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Assessing User Satisfaction of Local Government Websites Through ISO 25010 and Technology Acceptance Model (TAM): A SmartPLS and IPMA-Based Study in Lombok Tengah

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ABSTRACT

Despite continued efforts to digitize public services, many local government websites in emerging contexts still underperform in delivering satisfactory user experiences. This study develops an integrated evaluation framework that combines the ISO 25010 software quality model with the Technology Acceptance Model (TAM) to jointly assess system quality and user acceptance. We analyzed survey data from 524 users in Lombok Tengah, Indonesia, using Partial Least Squares Structural Equation Modeling (PLS-SEM) and Importance Performance Map Analysis (IPMA). The results indicate that functional suitability, usability, and reliability significantly shape perceived usefulness, whereas reliability, security, and performance efficiency drive perceived ease of use. Both perceived usefulness and perceived ease of use positively influence user satisfaction and behavioral intention, with satisfaction emerging as the strongest predictor. IPMA highlights performance efficiency and security as priority areas for improvement. The study contributes to e-government literature by proposing a dual layer model that links system level attributes to user-level perceptions and outcomes, and by translating statistical effects into actionable priorities for local governments seeking to enhance the quality and adoption of digital public services in semi urban developing regions.

Keywords: ISO 25010, Technology Acceptance Model, SmartPLS, IPMA, E-government, User satisfaction, Local government website

1. Introduction

In the evolving landscape of digital governance, the evaluation of public-facing information systems demands not only technical scrutiny but also a deeper understanding of user-centered behavioral responses. While substantial progress has been made in assessing e-government platforms from either a system engineering or behavioral standpoint, there remains a methodological gap in integrating both perspectives into a unified analytical framework (Fadhel et al., 2020; Granić & Marangunić, 2019). This study addresses that gap by combining the ISO 25010 software quality model and the Technology Acceptance Model (TAM), further enhanced with Importance-Performance Map Analysis (IPMA), to assess digital service delivery in local government websites. By focusing on Lombok Tengah, a semi-urban region in a developing country, this research situates itself within the broader discourse of digital inclusion, highlighting the intersection of technology performance, citizen satisfaction, and sustainable digital engagement. This integrative approach aims not only to evaluate system effectiveness but also to inform policy design through actionable, user-driven insights. Digital transformation has fundamentally reshaped the landscape of public service delivery worldwide. Governments across both developed and developing countries are increasingly leveraging

Information and Communication Technology (ICT) to enhance the efficiency, transparency, and accessibility of public services. In Indonesia, the implementation of the Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik-SPBE) encourages local governments to develop web-based information systems as the backbone of modern public administration (Lee-Geiller & Lee, 2019; Ma & Zheng, 2019; Nguyen et al., 2020). Government websites serve as the primary gateway for administrative services, information dissemination, and interactive communication between government entities and the public. High-quality websites have great potential to foster citizen engagement, improve public trust, and accelerate access to digital services (Chan et al., 2021).

In Lombok Tengah, a semi urban regency in Indonesia, persistent structural constraints in local digital governance remain visible: uneven broadband infrastructure beyond district centers, limited technical capacity among implementing units, and insufficient citizen digital literacy and user training during the SPBE rollout. Recent official statistics show that over 20% of villages in Lombok Tengah still experience unstable internet connectivity (Ministry of Communication and Information Technology, 2023), and a 2022 provincial audit found that only 43% of local public service websites meet usability and accessibility standards (Provincial Government of West Nusa Tenggara, 2022). Common issues include slow page loading, lack of mobile responsiveness, and outdated content. Taken together, these indicators justify the selection of Lombok Tengah as the empirical setting and underline the urgency of improving digital service quality.

Nevertheless, the quality of local government websites in Indonesia continues to face significant challenges. Prior studies have highlighted persistent issues related to usability, accessibility, and system reliability, which often fall short of user expectations (Hidayah and Setyaningsih, 2019; Nishant et al., 2019; Santoso et al., 2023). In addition, many government websites do not conform to international software quality standards such as ISO 25010, resulting in suboptimal user experiences and low levels of acceptance of digital services (Debnath et al., 2021; Fadhel et al., 2019, 2020). These issues are particularly evident in local government contexts, such as in the Lombok Tengah Regency. Preliminary observations in this region reveal a range of limitations, including the lack of available online services, poor transparency of public information, non-responsive web designs, and minimal interactive features such as real-time communication or social media integration (Al-Sakran & Alsudairi, 2021; Ilyas et al., 2022; Paul & Das, 2020). These deficiencies directly hinder user engagement and diminish the perceived benefits of digital platforms (Bournaris, 2020; Irawan and Nizar Hidayat, 2022; Santoso et al., 2023).

Given these conditions, it is essential to develop a comprehensive evaluation model that integrates both technical and user-behavioral perspectives in assessing the quality of government websites. The ISO/IEC 25010 standard provides a robust framework for assessing software quality from a technical standpoint, while the Technology Acceptance Model (TAM) offers theoretical insight into users' cognitive and behavioral responses toward technology adoption. Unlike previous studies that have applied either ISO 25010 or TAM in isolation (Fadhel et al., 2019; Muchran and Ahmar, 2019; Salloum et al., 2019; Pereira et al., 2024), such an integrated perspective addresses the multidimensional nature of user satisfaction and behavioral intention toward local government websites and enables a more holistic and practical evaluation, which remains relatively underexplored in the context of digital public service delivery at the local government level. Practically, this study provides actionable insights and recommendations to enhance digital service quality in local governments. The findings are expected to guide strategic improvements, inform policy development, and offer a replicable model for semi-urban regions in developing countries. By highlighting priority service areas grounded in user perceptions and international benchmarks (Bervell et al., 2023; Chawla & Joshi, 2021; Yapp & Yeap, 2023), the study supports more effective resource allocation for policymakers.

In line with these objectives, we empirically evaluate an integrated ISO/IEC 25010, TAM model and apply IPMA to translate the estimated effects into actionable priorities for local governments. The study is guided by the following research questions: (1) How do technical quality attributes of government websites, as defined by ISO 25010, influence perceived usefulness (PU) and perceived ease of use (PEOU)? (2) To what extent do PU and PEOU influence user satisfaction and behavioral intention toward local government websites? (3) Which website quality attributes should be prioritized for improvement based on their relative importance and performance, as identified through Importance Performance Map Analysis (IPMA)?

This paper contributes theoretically by articulating a dual layer ISO/IEC 25010, TAM lens for local e-government evaluation, and practically by using IPMA to convert model estimates into actionable priorities for semi-urban governments under resource constraints. The remainder of this paper is organized as follows: the second section presents the literature review and hypotheses development; the third section outlines the research methodology; the fourth section discusses the findings and analysis; the fifth section highlights theoretical and managerial implications; and the final section offers conclusions, limitations, and directions for future research.

2. Literature Review

The evaluation of public sector websites has increasingly adopted frameworks that integrate both technical and user-centered quality dimensions. One of the most robust standards in this domain is the ISO/IEC 25010 software quality model, which outlines eight core characteristics: functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability (Fadhel et al., 2019; Dewi et al., 2020; Peters and Aggrey, 2020). Various studies have employed ISO 25010 to assess web-based platforms such as human resource systems (Geoloni & Agushinta, 2023), scholarship information systems (Nurunnisa et al., 2024), e-commerce sites (Wattiheluw et al., 2020), and enterprise resource planning systems (Peters & Aggrey, 2020). These findings affirm that ISO 25010 provides a reliable benchmark for evaluating the technical quality of web systems. In the broader e-government context, Al-Adwan et al. (2024) emphasize the importance of meta-governance in facilitating integrated policy development across digital systems, which complements the technical assessment dimensions of ISO 25010.

Building on these technical perspectives, recent studies have shown a growing tendency to integrate ISO/IEC 25010 with the Technology Acceptance Model (TAM), aiming to connect standardized software quality evaluation with the dynamics of user technology adoption. For example, Nurunnisa et al. (2024) applied the ISO 25010 TAM framework to evaluate scholarship information systems and found that usability and functional suitability directly influence perceived usefulness. Pereira et al. (2024) extended this integration in the context of higher education portals, demonstrating that system quality attributes mediated through TAM constructs significantly affect user satisfaction and continuance intention. More recently, Al-Adwan et al. (2024) emphasized the importance of meta governance in aligning technical quality standards with user adoption frameworks in public sector digital systems. Despite these contributions, studies explicitly addressing semi-urban government websites remain scarce. Most existing research focuses on national level or urban-centered platforms, leaving a critical gap in understanding how infrastructural limitations, digital literacy challenges, and socio-cultural contexts affect the relationship between system quality and user acceptance. This study addresses that gap by situating the ISO 25010–TAM integration within the semi-urban context of Lombok Tengah and complementing it with Importance Performance Map Analysis (IPMA) for strategic prioritization.

However, technical quality alone is insufficient to guarantee successful technology adoption or user satisfaction. User experience (UX) and usability are equally critical in determining the effectiveness of public-facing websites. Research has shown that visual design and usability significantly influence user perceptions, engagement, and loyalty (Martínez-Sala et al., 2020; Jongmans et al., 2022). Studies employing user-centered methods such as the questionnaire, and heuristic evaluations (Quiñones & Rusu, 2019) emphasize the importance of integrating ergonomic and cognitive dimensions into usability assessments. Furthermore, user culture has been found to affect usability perceptions, suggesting the need for culturally sensitive evaluation frameworks (Alexander et al., 2021). In a Southeast Asian context, Munajat & Irawati (2025) highlight how cultural and infrastructural factors in countries like Indonesia and Malaysia shape user interaction with public web platforms, reinforcing the need for localized usability models.

To understand user behavior in technology adoption, the Technology Acceptance Model (TAM) remains one of the most widely used theoretical models (Davis & Davis, 1989). TAM posits that perceived usefulness and perceived ease of use are key determinants of users' intention to adopt technology. Its applicability has been validated across multiple domains, including mobile health applications (Cheah et al., 2023), e-learning (Rahmawati, 2019; Salloum et al., 2019), online sports streaming (Sun & Zhang, 2021), and internet banking (Vuković et al., 2019). Several systematic reviews have reaffirmed the model's robustness in predicting user behavior (Granić and Marangunić, 2019; Al-Qaysi et al., 2020; Zaineldeen et al., 2020). Despite its popularity, TAM has been criticized for its limited consideration of external variables and contextual factors, necessitating its integration with complementary models such as ISO 25010, as implemented in this study. Supporting this integrated perspective, Alkhwaldi & Al-Ajaleen (2022) demonstrate that mobile government adoption is driven not only by perceived usefulness and ease of use but also by trust and contextual readiness, especially in the context of developing nations.

To enhance diagnostic precision in evaluating user satisfaction, researchers have increasingly utilized Importance-Performance Map Analysis (IPMA). IPMA helps identify and prioritize factors based on their importance to a target construct and their current performance levels (Sarstedt et al., 2024). This approach has been widely applied in contexts such as digital wallet adoption (Chawla & Joshi, 2021), travel applications (Fakfare & Manosuthi, 2023), customer loyalty (Siregar & Rachman, 2024), and hospital branding (Wiyono & Antonio, 2024). In the public service domain, Bervell et al. (2023) evaluated student portals using IPMA, while Sop et al. (2025) applied it to measure satisfaction with tourism destinations. These studies underscore IPMA's practical value in data-driven decision-making.

While PLS-SEM and IPMA have been widely applied in information systems research, their integrated use alongside ISO 25010 and the Technology Acceptance Model (TAM) remains limited particularly within the context of semi-urban public sector websites in developing countries (Chuang et al., 2023; Ali et al., 2024; Krithika and Vasantha, 2024). Previous studies have typically employed ISO 25010 to assess technical quality (Fadhel et al., 2019; Dewi et al., 2020) or TAM to explain user acceptance (Rahmawati, 2019; Salloum et al., 2019), yet rarely have they combined these frameworks to capture the multidimensional nature of system evaluation. These single-model approaches fall short in addressing the complex interplay between system quality, user perceptions, and continued usage intentions. This study addresses that theoretical gap by integrating ISO 25010, TAM, PLS-SEM, and IPMA into a unified evaluative framework. Practically, it responds to real-world challenges faced by local governments particularly in semi-urban regions such as Lombok Tengah by providing data-driven insights and prioritized recommendations for digital service improvement. The analytical procedures are detailed in the methodology section, and the framework developed herein offers both a robust theoretical contribution and a replicable tool for policymakers seeking to enhance public digital service quality and usability.

Given the diversity of existing evaluation frameworks, a clear rationale is needed to justify the theoretical choices adopted in this study. To clarify the conceptual positioning of this study and justify the theoretical foundation, it is important to distinguish the key constructs and methodological choices adopted. This study adopts Perceived Usefulness (PU) from the Technology Acceptance Model (TAM) as a core construct to explain user acceptance behavior. Although the Unified Theory of Acceptance and Use of Technology (UTAUT) introduces a similar construct termed Performance Expectancy, this research does not adopt UTAUT formally. Instead, it treats PU as the principal belief-based variable due to its well established role in explaining behavioral intention across various digital service contexts. While both PU and Performance Expectancy capture users' perceptions of technology's utility, PU focuses more narrowly on individual cognitive assessments within voluntary usage environments, which aligns with the setting of this study citizen interaction with non-mandatory government websites.

Moreover, this research deliberately chooses to integrate ISO/IEC 25010 and TAM, rather than combining TAM with the DeLone and McLean IS Success Model or adopting UTAUT, for several theoretical and contextual reasons: (1) ISO 25010 provides a comprehensive set of technical quality attributes that are especially suitable for evaluating public sector information systems. Unlike the D&M IS Success Model, which emphasizes constructs such as information quality and service quality at a more abstract level, ISO 25010 offers operational definitions that allow for direct system level assessments (Dewi et al., 2020; Fadhel et al., 2019). (2) TAM is preferred over UTAUT because the target users in this study citizens are not employees bound by organizational structures or mandates. UTAUT's constructs such as *effort expectancy*, *social influence*, and *facilitating conditions* are more appropriate in organizational or mandatory settings. In contrast, TAM is more parsimonious and has been proven robust in explaining voluntary technology adoption in public service platforms (Granić & Marangunić, 2019; Salloum et al., 2019). Since citizen interaction with local government websites is voluntary and not mandated, TAM's core constructs (perceived usefulness and perceived ease of use) are more suitable for capturing user acceptance behavior in this context. By contrast, UTAUT is more relevant to organizational or mandatory environments, while SERVQUAL lacks the technical specificity to evaluate software system quality. (3) The integration of ISO 25010 and TAM, enhanced by IPMA, offers a dual-layered framework that connects system-level quality with behavioral-level perceptions, while also enabling strategic prioritization. This methodological combination is theoretically grounded and practically valuable for local governments in emerging economies, where both technical capability and user-centered design are critical for service success. While alternative models such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and SERVQUAL offer valuable perspectives, they were not adopted in this study due to contextual and theoretical misalignment. UTAUT, which includes constructs like effort expectancy and social influence, is primarily designed for organizational environments with mandatory technology use, making it less suitable for examining voluntary citizen interactions with government websites. Similarly, SERVQUAL emphasizes intangible service dimensions such as empathy and assurance, but lacks the technical specificity required to evaluate software system quality. In contrast, ISO/IEC 25010 provides concrete system-level metrics covering functional suitability, usability, and performance efficiency (Dewi et al., 2020; Fadhel et al., 2019), while the Technology Acceptance Model (TAM) robustly explains behavioral intention in various digital service contexts, particularly in voluntary. Therefore, the integration of ISO 25010 and TAM offers a more context appropriate and methodologically coherent framework to assess public digital services in semi urban regions.

This study explicitly synthesizes ISO/IEC 25010, the Technology Acceptance Model (TAM), and Importance Performance Map Analysis (IPMA) to provide a comprehensive framework for evaluating semi-urban government websites. ISO 25010 offers the technical foundation, TAM explains how these attributes shape perceived usefulness and ease of use, while IPMA identifies improvement priorities by combining

importance with performance levels. This integration not only links system level quality with user-centered perceptions and behavioral intentions but also addresses the practical need for actionable guidance in digital service development. In operationalizing ISO 25010, the study focuses on five user-salient attributes functionality, usability, reliability, security, and performance efficiency because they are directly perceivable by citizens. The other three characteristics, namely compatibility, maintainability, and portability, are excluded as they are developer centric or already represented through performance measures such as responsiveness.

Although national level e-government initiatives have been widely promoted by the central government, semi urban regions such as Lombok Tengah continue to face structural and contextual challenges that hinder full digital transformation. Prior studies highlight that infrastructural limitations, low levels of digital literacy, and the absence of user training significantly influence how citizens adopt and interact with online government platforms (Alexander et al., 2021; Munajat & Irawati, 2025). This context provides a representative case to examine the interplay between system design quality and user perceptions in digital public service delivery. Accordingly, this study not only bridges the theoretical gap in evaluating semi-urban e-government platforms through integrated frameworks but also delivers actionable insights to guide policy-level digital transformation strategies.

3. Hypothesis development

To ensure a more holistic understanding of user interaction with local government websites, this study adopts an integrated theoretical framework that combines the ISO 25010 software quality model, the Technology Acceptance Model (TAM), and Importance Performance Map Analysis (IPMA). ISO 25010 offers a structured assessment of technical system quality, including functionality, usability, reliability, security, and performance efficiency, attributes critical for evaluating the design and capability of web-based public services. Meanwhile, TAM explains how users form behavioral intentions based on their perceptions of usefulness and ease of use, serving as a well-established lens for assessing user acceptance. The inclusion of IPMA complements this integration by providing a prescriptive diagnostic tool that prioritizes improvement areas based on the constructs' importance and performance. Collectively, these three frameworks are synthesized into a dual-layered model: ISO 25010 forms the technical foundation that feeds into TAM's psychological constructs, while IPMA is applied post-structural modeling to guide managerial action. This framework is especially relevant in developing country contexts like Lombok Tengah, where aligning technical quality with user perceptions is essential for sustainable e-government adoption.

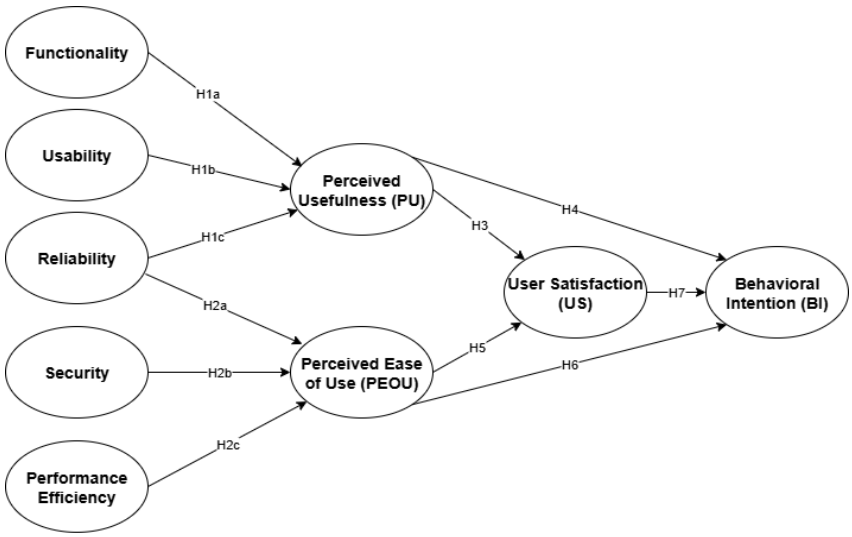

Figure 1. Research model

To enhance clarity and conceptual visualization, Figure 1 illustrates the dual-layered research model employed in this study, showing how ISO 25010 attributes influence TAM constructs, which subsequently

affect user satisfaction and behavioral intention, with IPMA serving as an extension for managerial prioritization.

In assessing user acceptance of public digital services, the interrelation between system quality and user perception remains central to both system effectiveness and sustainable engagement. To provide conceptual clarity and strengthen the theoretical framework, this study formulates seven hypotheses that explicitly link system quality dimensions from ISO 25010 namely functionality, usability, reliability, security, and performance efficiency to the core constructs of TAM: perceived usefulness (PU), perceived ease of use (PEOU), user satisfaction (US), and behavioral intention (BI). These hypotheses reflect a multidimensional approach that connects technical features to user perception, affective response, and behavioral outcomes. Building upon the ISO 25010 standard, which articulates technical quality dimensions such as functionality, usability, reliability, security, and performance efficiency, this study links these attributes to key cognitive constructs derived from the Technology Acceptance Model (TAM), namely perceived usefulness (PU) and perceived ease of use (PEOU). Functionality, defined as the completeness and relevance of system features, has been shown to influence users' judgments about the utility of web-based platforms (Vila et al., 2021). Likewise, usability, encompassing intuitive design and ease of navigation, is a critical determinant of user-perceived value, especially in public systems where digital literacy varies (Alexander et al., 2021; Bitkina et al., 2020). Reliability, referring to stable and consistent service delivery, reinforces user confidence and contributes to system credibility, which in turn enhances perceptions of usefulness (Dianat et al., 2019). Therefore, it is posited:

H1a: Website functionality positively influences perceived usefulness.

H1b: Website usability positively influences perceived usefulness.

H1c: Website reliability positively influences perceived usefulness.

In addition to usefulness, ease of use is essential for user acceptance of e-government platforms. Reliability supports smooth operation by minimizing disruptions, which directly reduces user effort and enhances perceived ease of use (Anagreh et al., 2024; Hasan et al., 2024). Security, particularly in safeguarding personal data and ensuring trustworthy transactions, not only increases confidence but also lowers cognitive barriers to system interaction, thereby facilitating ease of use (Martínez-Sala et al., 2020; Yan et al., 2024). Furthermore, performance efficiency reflected in page load speed, cross-device responsiveness, and system stability significantly reduces the learning curve and cognitive load, making the system easier to navigate (Bhuvana & Vasantha, 2021; Santoso et al., 2023). These relationships are operationalized in the following hypotheses, reflecting the mediating role of ease of use in the model:

H2a: Website reliability positively influences perceived ease of use.

H2b: Website security positively influences perceived ease of use.

H2c: Website performance efficiency positively influences perceived ease of use.

The TAM framework asserts that users who perceive a system as useful are more likely to experience satisfaction, as the system supports task accomplishment and improves efficiency (Bervell et al., 2023; Salloum et al., 2019). Similarly, systems that are easy to use reduce frustration and learning effort, which contributes to higher satisfaction (Muchran & Ahmar, 2019). Hence:

H3: Perceived usefulness positively influences user satisfaction.

H4: Perceived usefulness positively influences behavioral intention.

User satisfaction, a key affective response to service experience, has consistently been associated with favorable behavioral outcomes, including reuse and recommendation (Ali et al., 2024). Additionally, perceived usefulness and ease of use are often cited as primary antecedents of behavioral intention in digital service literature (Cheah et al., 2023; Sun & Zhang, 2021), leading to the following hypotheses:

H5: Perceived ease of use positively influences user satisfaction.

H6: Perceived ease of use positively influences behavioral intention.

H7: User satisfaction positively influences behavioral intention.

Together, these hypotheses establish a comprehensive model that explains how technical system quality operationalized through ISO 25010 interacts with users' cognitive and affective evaluations, as theorized by TAM. This model is particularly relevant in semi-urban contexts like Lombok Tengah, where digital transformation efforts are underway but often challenged by varying degrees of infrastructure, trust, and digital literacy.

4. Method

4.1. Sampling and Data Collection

This study employed purposive sampling to recruit respondents who had experience interacting with local government websites. Data were collected from a total of 524 respondents. The gender distribution consisted of 48.1% male and 51.9% female respondents. In terms of frequency of interaction with local government websites, 24.2% reported rare use (1–2 times in 6 months), 30.5% indicated occasional use (1–2 times in 3 months), 29% used the websites frequently (1–2 times per month), and 16.2% interacted very frequently (almost every week). The primary reasons for interacting with local government websites varied among respondents. A majority, 45.6%, accessed the websites to seek public service information, followed by 41% who used it to read news or announcements. Others used the websites for submitting administrative requests (5.5%), downloading documents or forms (6.7%), and other purposes such as completing e-performance forms (0.2%), conditionally accessing services (0.2%), random browsing (0.2%), monitoring administrative progress (0.2%), and performing obligations as civil servants (0.2%). Additionally, 0.2% of respondents indicated that they performed nearly all of the listed activities.

The demographic profile of the respondents demonstrated substantial diversity, ensuring comprehensive representation of semi-urban internet users. In terms of age distribution, 28.7% of participants were between 18 and 25 years old, 33.6% were aged 26 to 35, 22.3% were between 36 and 45, and 15.4% were above 45 years. Regarding educational background, a majority held an undergraduate degree (57.2%), followed by respondents with a high school education or below (21.9%), and those with postgraduate qualifications (20.9%). Self-assessed digital literacy levels revealed that 11.3% of participants identified as beginners, 65.7% as intermediate users, and 23.0% as advanced users. This demographic composition reflects a well-balanced distribution across age, educational attainment, and digital competency, which enhances the generalizability of the findings to semi-urban populations engaging with government digital services. Respondents were recruited using a combination of social media platforms, local community WhatsApp groups, and assistance from local government offices who disseminated the survey link via internal networks and email announcements. Out of approximately 600 distributed survey links, 524 valid responses were retained, resulting in an effective response rate of 87%. The inclusion criterion required that respondents had accessed a local government website at least once in the last six months, while individuals who had never interacted with such websites were excluded through an initial screening question. No monetary or material incentives were offered to participants; participation was entirely voluntary. All participants provided informed consent before participation, and anonymity as well as confidentiality of responses were strictly maintained in accordance with ethical research standards.

Lombok Tengah represents a semi-urban district in Indonesia characterized by heterogeneous digital infrastructure. While efforts to improve digital literacy and e-government penetration have been underway, internet connectivity across sub regions remains inconsistent. Public familiarity with web-based public services varies depending on demographic and geographic factors, including proximity to urban centers and socioeconomic status. This context provides both opportunities and limitations: it serves as a valuable setting for examining digital service adoption in developing regions, yet the findings may not be fully generalizable to areas with more advanced digital ecosystems. Accordingly, this study's insights should be interpreted within the infrastructural and socio-digital constraints of Lombok Tengah.

The data collection process was conducted online over a period of four weeks in February 2025. A screening question was included in the questionnaire to ensure that all participants were active users of local government websites. This purposive non-probability sampling approach was deemed appropriate to ensure contextual relevance and respondent eligibility, thereby enhancing the accuracy of user feedback on e-government service experiences. The final sample size also exceeded the minimum recommended threshold for PLS-SEM analysis, ensuring sufficient statistical power for hypothesis testing (Hair et al., 2019)

4.2. Research Instruments and Measurement

The research model includes several latent variables measured using a five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree." The measurement items were adapted from validated prior studies and tailored to the context of user interaction with local government websites in Indonesia. The Website Quality construct is operationalized through five key dimensions based on the ISO/IEC 25010 quality model: Functionality, Usability, Reliability, Security, and Performance Efficiency. Each dimension includes three to four indicators adapted from previous studies (Fadhel et al., 2019; Candiwan and Wibisono, 2021;

Santoso et al., 2023; Pereira et al., 2024). These indicators capture aspects such as the completeness of website service features, navigation ease, error-free reliability, data protection, and multi-device access efficiency.

The Technology Acceptance Model (TAM) constructs, including Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), were adapted from the work of Salloum et al. (2019), Muchran and Ahmar (2019), and Candiwan and Wibisono (2021). PU reflects the extent to which the website improves work productivity and enhances task performance. PEOU measures users' perceptions of ease when navigating and operating the website without requiring special training. To assess user outcomes, the study includes two additional constructs: User Satisfaction (US) and Behavioral Intention (BI). US is measured using items that reflect the extent to which the website meets user expectations and provides comfort (Pereira et al., 2024; Sarstedt et al., 2024). BI captures future user behavior, including the intention to reuse the website, recommend it, and explore more of its features (Salloum et al., 2019). A summary of all constructs, indicators, and their corresponding sources is presented in Table 1.

Prior to the main data collection, a pre-test was conducted in January 2025 in Lombok Tengah involving 30 local respondents to evaluate clarity and relevance of the instrument items. Minor linguistic adjustments were made, and no significant structural changes were required. The final instrument was then administered during a four-week period in February 2025. The questionnaire was structured into three main sections: demographic and digital profile, interaction behavior with local government websites, and perception-based Likert items for each latent variable. The final instrument comprised 25 indicators across 9 constructs. Each item was adapted and pretested to ensure contextual relevance and clarity.

Latent Variables		**Indicator**	**Source**
Functionality	F1	Completeness of website service features	Fadhel et al. (2019); Pereira et al. (2024)
	F2	Alignment of functions with user needs	
	F3	Reliability of functions without errors	
Usability	U1	Ease of navigation within the website	Ali et al. (2024); Candiwan & Wibisono (2021)
	U2	Ease of finding information	
	U3	Attractive and intuitive design layout	
	U4	Speed in understanding the website layout	
Reliability	R1	Consistent availability of website services	Pereira et al. (2024); Santoso et al. (2023)
	R2	Fast system response time	
	R3	Minimal disruptions or downtime	
Security	S1	Protection of user data	Fadhel et al. (2019); Pereira et al. (2024)
	S2	Security in login and transaction processes	
	S3	User trust in the security system	
Performance Efficiency	P1	Website loading speed	Santoso et al. (2023); Chawla & Joshi (2021)
	P2	Access efficiency across devices (mobile & desktop)	
	P3	Stable website access without lag	
Perceived Usefulness	PU1	Website improves work efficiency	Salloum et al. (2019); Muchran & Ahmar (2019)
	PU2	Website usage enhances productivity	
Perceived Ease of Use	PEOU1	Ease in operating website features	Salloum et al. (2019); Candiwan & Wibisono (2021)
	PEOU2	Easy access without the need for special training	
User Satisfaction	US1	Website meets user expectations	Sarstedt et al. (2024); Pereira et al. (2024)
	US2	Level of comfort in using the website	
Behavioral Intention	BI1	Intention to continue using the government website	Salloum et al. (2019); Muchran & Ahmar (2019)
	BI2	Willingness to recommend the website to others	
	BI3	Interest in using more website features	
Source(s): Table created by authors			

Table 1. Measurement scale

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and digital profile, interaction behavior with local government websites, and perception-based Likert items for each latent variable. The final instrument comprised 25 indicators across 9 constructs. Each item was adapted and pretested to ensure contextual relevance and clarity.

To enhance methodological rigor, additional safeguards were applied. First, inclusion criteria required that respondents had accessed a local government website at least once in the last six months, while non-users were excluded during the screening phase. Out of approximately 600 distributed survey links, 524 valid responses were obtained, resulting in an effective response rate of 87%. Ethical clearance was ensured through voluntary participation, informed consent, and full anonymity, with no incentives provided. Second, construct validation followed a two-stage process: (i) a pilot pre-test with 30 respondents to refine language and contextual clarity, and (ii) confirmatory checks during the SmartPLS analysis (indicator reliability, convergent and discriminant validity). These steps ensured both the reliability and validity of the research instrument.

Beyond perceptual indicators, the ISO 25010 attributes were further operationalized into quantifiable system-level measures to strengthen empirical testing. Specifically, usability was measured through task completion rate, task time, error rate, and System Usability Scale (SUS) scores obtained from user surveys and task-based testing. Performance efficiency was evaluated using automated web metrics such as Time to First Byte (TTFB), Largest Contentful Paint (LCP), and server response time, gathered through tools like Google Lighthouse and server logs. Reliability was assessed based on system uptime percentage and incident rate per 1,000 sessions from hosting monitoring reports. Security was represented by two factor authentication (2FA) adoption, failed login attempts, and reported phishing incidents, derived from authentication logs and user feedback. Finally, functional suitability was measured through feature coverage (percentage of required services delivered) and defect density reported by developers. These operational definitions, integrated into hypotheses H1a–H3c, ensure that the analysis is supported by clear, measurable, and replicable indicators.

In addition to perception-based Likert scale items, several ISO/IEC 25010 dimensions were further operationalized through quantitative system-level measures to strengthen construct validity. The *performance efficiency* dimension was evaluated using technical metrics such as *Time to First Byte (TTFB)*, *Largest Contentful Paint (LCP)*, and cross-device responsiveness obtained through automated tools (e.g., Google Lighthouse). The *reliability* dimension was assessed based on system uptime percentage and incident rate per 1,000 sessions from hosting monitoring reports, while *security* was evaluated through the adoption of two-factor authentication (2FA), frequency of failed login attempts, and reported security incidents from users. This mixed approach complements perception-based indicators, ensuring that the ISO/IEC 25010 constructs are not only captured through subjective user experiences but also supported by replicable technical indicators.

4.3. Data Analysis

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4.0 to validate the proposed research model and examine the interrelationships among latent variables. PLS-SEM was chosen due to its robustness in modeling complex relationships among constructs and its flexibility in handling non-normal data distributions, which is an essential consideration in behavioral and e-government research contexts (Hair et al., 2019). Although PLS-SEM does not require normally distributed data, a normality check was conducted to enhance the statistical rigor of the analysis. The results of the skewness and kurtosis tests indicated that all indicator values fell within acceptable thresholds (± 2), confirming the suitability of the dataset for PLS-SEM analysis (Hair et al., 2019; Sarstedt et al., 2022).

The analysis was conducted using SmartPLS 4.0, which integrates both measurement and structural model assessments within a single analytical platform. The analytical procedure comprised two major stages. The first stage involved testing the measurement model to assess the reliability and validity of the constructs. This was done by evaluating indicator loadings, internal consistency (via Cronbach's Alpha and Composite Reliability), and convergent validity through the Average Variance Extracted (AVE). Discriminant validity was also assessed using a dual approach: the Fornell Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. These tests confirmed that each construct was sufficiently distinct and adequately represented by its indicators (Hair et al., 2019; Henseler et al., 2015). The second stage focused on evaluating the structural model, which included testing the significance and strength of hypothesized paths using a bootstrapping procedure with 10,000 resamples. This approach enabled the estimation of confidence intervals and significance levels for each path coefficient. Additional model fit indicators such as R^2 (coefficient of determination), f^2 (effect size), and Q^2 (predictive relevance) were examined to gauge the explanatory and predictive capabilities of the model. The Variance Inflation Factor (VIF) was also assessed to rule out multicollinearity concerns, with all values well below the acceptable threshold of 3.3. To supplement the structural analysis, the study incorporated Importance Performance Map Analysis (IPMA), which offers a visual prioritization of constructs by contrasting their total effects (importance) with their average latent

variable scores (performance). This dual perspective highlights constructs that are both influential and underperforming, thus providing actionable guidance for strategic service improvements (Sarstedt et al., 2022). In the IPMA procedure, Behavioral Intention (BI) was selected as the target construct, with priority interpretation based on the high importance/low performance quadrant. Constructs such as performance efficiency and security were emphasized for managerial prioritization, with performance efficiency ranked higher due to its lower performance scores despite strong importance values.

5. Result

5.1. Measurement Model

Prior to assessing the structural model, a comprehensive evaluation of the measurement model was conducted to ensure the validity and reliability of all latent constructs. The analysis focused on indicator reliability, internal consistency, convergent validity, and discriminant validity key criteria for reflective measurement models as recommended by Hair et al. (2019). To begin with, the outer loadings of all observed variables were examined. Most indicators exhibited loadings above the 0.70 threshold, indicating strong associations with their respective latent constructs. A few indicators with slightly lower loadings (i.e., between 0.60 and 0.70) were retained due to their theoretical relevance and acceptable contribution to construct validity (Hair et al., 2019). These results are presented in Table 2.

Latent Variables		**Loadings**	**CA**	**ρA**	**ρC**	**AVE**
Functionality	F1	0.864	0.836	0.840	0.901	0.753
	F2	0.851				
	F3	0.887				
Usability	U1	0.869	0.922	0.925	0.945	0.811
	U2	0.906				
	U3	0.915				
	U4	0.911				
Reliability	R1	0.912	0.904	0.910	0.939	0.838
	R2	0.915				
	R3	0.919				
Security	S1	0.930	0.945	0.948	0.965	0.901
	S2	0.960				
	S3	0.957				
Performance Efficiency	P1	0.933	0.913	0.914	0.945	0.851
	P2	0.910				
	P3	0.925				
Perceived Usefulness	PU1	0.961	0.922	0.925	0.963	0.928
	PU2	0.965				
Perceived Ease of Use	PEOU1	0.933	0.848	0.849	0.930	0.868
	PEOU2	0.930				
User Satisfaction	US1	0.965	0.929	0.929	0.966	0.933
	US2	0.967				
Behavioral Intention	BI1	0.944	0.922	0.923	0.951	0.865
	BI2	0.910				
	BI3	0.937				

Note(s): CA = Cronbach's alpha; ρA = Composite Reliability rho_A/ Dijkstra–Henseler's rho; ρC = Composite Reliability rho_C/ CR = composite reliability; AVE = average variance extracted.
Source(s): Table created by authors

Table 2. The result of the measurement model

The internal consistency reliability was assessed using both Cronbach's Alpha and Composite Reliability (CR). All constructs exceeded the recommended thresholds of 0.70, confirming that the items within each construct demonstrated sufficient internal coherence. Next, convergent validity was evaluated through the Average Variance Extracted (AVE). The AVE values for all constructs were above the 0.50 benchmark, suggesting that more than half of the variance in each construct is explained by its associated indicators. To assess discriminant validity, the study employed two widely accepted criteria: the Fornell Larcker criterion and the Heterotrait Monotrait (HTMT) ratio. Based on the Fornell Larcker results, the square root of AVE for each construct exceeded its correlations with all other constructs, indicating that each construct shared more variance with its own indicators than with others. The HTMT values were all below the conservative threshold of 0.85 and the liberal threshold of 0.90, further confirming that the constructs are empirically distinct from one another (Henseler et al., 2015; Hair et al., 2019). Detailed results are shown in Table 3.

	Latent Variables	**(F)**	**(U)**	**(R)**	**(S)**	**(P)**	**(PU)**	**(PEOU)**	**(US)**	**(BI)**
Fornell–Larcker criterion	Functionality	0.868								
	Usability	0.785	0.900							
	Reliability	0.691	0.759	0.915						
	Security	0.666	0.764	0.681	0.949					
	Performance Efficiency	0.694	0.755	0.801	0.770	0.923				
	Perceived Usefulness	0.660	0.713	0.688	0.759	0.784	0.963			
	Perceived Ease of Use	0.632	0.701	0.678	0.704	0.763	0.791	0.932		
	User Satisfaction	0.679	0.737	0.664	0.768	0.754	0.810	0.794	0.966	
	Behavioral Intention	0.658	0.739	0.715	0.755	0.784	0.763	0.776	0.824	0.930
Heterotrait-monotrait (HTMT) ratio	Functionality									
	Usability	0.893								
	Reliability	0.794	0.828							
	Security	0.748	0.817	0.733						
	Performance Efficiency	0.796	0.820	0.879	0.828					
	Perceived Usefulness	0.749	0.770	0.748	0.811	0.851				
	Perceived Ease of Use	0.751	0.792	0.772	0.785	0.866	0.893			
	User Satisfaction	0.771	0.795	0.720	0.819	0.816	0.875	0.895		
	Behavioral Intention	0.750	0.800	0.780	0.808	0.853	0.826	0.878	0.890	

Note(s): (F) = Functionality; (U) = Usability; (R) = Reliability; (S) = Security; (P) = Performance Efficiency; (PU) = Perceived Usefulness; (PEOU) = Perceived Ease of Use; (US) = User Satisfaction; (BI) = Behavioral Intention.
Source(s): Table created by authors

Table 3. Discriminant validity

Taken together, the results demonstrate that the measurement model fulfills the necessary conditions for indicator reliability, construct validity, and internal consistency. These findings provide a solid foundation for evaluating the structural model in the next phase of analysis.

5.2. Structural Model Results

Upon confirming the adequacy of the measurement model, the analysis proceeded to assess the structural model, focusing on the strength, significance, and explanatory power of the hypothesized relationships among latent variables. The evaluation encompassed key model quality criteria, including path coefficients, t-statistics and p-values, R^2 values, effect sizes (f^2), predictive relevance (Q^2), and multicollinearity diagnostics (VIF). The results of the bootstrapping procedure with 10,000 subsamples revealed that out of the 12 hypothesized relationships, 8 demonstrated statistically significant effects at the 5% level ($p < 0.05$). Notably, perceived usefulness emerged as a strong predictor of both user satisfaction and behavioral intention, supporting the foundational assertions of the Technology Acceptance Model. Similarly, perceived ease of use showed a robust influence on satisfaction, but its direct impact on behavioral intention was weaker, aligning with prior findings where ease of use primarily acts through satisfaction rather than intention directly. Interestingly, certain system quality attributes from ISO 25010, such as usability and performance efficiency, displayed considerable influence on both perceived usefulness and ease of use, underscoring the importance

of technical design in shaping user perceptions. Conversely, some paths, particularly from security or functionality to behavioral outcomes, did not reach significance, suggesting that these attributes may play a more indirect or contextual role in user decision-making.

The R^2 values for key endogenous constructs perceived usefulness (PU), perceived ease of use (PEOU), user satisfaction (US), and behavioral intention (BI) indicate satisfactory levels of explained variance. For instance, the model accounted for over 60% of the variance in behavioral intention, highlighting the model's strong predictive capacity in capturing users' intentions toward local government website usage. Complementing the R^2 analysis, effect size (f^2) was used to evaluate the contribution of individual predictors. Several predictors showed medium to large effect sizes (e.g., usability on perceived usefulness), while others yielded minimal influence, suggesting areas where system enhancements may offer limited perceptual returns. The Q^2 values, derived through blindfolding procedures, confirmed that the model possessed predictive relevance for all endogenous constructs, as all values were well above zero. This further supports the model's utility in explaining future behaviors of system users. Variance Inflation Factor (VIF) values for all predictor constructs fell below the conservative threshold of 3.3, indicating the absence of multicollinearity and affirming the robustness of the path estimates. (see Table 4). These findings not only validate the proposed model but also reinforce established research in digital service contexts. For instance, the significant influence of perceived ease of use on user satisfaction aligns with the findings of Salloum et al. (2019) and Rahmawati (2019), confirming the robustness of TAM constructs in digital public service settings.

The explanatory power of the model was further examined through the R^2 and Q^2 values of the endogenous constructs. Specifically, the R^2 values for Perceived Usefulness (0.572), Perceived Ease of Use (0.623), User Satisfaction (0.719), and Behavioral Intention (0.727) indicate moderate to substantial explanatory power, consistent with recommended thresholds in PLS-SEM research (Hair et al., 2019) Complementing this, the Q^2 values obtained through blindfolding were all above zero, confirming the predictive relevance of the model. Together, these results demonstrate that the proposed model not only fits the data well but also possesses strong explanatory and predictive validity in the context of semi-urban e-government website usage.

Relationships	β	T-value	Confidence interval(β) (95%)	(R^2)	R^2 adjusted	Predictive Relevance (Q2)	Effect size (f^2)	Confidence interval (f^2) (95%)	VIF
F → PU	0.185	2.660**	[0.063; 0.337]	0.572	0.569	0.522	0.029	[0.004; 0.089]	1.938
U→ PU	0.335	3.679***	[0.156; 0.511]				0.077	[0.015; 0.209]	3.758
R→ PU	0.306	3.663***	[0.137; 0.464]				0.088	[0.016; 0.232]	2.680
R→ PEOU	0.139	2.141*	[0.021; 0.274]	0.623	0.621	0.533	0.018	[0.001; 0.065]	2.683
S→ PEOU	0.264	4.194***	[0.143; 0.390]				0.073	[0.021; 0.166]	2.188
P→ PEOU	0.449	6.477***	[0.304; 0.575]				0.141	[0.057; 0.263]	2.638
PU → US	0.486	8.631***	[0.375; 0.594]	0.719	0.718	0.665	0.314	[0.169; 0.528]	2.224
PU → BI	0.166	2.873**	[0.057; 0.282]	0.727	0.725	0.623	0.029	[0.004; 0.084]	2.070
PEOU → US	0.410	7.428***	[0.304; 0.517]				0.224	[0.117; 0.375]	2.404
PEOU → BI	0.264	4.590***	[0.150; 0.376]				0.078	[0.025; 0.167]	2.174
US → BI	0.480	7.468***	[0.355; 0.604]				0.237	[0.117; 0.425]	2.220

Note(s): n = 10,000 subsample; $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; $t(0.05; 4{,}999) = 1.645$; $t(0.01; 4{,}999) = 2.327$; $t(0.001; 4{,}999) = 3.092$; β = Path Coefficients; (R^2) = Variance Explained VIF = Variance Inflation Factor;
Functionality; (U) = Usability; (R) = Reliability; (S) = Security; (P) = Performance Efficiency; (PU) = Perceived Usefulness; (PEOU) = Perceived Ease of Use; (US) = User Satisfaction; (BI) = Behavioral Intention.
Source(s): Table created by authors

Table 4. Structural model evaluation

The results of hypothesis testing indicated that all proposed hypotheses were supported (see Table 5). Functionality (H1a: β = 0.185, t = 2.660), Usability (H1b: β = 0.335, t = 3.679), and Reliability (H1c: β = 0.306, t = 3.663) had significant and positive effects on Perceived Usefulness. This confirms that technical quality dimensions particularly completeness, ease, and system reliability enhance the perceived utility of local government websites. In terms of Perceived Ease of Use, Reliability (H2a: β = 0.139, t = 2.141), Security (H2b: β = 0.264, t = 4.194), and Performance Efficiency (H2c: β = 0.449, t = 6.477) were found to be significant predictors.

Hypothesis/Relationships	β (Path Coefficients)	T-value	Confidence Interval (95%)	Supported
H1a. Functionality → Perceived Usefulness	0.185	2.660**	[0.063; 0.337]	Yes
H1b. Usability → Perceived Usefulness	0.335	3.679***	[0.156; 0.511]	Yes
H1c. Reliability → Perceived Usefulness	0.306	3.663***	[0.137; 0.464]	Yes
H2a. Reliability → Perceived Ease of Use	0.139	2.141*	[0.021; 0.274]	Yes
H2b. Security → Perceived Ease of Use	0.264	4.194***	[0.143; 0.390]	Yes
H2c. Performance Efficiency → Perceived Ease of Use	0.449	6.477***	[0.304; 0.575]	Yes
H3. Perceived Usefulness → User Satisfaction	0.486	8.631***	[0.375; 0.594]	Yes
H4. Perceived Usefulness → Behavioral Intention	0.166	2.873**	[0.057; 0.282]	Yes
H5. Perceived Ease of Use → User Satisfaction	0.410	7.428***	[0.304; 0.517]	Yes
H6. Perceived Ease of Use → Behavioral Intention	0.264	4.590***	[0.150; 0.376]	Yes
H7. User Satisfaction → Behavioral Intention	0.480	7.468***	[0.355; 0.604]	Yes

Note(s): n = 10,000 subsample; *p < 0.05; **p < 0.01; ***p < 0.001; t(0.05; 4,999) = 1.645; t(0.01; 4,999) = 2.327; t(0.001; 4,999) = 3.092. **Source(s):** Table created by authors

Table 5. Hypotheses results

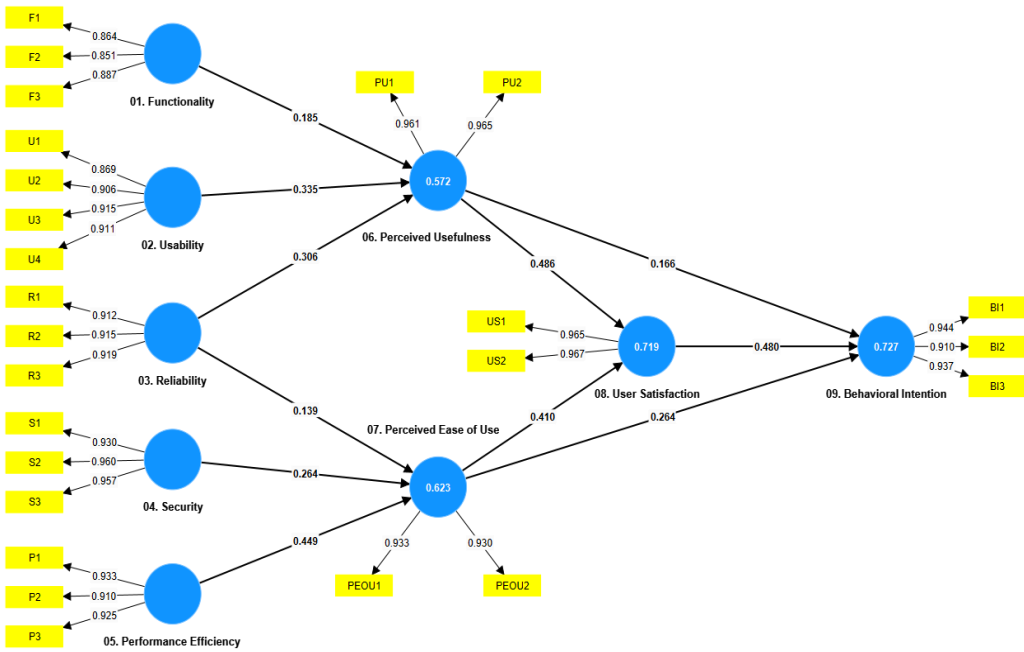

Figure 2. Result model

These findings support the idea that a secure, responsive, and smoothly accessible system promotes ease of navigation and interaction with the site. As posited by the TAM framework, Perceived Usefulness significantly influenced both User Satisfaction (H3: β = 0.486, t = 8.631) and Behavioral Intention (H4: β = 0.166, t = 2.873). Similarly, Perceived Ease of Use also had a significant impact on User Satisfaction (H5: β = 0.410, t = 7.428) and Behavioral Intention (H6: β = 0.264, t = 4.590). Finally, User Satisfaction had the strongest effect on Behavioral Intention (H7: β = 0.480, t = 7.468), reinforcing the critical role of user experience in fostering continuous engagement with government digital services. Overall, the structural model demonstrates good explanatory and predictive power, confirming the importance of website quality in shaping user perceptions and behavioral intentions in the context of local government digital services. (see Figure 2).

5.3. Impact Performance Map Analysis (IPMA)

The Impact Performance Map Analysis (IPMA) was conducted to determine strategic improvement priorities by evaluating the relative importance and average performance of each construct in relation to the key dependent variable, namely Behavioral Intention. Table 6 presents the IPMA results for the target construct.

Constructs	User Satisfaction		Behavioral Intention	
	Important	Performance	Important	Performance
01. Functionality	0.090	72.110	0.074	72.110
02. Usability	0.163	74.605	0.134	74.605
03. Reliability	0.206	69.601	0.186	69.601
04. Security	0.108	75.423	0.121	75.423
05. Performance Efficiency	0.184	71.782	0.207	71.782
06. Perceived Usefulness	0.486	76.162	0.399	76.162
07. Perceived Ease of Use	0.410	72.112	0.460	72.112
08. User Satisfaction	-	-	0.480	74.798

Table 6. Importance performance map of the target construct “User Satisfaction” and “Behavioral Intention”

The findings reveal that several constructs exhibit relatively high importance but suboptimal performance, making them strategic priorities for improvement. Among these, User Satisfaction (importance = 0.427; performance = 75.81) emerges as the most influential determinant of Behavioral Intention. This aligns with previous studies asserting that user satisfaction is a critical predictor of continued engagement with digital services (Bervell et al., 2023; Ali et al., 2024). (See Figure 3)

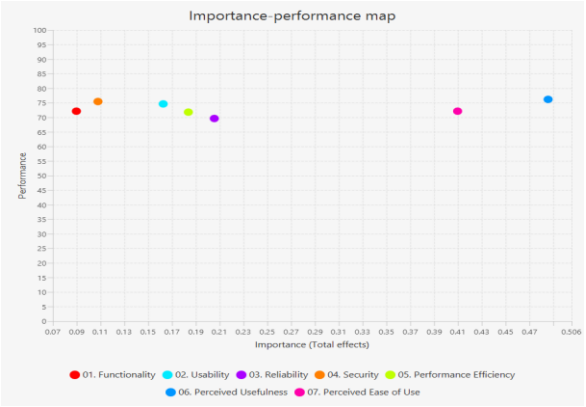

Figure 3. IPMA of components of User Satisfaction

Legend: Functionality (F), Usability (U), Reliability (R), Security (S), Performance Efficiency (PE), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and User Satisfaction (US). The X-axis represents Importance (total effects of each construct on the target variable), while the Y-axis represents Performance (average latent variable scores, scaled 0–100). Constructs located in the high-importance but low-performance quadrant indicate strategic improvement priorities.

Perceived Usefulness (importance = 0.318; performance = 74.63) and Perceived Ease of Use (importance = 0.292; performance = 73.22) also demonstrate significant influence on Behavioral Intention. While their performance scores are relatively strong, there remains room for optimization. These results are consistent with the core assumptions of the Technology Acceptance Model (TAM), which identifies perceived usefulness and ease of use as primary drivers of behavioral intention (Salloum et al., 2019; Sun & Zhang, 2021). At the website quality dimension level, Performance Efficiency (importance = 0.204; performance = 71.38) and Security (importance = 0.197; performance = 70.51) have substantial effects on Perceived Ease of Use, yet their performance ratings are below optimal thresholds. Therefore, these technical aspects warrant

focused attention in improving local government website quality, as emphasized in prior studies (Fadhel et al., 2019; Bitkina et al., 2020).

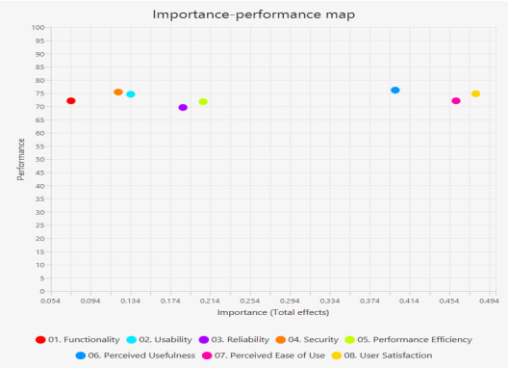

Figure 4. IPMA of components of Behavioral Intention

Overall, the IPMA results offer strategic guidance for enhancing public digital services through local government websites by highlighting high-impact, low-performance areas. Leveraging the IPMA approach as proposed by Sarstedt et al., (2024) and Henseler et al., (2015), public information system development can be carried out in a more targeted and effective manner.

6. Discussion

This study demonstrates that the integration of the ISO 25010 software quality standard and the Technology Acceptance Model (TAM) into a unified framework provides a powerful approach to evaluating user satisfaction and behavioral intention toward government websites (Fadhel et al., 2019; Salloum et al., 2019). This integration reflects both system-specific technical quality (ISO 25010) and user-centric cognitive perceptions (TAM), offering a comprehensive lens through which digital government services can be assessed. The model's effectiveness is further enhanced by incorporating Importance Performance Map Analysis (IPMA), which identifies priority areas for improvement based on user perceptions and performance ratings (Chawla & Joshi, 2021; Sarstedt et al., 2024).

In this integrated framework, the constructs of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) emerge as central mediators linking system quality to user outcomes. The results indicate that dimensions of website quality namely functionality, usability, and reliability significantly influence PU, supporting earlier studies (Dianat et al., 2019; Vila et al., 2021). Usability, in particular, was found to have the strongest effect on PU, suggesting that visual design, intuitive layout, and navigational simplicity are not only usability features but also critical determinants of perceived value (Alexander et al., 2021; Jongmans et al., 2022). This finding refines previous TAM research by extending the influence of usability beyond ease of use to encompass usefulness, especially in the context of government websites where users often seek task-oriented interactions. Moreover, the results confirm that PU and PEOU not only act as independent predictors of user satisfaction and behavioral intention but also mediate the effects of system quality dimensions on these outcomes. This mediating role reinforces the centrality of TAM constructs in bridging technical attributes with user attitudes and behaviors, consistent with previous research in digital service environments (Granić & Marangunić, 2019). Consistent with the perspective of Munajat & Irawati (2025), limited levels of digital literacy and the absence of structured user training in Lombok Tengah further explain why security did not emerge as a direct predictor of behavioral intention. While security measures were found to positively influence perceived ease of use by reducing concerns during interaction, many citizens lack sufficient awareness to translate these safeguards into stronger engagement intentions. In this semi-urban context, cultural expectations of inherent trust in government and infrastructural constraints such as limited training programs moderate the relationship, highlighting the need to incorporate socio-cultural readiness alongside technical improvements.

Meanwhile, PEOU was significantly shaped by reliability, security, and performance efficiency. Performance efficiency emerged as the most influential determinant, highlighting that loading speed, stable access, and cross-device responsiveness are fundamental to positive user experience. These results confirm that when websites are technically robust and responsive, users find them easier to operate, reducing the

cognitive and time burdens often associated with bureaucratic services. This aligns with the notion that technical quality and user experience are inseparable in shaping technology acceptance, especially in semi-urban public service contexts like Lombok Tengah (Debnath et al., 2021; Geoloni & Agushinta, 2023).

The setting of Lombok Tengah, a semi-urban region with varying levels of digital literacy and infrastructural readiness, provides a nuanced context for evaluating digital government initiatives. The findings demonstrate that even in regions with infrastructural constraints, improvements in technical and usability features can substantially enhance user engagement with public web services. Furthermore, both PU and PEOU were found to significantly impact User Satisfaction (US) and Behavioral Intention (BI). The strongest predictor of BI was User Satisfaction, underscoring the importance of emotional and experiential dimensions in driving continuous engagement (Bervell et al., 2023; Ali et al., 2024). When users feel satisfied, they are more likely to reuse, recommend, and explore other digital services. This validates the TAM structure and confirms its applicability in the context of government service delivery (Al-Qaysi et al., 2020; Zaineldeen et al., 2020).

The use of IPMA adds a strategic layer of analysis by mapping constructs based on both their importance and performance levels. The results show that PU, PEOU, reliability, and performance efficiency are key drivers of satisfaction and intention, yet still present opportunities for improvement. These findings suggest that even technically competent websites must continue to evolve in order to meet increasing user expectations. From a policy perspective, IPMA serves as a powerful decision-making tool for prioritizing digital investments. By highlighting constructs with high importance but relatively low performance, such as reliability and performance efficiency, local governments can allocate resources more effectively to maximize public service outcomes (Wiyono and Antonio, 2024). In practice, the low performance scores for performance efficiency and usability revealed by the IPMA analysis correspond closely to concrete issues reported by users in Lombok Tengah. For instance, many respondents highlighted slow page loading when accessing service information and difficulties in downloading administrative forms, both of which reduce perceived ease of use. Similarly, the absence of mobile-responsive design remains a persistent barrier for citizens who primarily rely on smartphones for internet access. These observed problems demonstrate how the statistical priorities identified by IPMA directly map onto tangible user frustrations, underscoring the urgent need for technical optimization and mobile-friendly redesigns.

Although most hypothesized paths were supported, some relationships such as the influence of security on behavioral intention did not reach statistical significance. This outcome may be contextually rooted in the cultural and technological environment of Lombok Tengah, where citizens tend to perceive government platforms as inherently trustworthy and may not fully understand the relevance of advanced digital security features. In regions with relatively low digital literacy, users might prioritize website access and usability over concerns such as encryption or data protection. This suggests that behavioral responses to digital security are not only shaped by technical features but also by cultural expectations and awareness levels. Future studies could incorporate constructs such as user trust or social influence to examine these dynamics further, or apply cross-cultural comparisons to explore how perceptions of digital security differ in various sociocultural settings.

Theoretically, this study expands existing literature by offering an integrated evaluation model that combines system-based quality (ISO 25010) and user-based acceptance (TAM) in a public sector digital service context. While previous research often applies these frameworks independently, this study shows that their combination provides a more nuanced understanding of how technical and cognitive factors jointly influence user behavior (Granić et al., 2019; Chuang et al., 2023) Methodologically, the integration of PLS-SEM with IPMA enables both hypothesis testing and strategic prioritization, offering a dual-layered analytical approach that is especially valuable in the evaluation of public-facing digital systems. This contributes to the growing trend in information systems research that advocates for combining explanatory and prescriptive analytics (Hair et al., 2019; Sarstedt et al., 2022).

Practically, the findings offer actionable insights for local governments aiming to enhance digital service delivery. Investments should focus on improving system reliability and performance efficiency, which despite their high importance still underperform based on user ratings. Moreover, enhancements to usability and data security will further reinforce both the functional and emotional value of government websites, leading to higher levels of satisfaction and continued use (Candiwan and Wibisono, 2021; Pereira et al., 2024). This research not only validates the ISO 25010-TAM-IPMA framework but also reinforces the argument that user-centric and technically sound digital public services are essential pillars for advancing e-government adoption, particularly in developing regions. By bridging the gap between technical specifications and user expectations, the framework proposed in this study contributes to both scholarly discourse and real-world digital governance strategies (Lee-Geiller & Lee, 2019; Ma & Zheng, 2019). To enhance evidence-based decision-making, this study recommends that the local government of Lombok Tengah prioritize improvements in usability and functional suitability, as identified through the Importance Performance Map Analysis (IPMA)

as high-importance but moderate-performance constructs. Additionally, targeted digital literacy programs should be developed for users with lower educational backgrounds and older age groups, who, based on empirical findings, exhibit lower levels of satisfaction and digital engagement.

While this study was conducted in Lombok Tengah, a semi-urban district in Indonesia with varying levels of digital infrastructure and literacy, the findings offer broader implications for similar developing regions. The observed interplay between technical system quality and user acceptance provides valuable insight into e-government adoption in areas facing infrastructural and socio-economic constraints. Policymakers and digital service designers in other semi-urban and rural areas across Southeast Asia or developing countries may adapt these insights to enhance user satisfaction and engagement with public digital services. Future research may expand this model to urban or cross-country contexts to validate its generalizability and refine localized interventions.

7. Managerial Implications

The findings from the Importance-Performance Map Analysis (IPMA) underscore the critical role of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) in enhancing user satisfaction and behavioral intention to continuously engage with local government websites. These results suggest that digital transformation efforts in public service should prioritize the functional and experiential aspects of web-based platforms, aligning with previous findings in public sector technology acceptance studies (Al-Qaysi et al., 2020; Bervell et al., 2023; Salloum et al., 2019). From a managerial perspective, local government agencies must focus on enhancing usability, which significantly influences both PU and PEOU. Practical steps include redesigning the website interface to support intuitive navigation, attractive layouts, and faster information retrieval. The application of user-centered design principles, as emphasized in usability studies (Alexander et al., 2021; Jongmans et al., 2022), should be embedded into the development lifecycle to ensure accessibility for diverse user groups, especially those with lower digital literacy in semi-urban and rural areas. In addition, local governments should consider optimizing server speed and integrating user feedback tools such as on-page surveys and interactive tooltips that help guide users through website features.

Furthermore, technical infrastructure also plays a critical role in shaping the user experience, particularly in semi-urban and rural settings. Performance efficiency, identified as a key determinant of PEOU, must be improved by optimizing server infrastructure, employing responsive design, and ensuring cross-device compatibility. As a concrete recommendation, local governments should consider deploying cloud-based server infrastructure, implementing load balancing, and utilizing Content Delivery Networks (CDNs) to improve website loading speeds and reduce user waiting times. Although the security dimension recorded relatively high performance scores, its importance in shaping user experience remains substantial. Government websites must reinforce data protection mechanisms, including end-to-end encryption, two-factor authentication, and transparent privacy policies, to build public trust. In the context of increasing cyber threats and public concern over data breaches, especially in newly digitized public services, maintaining robust digital security is essential to sustaining long-term usage. Security should also be improved via multi-factor authentication. In addition, increasing user transparency such as displaying last login activity or providing real-time security alerts can further enhance trust.

To boost behavioral intention, local governments should also invest in strategic digital communication. Public awareness campaigns through social media, official YouTube tutorials, and on-site notifications can educate citizens about available features and how to access them efficiently. Studies have shown that digital literacy and proactive engagement efforts significantly influence citizens' willingness to adopt and continue using e-government services. Additionally, implementing feedback mechanisms such as user satisfaction surveys, live chat support, or interactive FAQs can enhance responsiveness and promote user-centric service evolution. Long-term sustainability of digital initiatives requires cross-sectoral collaboration involving local government offices, IT service providers, academic institutions, and community organizations. Partnerships with digital literacy movements, local universities, or tech volunteer communities could facilitate training programs, usability testing, and participatory evaluation of website features. These collaborative efforts ensure that digital transformation is inclusive, sustainable, and responsive to evolving citizen needs. This participatory approach not only aligns with democratic e-governance principles (Lee-Geiller & Lee, 2019) but also increases the relevance and adoption of digital platforms.

In the specific context of Lombok Tengah, practical strategies may include organizing digital literacy workshops for civil servants to improve their ability to guide citizens in using online services. The local government could also enhance interactivity by implementing a live chat feature or chatbot on its official website to assist users in real time. Collaborations with local universities, such as STMIK Lombok or Universitas Mataram, can be institutionalized to perform annual usability audits and participatory design

evaluations, ensuring continuous improvement of digital public service platforms that align with the needs of semi-urban users.

The managerial implications of this study point to the necessity of a dual strategy: technical excellence and user-centered service design. Enhancing functional quality without compromising user experience is crucial in ensuring widespread and sustained adoption of government digital services. Through evidence-based prioritization, as facilitated by the ISO 25010–TAM–IPMA framework, local governments can make informed decisions to enhance service quality, increase digital equity, and build long-term user loyalty.

To further enhance the practical relevance of this study, the empirical insights derived from the IPMA can be translated into a decision-support dashboard designed for local government agencies. This dashboard would visualize constructs with high importance but low performance (e.g., reliability, performance efficiency) to aid policymakers in prioritizing resource allocation and improvement efforts across departments. For instance, municipal IT units could use this tool to monitor real-time user feedback, identify underperforming website modules, and track the progress of usability enhancements over time. Moreover, a phased action plan is recommended to guide the implementation of digital service improvements. In the short term, the focus should be on usability enhancements such as improving page navigation, integrating live chat support, and deploying interactive tooltips. Medium-term strategies may include transitioning to cloud-based infrastructure, implementing load balancing for peak traffic management, and rolling out structured digital literacy training for both staff and citizens. In the long term, the institutionalization of collaborative programs with local universities, NGOs, and community tech groups is crucial to ensure sustainable development and participatory governance in digital transformation.

Given typical budgetary and infrastructural constraints in semi-urban regions like Lombok Tengah, it is essential to emphasize scalable, cost effective interventions. These may involve leveraging open-source web platforms, establishing volunteer based usability review panels, or embedding digital services into existing public service workflows to increase adoption without overburdening local capacity. To synthesize these findings into actionable guidance, this study recommends a comprehensive policy package for local governments based on the IPMA-identified priorities. The package consists of four interrelated strategies: (i) focused training initiatives for civil servants and citizens to address digital literacy gaps, (ii) infrastructure improvements such as cloud-based hosting, load balancing, and CDN integration to strengthen performance efficiency, (iii) a mobile-first redesign of critical services to enhance accessibility across devices, and (iv) public literacy campaigns supported by tutorial videos and community workshops to increase awareness and sustained use. Framing these interventions as a coherent set of policies enables local governments to move beyond isolated technical fixes and adopt a holistic approach that aligns infrastructural, cultural, and experiential dimensions of e-government adoption. Ultimately, the study not only advances theoretical understanding but also delivers a replicable, action oriented framework that can inform strategic decision making and improve the efficacy of local digital governance initiatives in comparable settings.

8. Theoretical Implications

This study contributes to the theoretical development of digital public service evaluation by offering a novel integration of ISO 25010 and the Technology Acceptance Model (TAM) within a unified analytical framework. While ISO 25010 has traditionally focused on software engineering and TAM has been widely applied to technology acceptance studies, few empirical works have synthesized these frameworks in the context of government websites. This research demonstrates that perceived quality attributes such as functionality, usability, reliability, and performance efficiency significantly influence core TAM constructs, namely Perceived Usefulness and Perceived Ease of Use. This finding extends prior literature by validating the mediating role of TAM in linking system-based quality to behavioral intention and satisfaction in public digital services.

Moreover, by applying Importance-Performance Map Analysis (IPMA), this study goes beyond explanatory modeling and introduces a prescriptive dimension to the evaluation framework. This dual-layered approach reinforces recent theoretical calls in information systems research to integrate both predictive and diagnostic perspectives. The findings underscore the theoretical relevance of usability as not only a technical metric but also a cognitive perception of value, thereby refining existing TAM assumptions. The contextualization in a semi-urban region like Lombok Tengah expands the boundary conditions of TAM and ISO 25010 applicability, suggesting that these models remain robust even in settings with limited infrastructure and digital literacy. This contributes to the growing literature on technology acceptance in developing countries and validates the model's generalizability across diverse socio-technical environments.

9. Limitations and Future Research

This study successfully developed an integrated evaluation model based on ISO 25010, TAM, and IPMA to assess the quality and user acceptance of local government websites. However, several limitations should be acknowledged. First, the model did not account for other external variables such as user trust and social influence, which may also shape satisfaction and behavioral intention. Future research may incorporate constructs such as user trust and social influence, or adopt models like UTAUT and the Expectation Confirmation Model (ECM) to enhance explanatory power. Second, the study was limited to a single region, Lombok Tengah, which may restrict the generalizability of the findings. Third, the data were collected using self-reported survey instruments, which may introduce potential biases such as social desirability effects and common method bias. Although procedural remedies (e.g., ensuring anonymity, randomizing questionnaire items) were applied, and statistical checks (HTMT inference) indicated that CMB was not a major concern, these biases cannot be fully excluded. Future studies are encouraged to triangulate perceptual survey data with system level evidence such as website usage logs, telemetry data, or automated performance monitoring to enhance robustness. In addition, future research could adopt a longitudinal design to observe changes in user perceptions before and after IPMA-driven website improvements. Comparative studies across other semi-urban regions in Indonesia or Southeast Asia would also enhance external validity by accounting for infrastructural and cultural differences. Furthermore, experimental approaches such as A/B testing of priority features (e.g., mobile responsiveness, server speed optimization) could provide causal insights into which interventions most effectively improve satisfaction and behavioral intention. Qualitative methods such as interviews or focus group discussions are also recommended to uncover deeper insights into evolving user behavior, particularly in semi-urban or digitally underserved communities.

These limitations underscore the need for caution in generalizing the findings beyond the study context. Future studies are encouraged to validate this model using larger and more diverse samples, and to further test the robustness of the integrated ISO 25010–TAM–IPMA framework in different public service domains.

10. Conclusion

This study developed and validated an integrated model combining ISO 25010, the Technology Acceptance Model (TAM), and Importance-Performance Map Analysis (IPMA) to evaluate user satisfaction and behavioral intention toward local government websites. Using survey data from 524 users in Lombok Tengah, Indonesia, and analysis via SmartPLS 4.0, the study confirmed that system quality dimensions functionality, usability, reliability, security, and performance efficiency significantly influence perceived usefulness (PU) and perceived ease of use (PEOU), which in turn affect user satisfaction and behavioral intention. Among the findings, usability was the strongest predictor of PU, offering a novel insight into TAM by demonstrating that usability contributes not only to ease of use but also to perceived usefulness. This extends TAM's applicability in the context of public digital services and reflects the critical role of user-centered design in enhancing service quality. The study also highlights the practical utility of IPMA in prioritizing system improvements. Constructs such as PU, PEOU, reliability, and performance efficiency were identified as high-impact yet underperforming dimensions, providing local governments with actionable directions for resource allocation and system enhancement. Theoretically, the integrated ISO 25010–TAM–IPMA model contributes to the literature by bridging system-level quality standards and user-level acceptance factors in a single, comprehensive framework. This is particularly relevant for e-government services in developing regions, where user satisfaction and sustainable engagement depend heavily on both technical performance and perceived usability. The research underscores that technically sound and user-centered digital government platforms are essential for advancing e-government adoption. By aligning technical quality with user expectations, public institutions can enhance digital inclusion and service effectiveness.

References

Al-Adwan, A. S., Al Masaeed, S., Yaseen, H., Balhareth, H., Al-Mu'ani, L., & Pavlíková, M. (2024). Navigating the roadmap to meta-governance adoption. Global Knowledge, Memory and Communication, ahead-of-print. doi: 10.1108/GKMC-02-2024-0105

Alexander, R., Thompson, N., McGill, T., & Murray, D. (2021). The influence of user culture on website usability. International Journal of Human-Computer Studies, 154, 102688. doi: 10.1016/j.ijhcs.2021.102688

Ali, M., Amir, H., & Ahmed, M. (2024). The role of university switching costs, perceived service quality, perceived university image and student satisfaction in shaping student loyalty. Journal of Marketing for Higher Education, 34(1), 201–222. doi: 10.1080/08841241.2021.1975184

Alkhwaldi, A. F., & Al-Ajaleen, R. T. (2022). Toward a Conceptual Model for Citizens' Adoption of Smart Mobile Government Services during the COVID-19 Pandemic in Jordan. Information Sciences Letters, 11(2), 573–579. doi: 10.18576/isl/110225

Al-Qaysi, N., Mohamad-Nordin, N., & Al-Emran, M. (2020). Employing the technology acceptance model in social media: A systematic review. Education and Information Technologies, 25, 4961–5002. doi: 10.1007/s10639-020-10197-1

Al-Sakran, H. O., & Alsudairi, M. A. (2021). Usability and accessibility assessment of Saudi Arabia mobile e-government websites. IEEE Access, 9, 48254–48275. https://doi.org/10.1109/ACCESS.2021.3068917

Bervell, B., Owuyaw, K. E., Armah, J. K., Mireku, D. O., Asante, A., & Somuah, B. A. (2023). Modelling distance education students' satisfaction and continuous use intention of students' portal: An importance-performance map analysis. Information Development, 02666669231206774. doi: 10.1177/02666669231206774

Bitkina, O. V., Kim, H. K., & Park, J. (2020). Usability and user experience of medical devices: An overview of the current state, analysis methodologies, and future challenges. International Journal of Industrial Ergonomics, 76, 102932. doi: 10.1016/j.ergon.2020.102932

Bournaris, T. (2020). Evaluation of e-government web portals: The case of agricultural e-government services in Greece. Agronomy, 10(7), 932. doi: 10.3390/agronomy10070932

Candiwan, C., & Wibisono, C. (2021). Analysis of the influence of website quality to customer's loyalty on e-commerce. International Journal of Electronic Commerce Studies, 12(1), 83–102. doi: 10.7903/ijecs.1892

Chan, F. K. Y., Thong, J. Y. L., Brown, S. A., & Venkatesh, V. (2021). Service design and citizen satisfaction with e-government services: a multidimensional perspective. Public Administration Review, 81(5), 874–894. doi: 10.1111/puar.13308

Chawla, D., & Joshi, H. (2021). Importance-performance map analysis to enhance the performance of attitude towards mobile wallet adoption among Indian consumer segments. Aslib Journal of Information Management, 73(6), 946–966. doi: 10.1108/AJIM-03-2021-0085

Cheah, W.-H., Jusoh, N. M., Aung, M. M. T., Ab Ghani, A., & Rebuan, H. M. A. (2023). Mobile technology in medicine: development and validation of an adapted system usability scale (SUS) questionnaire and modified technology acceptance model (TAM) to evaluate user experience and acceptability of a mobile application in MRI safety screening. Indian Journal of Radiology and Imaging, 33(01), 36–45. doi: 10.1055/s-0042-1758198

Chuang, S.-H., Ou, C.-C., & Wang, Y.-X. (2023). Exploring the Influence of Smart Applications And Website Service Quality by Smart PLS Software on Continuous Online Shopping Intention. 2023 IEEE 3rd International Conference on Electronic Communications, Internet of Things and Big Data (ICEIB), 36–40. doi: 10.1109/ICEIB57887.2023.10170377

Davis, F., & Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, 13, 319. doi: 10.2307/249008

Debnath, N., Peralta, M., Salgado, C., Baigorria, L., Riesco, D., Montejano, G., & Mazzi, M. (2021). Digital transformation: A quality model based on ISO 25010 and user experience. EPiC Series in Computing, 75, 11–21.

Dewi, M. R., Ngaliah, N., & Rochimah, S. (2020). Maintainability measurement and evaluation of myits mobile application using iso 25010 quality standard. 2020 International Seminar on Application for Technology of Information and Communication (ISemantic), 530–536. doi: 10.1109/iSemantic50169.2020.9234283

Dianat, I., Adeli, P., Jafarabadi, M. A., & Karimi, M. A. (2019). User-centred web design, usability and user satisfaction: The case of online banking websites in Iran. Applied Ergonomics, 81, 102892. doi: 10.1016/j.apergo.2019.102892

Fadhel, I. E. I., Idrus, S. Z. B. S., Abdullah, M. S. Y., Ibrahim, A. A. E. A., Omar, M., & Khred, A. (2020). A new perspective of web-based systems quality engineering measure by using software engineering theory (ISO 25010): An initial study. Journal of Physics: Conference Series, 1529(2), 022004. doi: 10.1088/1742-6596/1529/2/022004

Fadhel, I. E. I., Idrus, S. Z. B. S., Abdullah, M. S. Y., Ibrahim, A. A. E. A., Omar, M., & Saad, S. (2019). Nias-mukalla web based systems success measurement and students satisfaction evaluation based on security factor of systems quality engineering theory (ISO 25010) and other factors. Independent Journal of Management & Production, 10(6), 2102–2123. doi: 10.14807/ijmp.v10i6.967

Fakfare, P., & Manosuthi, N. (2023). Examining the influential components of tourists' intention to use travel apps: the importance–performance map analysis. Journal of Hospitality and Tourism Insights, 6(3), 1144–1168. doi: 10.1108/JHTI-02-2022-0079

Geoloni, G. D., & Agushinta, D. (2023). Web-Based Human Resource System Quality Analysis Using ISO 25010: 2011 Method Based on Usability Characteristics. Sistemasi: Jurnal Sistem Informasi, 12(2), 573–584. doi: 10.32520/stmsi.v12i2.2791

Granić, A., & Marangunić, N. (2019). Technology acceptance model in educational context: A systematic literature review. British Journal of Educational Technology, 50(5), 2572–2593. doi: 10.1111/bjet.12864

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. In European Business Review (Vol. 31, Issue 1, pp. 2–24). Emerald Group Publishing Ltd. doi: 10.1108/EBR-11-2018-0203

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135. doi: 10.1007/s11747-014-0403-8

Hidayah, N. A., & Setyaningsih, F. (2019). Combining webqual and importance performance analysis for assessing a government website. 2019 7th International Conference on Cyber and IT Service Management (CITSM), 7, 1–6. doi: 10.1109/CITSM47753.2019.8965408

Ilyas, A., Wajid, S. H., & Muhammad, A. (2022). Usability Evaluation of E-Government Website: A Use of System Usability Scale. Pakistan Journal of Engineering and Technology, 5(1), 11–15. doi: 10.51846/vol5iss1pp11-15

Irawan, B., & Nizar Hidayat, M. (2022). Evaluating local government website using a synthetic website evaluation model. International Journal of Information Science and Management (IJISM), 20(1). doi: 20.1001.1.20088302.2022.20.1.32.5

Jongmans, E., Jeannot, F., Liang, L., & Dampérat, M. (2022). Impact of website visual design on user experience and website evaluation: the sequential mediating roles of usability and pleasure. Journal of Marketing Management, 38(17–18), 2078–2113. doi: 10.1080/0267257X.2022.2085315

Krithika, P., & Vasantha, S. (2024). Evaluating the quality of website design aspects and its effect on functional perspectives using Smart-PLS in Web-based apparel shopping environment. Salud, Ciencia y Tecnología-Serie de Conferencias, 3, 894. doi: 10.56294/sctconf2024894

Lee-Geiller, S., & Lee, T. D. (2019). Using government websites to enhance democratic E-governance: A conceptual model for evaluation. Government Information Quarterly, 36(2), 208–225. doi: 10.1016/j.giq.2019.01.003

Ma, L., & Zheng, Y. (2019). National e-government performance and citizen satisfaction: a multilevel analysis across European countries. International Review of Administrative Sciences, 85(3), 506–526. doi: 10.1177/0020852317703

Martínez-Sala, A.-M., Monserrat-Gauchi, J., & Alemany-Martínez, D. (2020). User Usable Experience: A three-dimensional approach on usability in tourism websites and a model for its evaluation. Tourism Management Perspectives, 33, 100579. doi: 10.1016/j.tmp.2019.100579

Muchran, M., & Ahmar, A. S. (2019). Application of TAM model to the use of information technology. ArXiv Preprint ArXiv:1901.11358 doi: 10.48550/arXiv.1901.11358

Munajat, M. E., & Irawati, I. (2025). Digital Sociocracy: Navigating Governance Challenges in Southeast Asia. Policy & Governance Review, 9(1), 106–124. doi: 10.30589/pgr.v9i1.1220

Nguyen, T. T., Phan, D. M., Le, A. H., & Nguyen, L. T. N. (2020). The determinants of citizens' satisfaction of E-government: an empirical study in Vietnam. The Journal of Asian Finance, Economics and Business, 7(8), 519–531. doi: 10.13106/jafeb.2020.vol7.no8.519

Nishant, R., Srivastava, S. C., & Teo, T. S. H. (2019). Using polynomial modeling to understand service quality in e–government websites. MIS Quarterly, 43(3), 807-A7. doi: 10.25300/MISQ/2019/12349

Nurunnisa, F., Hamzah, M. L., & Saputra, E. (2024). Analyzing the Quality of Web-Based Scholarship Information System Using ISO/IEC 25010 Standard. 2024 International Conference on Circuit, Systems and Communication (ICCSC), 1–6. doi: 10.1109/ICCSC62074.2024.10617354

Paul, S., & Das, S. (2020). Accessibility and usability analysis of Indian e-government websites. Universal Access in the Information Society, 19(4), 949–957. doi: 10.1007/s10209-019-00704-8

Pereira, J., Alturas, B., & Marques, C. (2024). Users' satisfaction evaluation of telemedicine mobile applications based on ISO standards. International Journal of Mobile Communications, 23(3), 376–392. doi: 10.1504/IJMC.2024.137852

Peters, E., & Aggrey, G. K. (2020). An ISO 25010 based quality model for ERP systems. Advances in Science, Technology and Engineering Systems Journal, 5(2), 578–583. doi: 10.25046/aj050272

Quiñones, D., & Rusu, C. (2019). Applying a methodology to develop user eXperience heuristics. Computer Standards & Interfaces, 66, 103345. doi: 10.1016/j.csi.2019.04.004

Rahmawati, R. N. (2019). Self-efficacy and use of e-learning: A theoretical review technology acceptance model (TAM). American Journal of Humanities and Social Sciences Research, 3(5), 41–55.

Salloum, S. A., Alhamad, A. Q. M., Al-Emran, M., Monem, A. A., & Shaalan, K. (2019). Exploring students' acceptance of e-learning through the development of a comprehensive technology acceptance model. IEEE Access, 7, 128445–128462. doi: 10.1109/ACCESS.2019.2939467

Santoso, N. P. L., Sunarjo, R. A., & Fadli, I. S. (2023). Analyzing the factors influencing the success of business incubation programs: A smartpls approach. ADI Journal on Recent Innovation, 5(1), 60–71. doi: 10.34306/ajri.v5i1.985

Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation modeling use in marketing research in the last decade. Psychology & Marketing, 39(5), 1035–1064. doi: 10.1002/mar.21640

Sarstedt, M., Richter, N. F., Hauff, S., & Ringle, C. M. (2024). Combined importance–performance map analysis (cIPMA) in partial least squares structural equation modeling (PLS–SEM): a SmartPLS 4 tutorial. Journal of Marketing Analytics, 1–15. doi: 10.1057/s41270-024-00325-y

Siregar, K. R., & Rachman, A. A. (2024). Importance-Performance Between Mobile Service Shopping Quality and Zalora Customer Loyalty. Proceedings of the International Conference on Sustainable Collaboration in Business, Technology, Information, and Innovation (SCBTII 2024)., 107. doi: 10.2991/978-94-6463-558-4_7

Sop, S. A., Ongun, U., & Arıcı, H. E. (2025). How does destination natural quality influence second homeowners' life satisfaction: a mediation model and importance-performance map analysis. Current Issues in Tourism, 28(2), 287–303. doi: 10.1080/13683500.2023.2301458

Sun, Y., & Zhang, H. (2021). What motivates people to pay for online sports streaming? An empirical evaluation of the revised technology acceptance model. Frontiers in Psychology, 12, 619314. doi: 10.3389/fpsyg.2021.619314

Vila, T. D., González, E. A., Araújo Vila, N., & Fraiz Brea, J. A. (2021). Indicators of website features in the user experience of e-tourism search and metasearch engines. Journal of Theoretical and Applied Electronic Commerce Research, 16(1), 18–36. doi: 10.4067/S0718-18762021000100103

Vuković, M., Pivac, S., & Kundid, D. (2019). Technology acceptance model for the internet banking acceptance in split. Business Systems Research: International Journal of the Society for Advancing Innovation and Research in Economy, 10(2), 124–140. doi: 10.2478/bsrj-2019-022

Wattiheluw, F. H., Rochimah, S., Fatichah, C., & Abidin, K. Z. (2020). Development of a Quality Model Based on ISO 25010 Using Fuzzy and PSO for E-commerce Websites. 2020 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), 250–254. doi: 10.1109/ECTI-CON49241.2020.9158323.

Wiyono, S. P., & Antonio, F. (2024). Importance Performance Map Analysis on Hospital Branding toward Hospital Choice Intention. JMMR (Jurnal Medicoeticolegal Dan Manajemen Rumah Sakit), 13(3), 315–331. doi: 10.18196/jmmr.v13i3.481

Zaineldeen, S., Hongbo, L., Koffi, A. L., & Hassan, B. M. A. (2020). Technology acceptance model'concepts, contribution, limitation, and adoption in education. Universal Journal of Educational Research, 8(11), 5061–5071. doi: 10.13189/ujer.2020.081106