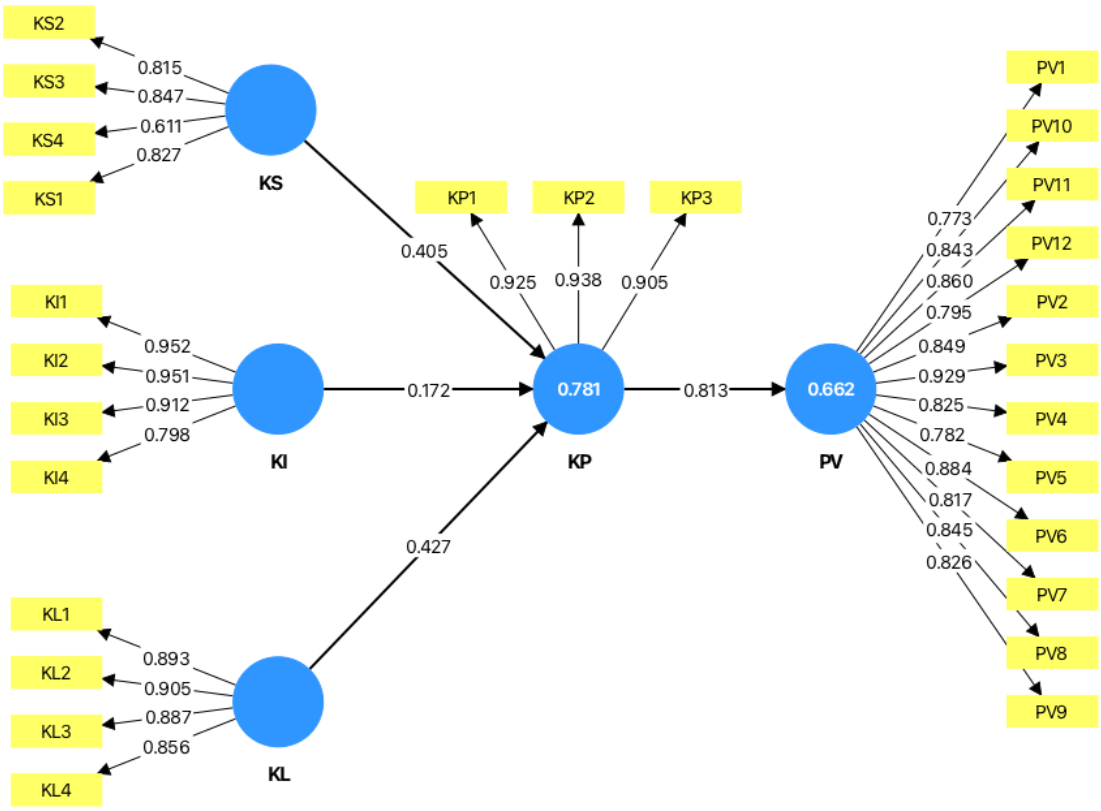


Figure 2. Structural Model (Outer Loadings, AVE, and R^2) – SmartPLS 4 Output

Hypothesis Testing

Table 6 reports the results of direct-effect hypothesis testing using bootstrapping with 5,000 resamples.

Table 6. Direct Effect Hypothesis Testing

Hyp.	Path	Coeff. (β)	T-statistics	P-values	Result
H1	System Quality → User Satisfaction	0.405	2.572	0.005	Supported
H2	Information Quality → User Satisfaction	0.172	1.025	0.153	Not Supported
H3	Service Quality → User Satisfaction	0.427	3.487	0.000	Supported
–	User Satisfaction → Public Value	0.813	15.449	0.000	Supported

Source: SmartPLS 4 output (2026).

System quality (H1: β = 0.405, t = 2.572, p = 0.005) and service quality (H3: β = 0.427, t = 3.487, p = 0.000) both showed a significant positive effect on user satisfaction, supporting H1 and H3. Information quality showed a positive but non-significant effect (H2: β = 0.172, t = 1.025, p = 0.153), so H2 was not supported. User satisfaction showed a very strong, significant effect on public value (β = 0.813, t = 15.449, p = 0.000).

Table 7 reports the specific indirect effects used to test the mediating role of user satisfaction (H4).

Table 7. Indirect Effect (Mediation) Hypothesis Testing

Hyp.	Path	Coeff. (β)	T-statistics	P-values	Result
H4a	System Quality → User Satisfaction → Public Value	0.329	2.554	0.005	Supported
H4b	Information Quality → User Satisfaction → Public Value	0.140	0.995	0.160	Not Supported
H4c	Service Quality → User Satisfaction → Public Value	0.347	3.372	0.000	Supported

Source: SmartPLS 4 output (2026).

User satisfaction significantly mediated the effect of system quality (H4a: β = 0.329, t = 2.554, p = 0.005) and service quality (H4c: β = 0.347, t = 3.372, p = 0.000) on public value, but did not mediate the effect of information quality (H4b: β = 0.140, t = 0.995, p = 0.160), a direct consequence of information quality's non-significant direct effect on user satisfaction. H4 was therefore partially supported.

Effect of System Quality on User Satisfaction

System Quality was found to have a positive and significant effect on User Satisfaction (β = 0.405; T = 2.572; p = 0.005), supporting H1. Respondents rated SALAM's ease of use and menu clarity (KS3 = 4.545) and response speed (KS4 = 4.333) very highly, reflecting a well-designed, intuitive self-service interface. However, system reliability and stability (KS1 = 4.152) recorded the lowest score within this construct, with some respondents reporting occasional downtime linked to SALAM's dependence on the national CEISA 4.0 backbone.

This finding is consistent with Abdulkareem and Mohd Ramli (2022), Buyannemekh et al. (2024), and Rahmatullah et al. (2025), who report that technically stable, accessible e-government systems significantly enhance user satisfaction. It contrasts, however, with Al-Hattami (2021) and Amalia et al. (2026), who found no significant effect in mandatory banking and government-finance systems, arguing that in those contexts technical reliability functions purely as a prerequisite. The active operational risk posed by SALAM's occasional downtime at KPPBC Marunda appears to keep system-quality improvements salient to users' satisfaction judgments.

Effect of Information Quality on User Satisfaction

Contrary to expectations, Information Quality did not significantly affect User Satisfaction (β = 0.172; T = 1.025; p = 0.153), leading to the rejection of H2. This result diverges from the classical DeLone and McLean proposition but aligns closely with Iskandar and Amriani (2021) and with the broader Two-Factor logic of Kotler and Keller (2016): for SALAM's predominantly expert, high-frequency users (84.85% with more than three months of experience), accurate and complete information is treated as a hygiene factor - an obligatory

baseline that customs regulations require - rather than a satisfaction driver. Because these users already understand customs business processes thoroughly, they rely far more on system speed and staff assistance than on the informational content of the portal itself to form their satisfaction judgments.
This finding contradicts Abdulkareem and Mohd Ramli (2022), Al-Hattami (2021), Amalia et al. (2026), Darmawan and Pasaribu (2024) and Buyannemekh et al. (2024), underscoring that the salience of information quality as a satisfaction driver may be highly dependent on user expertise and the mandatory versus voluntary nature of the system being evaluated.

Effect of Service Quality on User Satisfaction

Service Quality emerged as the strongest direct predictor of User Satisfaction ($\beta = 0.427$; $T = 3.487$; $p = 0.000$), supporting H3 and exceeding the contribution of System Quality. Because customs clearance at KPPBC Marunda is tightly bound by dwelling time, warehousing costs, and container demurrage penalties, any system disruption imposes real, escalating financial costs on service users; in such moments, competent, responsive, and empathetic help-desk support (KL2 = 4.424; KL4 = 4.424) becomes the decisive factor shaping user satisfaction. This result reinforces, Abdulkareem and Mohd Ramli (2022), Benmohamed et al. (2024), and Rahmatullah et al. (2025), all of which highlight that human-to-human support remains critical even in automated e-government services. It contrasts with Al-Hattami (2021), Buyannemekh et al. (2024), and Iskandar and Amriani (2021), suggesting that the high financial stakes and dynamism of customs operations at Marunda make responsive service support considerably more consequential than in routine banking or internal government administration.

Effect of User Satisfaction on Public Value and its Mediating Role

User Satisfaction exerted a very strong direct effect on Public Value ($\beta = 0.813$; $T = 15.449$; $p = 0.000$; $f^2 = 1.956$), confirming that satisfied users translate their positive experience directly into perceptions of tangible public benefit - most visibly in cost savings (92.94% achievement), transparency through real-time document tracking (92.65%), and institutional trust (92.55%). This result substantiates Panagiotopoulos et al. (2019), Twizeyimana and Andersson (2019), Abdulkareem and Mohd Ramli (2022), and Buyannemekh et al. (2024), all of which argue that e-government success must be measured by citizen-perceived value rather than technical functionality alone. Regarding the mediating role of User Satisfaction, the analysis found that it significantly mediates the effects of System Quality ($\beta = 0.329$; $T = 2.554$; $p = 0.005$) and Service Quality ($\beta = 0.347$; $T = 3.372$; $p = 0.000$) on Public Value, consistent with Benmohamed et al. (2024), but does not mediate the effect of Information Quality ($\beta = 0.140$; $T = 0.995$; $p = 0.160$), a direct statistical consequence of Information Quality's non-significant effect on User Satisfaction. These results collectively demonstrate that investments in technical infrastructure and staff service capacity at KPPBC Marunda can only be converted into genuine public value if they first translate into measurable user satisfaction.

CONCLUSIONS AND RECOMMENDATIONS

This study demonstrates that System Quality (β = 0.405) and Service Quality (β = 0.427) both exert a positive and significant effect on User Satisfaction with the SALAM application, while Information Quality does not (β = 0.172; not significant), reflecting its role as a baseline expectation rather than a satisfaction driver among expert, mandatory users. User Satisfaction, in turn, exerts a very strong direct effect on Public Value (β = 0.813) and significantly mediates the effects of System Quality and Service Quality - but not Information Quality - on Public Value creation. These findings confirm the applicability of the integrated DeLone and McLean-Public Value model to a mandatory, customs-based e-government context, while also revealing that user satisfaction is the indispensable conduit through which technological and service investments are converted into socially and economically meaningful public value.

For KPPBC TMP A Marunda's management, four practical recommendations follow. First, service quality should be prioritized through regular technical and customer-service training for SALAM administrators, a formal Service Level Agreement for complaint response times, and the introduction of live-chat or AI-assisted chatbot features to handle routine queries around the clock. Second, system stability should be strengthened through regular maintenance, closer coordination with DJBC's central IT directorate to expand bandwidth and load-balance peak-hour traffic, and local caching mechanisms that preserve uploaded documents during server disruptions. Third, although information quality was not a significant satisfaction driver, its presentation could still be modernized - for example, replacing lengthy PDF instructions with interactive infographics, short video tutorials, and automated WhatsApp or push notifications on application status - to further reduce user effort. Fourth, participation and feedback mechanisms should be expanded through a two-way digital consultation forum and an in-app star-rating and review feature immediately after each transaction, signaling institutional openness to user feedback and reinforcing public trust..

ADVANCED RESEARCH

This study has several limitations that should temper the interpretation of its findings and inform future research. First, after rigorous data screening the usable sample was reduced to 33 respondents (39.76% active response rate); although this size is statistically adequate for SEM-PLS estimation and compares favorably with DJBC's own 2024 survey benchmark, it limits the generalizability of the structural model beyond the SALAM ecosystem. Second, the study focuses exclusively on a single, locally developed e-government platform at one customs office, so its findings may not directly generalize to the national CEISA 4.0 system or to other vertical customs offices. Third, all constructs were measured through self-reported perceptions, leaving room for common-method and social-desirability bias.

Future research is encouraged to replicate this integrated DeLone and McLean-Public Value model across a broader set of vertical customs offices or other mandatory local e-government applications to test the stability of these

relationships. Additional antecedent variables - such as computer self-efficacy, digital literacy, or regulatory compliance - could also be incorporated to deepen understanding of user satisfaction in mandatory public-sector systems. Finally, a mixed-methods design combining PLS-SEM with qualitative interviews or focus-group discussions with service-user representatives could help explain in greater depth why information quality, contrary to theoretical expectation, did not significantly drive user satisfaction in this setting.

ACKNOWLEDGMENT

The authors thank Telkom University's Distance Learning Master of Management Study Program for its academic support, the management and staff of KPPBC TMP A Marunda for granting access to institutional data and facilitating the distribution of the survey instrument, and the four-member expert panel who validated the research instrument. The authors also thank the registered SALAM users who participated in the survey, whose responses made this study possible

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