



Digital Transformation Initiatives and Beneficiaries' Satisfaction in Public Services: The Mediating Roles of Service Accessibility and Ease of Use

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Received: 28 November 2025

Accepted: 25 February 2026

DOI: <https://doi.org/10.32479/irmm.23399>

ABSTRACT

Despite increasing investments in digital transformation initiatives within public administration, there is limited empirical evidence on how these initiatives translate into higher beneficiary satisfaction. Prior studies have primarily emphasized technological adoption and infrastructure readiness, with less attention to the service-level mechanisms that operationalize digital investments into positive user experiences. To address this gap, this study aims to examine the direct and indirect effects of digital transformation initiatives (e-government services, mobile applications, and online portals) on beneficiaries' satisfaction, with particular focus on the mediating roles of service accessibility and ease of use. Drawing on resource-based theory, the dynamic capabilities view, and the Technology–Organization–Environment framework, this study develops and tests a mediation model using structural equation modeling (SEM). Data were collected from 400 beneficiaries of digital municipal services in Dhofar Municipality, Oman. Reliability and validity were assessed through measurement model evaluation, and mediation effects were tested using bootstrapping procedures. The results reveal that digital transformation initiatives significantly enhance service accessibility and ease of use. Both accessibility and ease of use positively influence beneficiaries' satisfaction, with ease of use demonstrating a comparatively stronger effect. Mediation analysis indicates that digital transformation initiatives improve satisfaction both directly and indirectly through enhanced accessibility and usability, confirming partial mediation. The findings also highlight the importance of inclusive digital design, cybersecurity, and infrastructure reliability in maximizing satisfaction outcomes. This study contributes to digital governance literature by clarifying the service-level mechanisms through which digital transformation initiatives influence citizen satisfaction. Unlike prior research that has primarily focused on adoption rates, this study integrates service quality theory and digital transformation perspectives to explain how accessibility and ease of use operationalize digital investments into public value within a municipal context.

Keywords: Digital Transformation, E-government, Public Services, Beneficiaries' Satisfaction, Service Accessibility, Ease of Use.

JEL Classifications: M1

1. INTRODUCTION

In recent years, digital transformation (DT) has emerged as a fundamental driver of structural and strategic change across both the private and public sectors (Shi et al., 2023). DT is not merely the deployment of advanced technologies; rather, it represents a comprehensive reconfiguration of processes, structures, and governance mechanisms to fully exploit the potential of information, communication, connectivity, and

computing technologies. By leveraging tools such as artificial intelligence (AI), big data analytics, and cloud computing, digital transformation enhances transparency, optimizes resource utilization, and improves service delivery outcomes (Rumman et al., 2025). The diffusion of digital technologies compels organizations to redesign their value propositions and operational processes, fostering innovation and responsiveness in increasingly dynamic environments (Oludapo et al., 2024; Prando et al., 2025).

From a theoretical standpoint, the success of digital transformation initiatives is largely explained by the resource-based theory (RBT) and the dynamic capabilities perspective. These frameworks argue that differences in digital transformation capability—defined as an organization's ability to innovate its value proposition and processes through digital technologies—determine the returns generated from digital investments (Bharadwaj et al., 2013; Wielgos et al., 2021). Digital transformation capabilities are considered dynamic capabilities that enable organizations to adapt, reconfigure resources, and create new value in rapidly evolving digital environments (Teece et al., 1997; Eisenhardt and Martin, 2000; Vial, 2019). Complementarily, the TOE framework (Tornatzky et al., 1990) emphasizes that the effectiveness of digital transformation depends on technological readiness, organizational resources, and environmental conditions, suggesting that contextual factors shape the outcomes of digital initiatives.

Within the public sector, digital transformation has become central to reforming service delivery and enhancing citizen engagement. Governments worldwide have increasingly adopted e-government services, mobile applications, and online portals to improve efficiency, accessibility, and responsiveness (Henman, 2020; Al-Khouri, 2020). These initiatives aim to reduce bureaucratic complexity, minimize physical visits, and provide seamless digital interactions between citizens and public institutions. However, while digital transformation initiatives are expected to improve service performance, their ultimate success depends on how beneficiaries perceive and experience these services.

Service accessibility and ease of use represent critical mechanisms through which digital transformation initiatives influence user outcomes. Digital platforms must be accessible, inclusive, and user-friendly to generate positive service experiences. Prior research highlights that digital service adoption and satisfaction are strongly influenced by usability, digital literacy, and perceived convenience (Zolotov et al., 2018; Mergel et al., 2019). Moreover, digital inequality and varying levels of technological readiness may limit the benefits derived from digital public services (Almeida et al., 2020). Therefore, improvements in accessibility and ease of use are likely to mediate the relationship between digital transformation initiatives and beneficiaries' satisfaction levels.

Despite the increasing investments in digital public infrastructure, empirical evidence remains limited regarding how specific digital transformation initiatives—such as e-government services, mobile applications, and online portals—translate into higher satisfaction among beneficiaries through improved accessibility and usability. While existing studies acknowledge the transformative potential of DT in governance (Henman, 2020; Al-Khouri, 2020), less attention has been given to examining the mediating mechanisms that explain how digital initiatives shape satisfaction outcomes in municipal and public service contexts. Accordingly, this study develops a conceptual model in which digital transformation initiatives serve as the independent variable, service accessibility and ease of use as mediating variables, and beneficiaries' satisfaction with public services as the dependent variable.

Grounded in RBT, dynamic capability theory, and the TOE framework (Bharadwaj et al., 2013; Teece et al., 1997; Tornatzky et al., 1990), this research seeks to answer the following research questions:

- RQ1. What is the effect of digital transformation initiatives (e-government services, mobile applications, and online portals) on beneficiaries' satisfaction with public services?
- RQ2. Do service accessibility and ease of use mediate the relationship between digital transformation initiatives and beneficiaries' satisfaction levels?

By empirically examining these relationships, the study contributes to the digital governance literature by clarifying the mechanisms through which digital transformation enhances public service satisfaction and by offering practical insights for policymakers seeking to optimize digital service strategies.

2. THEORETICAL BACKGROUND

DT has evolved into a multidimensional organizational phenomenon that extends beyond technological adoption to encompass structural redesign, process reconfiguration, and strategic renewal (Shi et al., 2023). Unlike incremental digitalization efforts, DT represents a systemic shift in how value is created and delivered through the integration of artificial intelligence (AI), big data analytics, cloud computing, and interconnected digital platforms (Oludapo et al., 2024; Prando et al., 2025). Such transformation enables organizations to enhance transparency, optimize resource allocation, and improve performance outcomes, though its impact often varies by organizational capabilities and contextual conditions (Rani and Prihana, 2025).

To explain these variations, the resource-based theory (RBT) provides a foundational lens by emphasizing that performance differentials stem from heterogeneity in valuable and inimitable resources (Bharadwaj et al., 2013). Within the DT context, digital transformation capability constitutes a strategic resource reflecting an organization's ability to recombine digital technologies to innovate services and processes (Wielgos et al., 2021). However, the dynamic nature of digital environments necessitates a more advanced perspective. The dynamic capabilities view (DCV) extends RBT by suggesting that sustainable advantage depends not merely on possessing resources but on the ability to continuously integrate, reconfigure, and renew them in response to environmental change (Teece et al., 1997; Eisenhardt and Martin, 2000; Vial, 2019). Thus, digital transformation initiatives can be conceptualized as higher-order dynamic capabilities that enable public institutions to adapt governance structures and service delivery mechanisms in rapidly evolving technological ecosystems.

Complementing these perspectives, the technology organization environment (TOE) framework provides contextual clarity by identifying the conditions under which digital transformation capabilities are effectively leveraged (Tornatzky et al., 1990). According to TOE, technological readiness, organizational characteristics, and environmental pressures collectively shape the adoption and outcomes of digital initiatives. Differences

in digital infrastructure maturity, regulatory frameworks, and user preparedness may therefore explain disparities in digital transformation returns across institutions (Appio et al., 2021; Dethine et al., 2020).

In public sector settings, digital transformation redefines service architectures and citizen–government interactions (Henman, 2020). Through AI-enabled systems, cloud-based platforms, and integrated data infrastructures, governments aim to increase administrative efficiency and citizen-centric responsiveness (Al-Khouri, 2020). Nevertheless, the ultimate success of these initiatives depends not only on technological sophistication but also on how digital services are experienced by beneficiaries. Accessibility and ease of use are critical service-level mechanisms that translate digital capabilities into perceived value. Prior research indicates that user satisfaction in digital environments is strongly influenced by usability, digital literacy, and institutional support systems (Zolotov et al., 2018; Mergel et al., 2019). Moreover, persistent digital inequality may limit the inclusiveness of digital governance initiatives (Almeida et al., 2020).

Although empirical evidence suggests that DT enhances performance through mediating mechanisms such as innovation and governance improvements (Yang and Li, 2024), limited attention has been devoted to understanding how digital transformation initiatives in municipal contexts translate into outcomes of beneficiaries' satisfaction (Viana, 2021). Specifically, it remains unclear whether accessibility and ease of use function as enabling capabilities that operationalize digital investments into positive user experiences. Drawing upon RBT, DCV, and TOE, this study conceptualizes digital transformation initiatives operationalized through e-government services, mobile applications, and online portals as strategic digital capabilities. These capabilities are expected to influence beneficiaries' satisfaction indirectly through enhanced service accessibility and ease of use. RBT explains the foundational value of digital resources, DCV captures their transformation into adaptive service capabilities, and TOE clarifies the contextual contingencies shaping their effectiveness.

3. HYPOTHESES DEVELOPMENT

3.1. Digital Transformation in the Public Sector

Although digital transformation (DT) in the public sector is widely acknowledged as a strategic reform initiative, the specific mechanisms by which DT enhances service outcomes remain insufficiently clarified in the literature. Digitalization of public services is often associated with improved administrative efficiency and data management; however, its impact on service-level dimensions such as accessibility and usability requires deeper theoretical articulation (Ikwuanusi, 2024). While governments worldwide are investing in advanced digital infrastructures inspired by Industry 4.0 and emerging Industry 5.0 principles (Rahimian et al., 2021; Najafi and Rahimian, 2025), translating these technological investments into tangible citizen-facing benefits depends on how effectively digital initiatives are embedded within service architectures.

Digital transformation initiatives—such as e-government services, mobile applications, and online portals are designed to remove bureaucratic complexity and enhance citizens' ability to access public services without physical constraints. The integration of advanced technologies, including IoT, blockchain, machine learning, and digital platforms, creates interconnected service ecosystems that facilitate real-time information exchange and process automation (Basheer et al., 2024; Okonta et al., 2025; Seyedzadeh et al., 2020). These technologies enable seamless service delivery, improving transparency, traceability, and responsiveness. In this respect, digitalization functions as a catalyst for bureaucratic reform aimed at fulfilling citizens' rights and needs more efficiently and effectively (Ikwuanusi, 2024). Therefore, when public institutions implement comprehensive digital transformation initiatives, service accessibility is expected to improve through expanded service availability, reduced waiting times, and multi-channel access options.

However, accessibility alone does not guarantee positive service experiences unless digital platforms are perceived as user-friendly. The concept of perceived ease of use (PEOU), rooted in the Technology Acceptance Model (TAM), posits that individuals are more likely to adopt and use technologies that require minimal effort (Davis, 1985). Extensive empirical evidence across sectors confirms that ease of use reduces cognitive and technical barriers, enhances user attitudes, and strengthens technology acceptance (Moon and Kim, 2001; Susilo et al., 2021; Mawaddah and Retnowardhani, 2023). In digital public services, advanced technologies such as AI-enabled systems, natural language processing, and digital twins can simplify interactions, automate complex procedures, and provide intuitive interfaces (Zhou and Xue, 2025; Salimi et al., 2025). These capabilities support smoother navigation and clearer communication, thereby improving perceived usability.

Nevertheless, digital transformation requires a holistic strategy that addresses infrastructure readiness, human resources, and cybersecurity to ensure sustainable, inclusive services (Santos et al., 2025). Without adequate system design and governance mechanisms, technological sophistication may not translate into ease of use. Therefore, the effectiveness of digital transformation initiatives in improving usability depends on how technologies are strategically aligned with citizen-centric service design principles. Drawing on TAM foundations, we argue that digital transformation initiatives serve as structural and technological catalysts that enhance accessibility and ease of use in public services. Advanced digital infrastructures expand service reach and availability, while user-centered digital platforms reduce complexity and improve interaction quality. Accordingly, we propose the following hypotheses:

- H₁: Digital transformation initiatives have a positive and significant effect on service accessibility.
- H₂: Digital transformation initiatives have a positive and significant effect on ease of use.

3.2. Digital Transformation and Beneficiaries' Satisfaction with Public Services

Previous literature increasingly emphasizes that citizen satisfaction represents a central performance indicator in evaluating the

effectiveness of digital transformation initiatives in public administration. Digital technologies have been shown to strengthen citizen trust and engagement when services are delivered efficiently and designed around user needs (Zolotov et al., 2018). In municipal contexts, digital platforms and online portals reduce waiting times, simplify procedures, and enable real-time communication between citizens and authorities, thereby enhancing service experiences (Al-Rahbi et al., 2020). These improvements align with broader governance reforms that position digital transformation as a catalyst for administrative efficiency and responsiveness (Henman, 2020; Ikwuanusi, 2024). Furthermore, digital integration supported by AI, big data, and cloud technologies improves transparency and service performance, which are critical determinants of user perceptions (Al-Khoury, 2020; Rumman et al., 2025).

From a service quality perspective, Parasuraman et al. (2005) proposed the SERVQUAL framework, identifying reliability, responsiveness, assurance, empathy, and tangibles as core dimensions shaping service evaluations. When extended to digital environments, these dimensions capture how technological infrastructures enhance reliability through uninterrupted service availability and responsiveness through prompt digital feedback mechanisms. Empirical evidence suggests that digital service efficiency is positively associated with increased citizen satisfaction and trust in government institutions (Al-Hinai et al., 2021). Collectively, the literature indicates a consistent positive impact of digital transformation initiatives on satisfaction-related outcomes.

Beyond the direct impact of digital initiatives, service accessibility plays a foundational role in shaping beneficiaries' evaluations of public services. Digital platforms expand access to services across geographical and temporal boundaries, enabling inclusive participation and reducing administrative burdens (Al-Rahbi et al., 2020). Improved accessibility enhances perceptions of fairness, efficiency, and government responsiveness—core elements associated with satisfaction and trust (Zolotov et al., 2018). However, the literature also cautions that digital benefits may be unevenly distributed due to the “digital divide,” in which certain demographic groups encounter barriers to technological skills or internet access (Zhang et al., 2022). Thus, when digital transformation effectively mitigates these barriers and ensures equitable access, beneficiaries are more likely to report higher levels of satisfaction.

In addition, ease of use constitutes a critical determinant of satisfaction in digital service contexts. Rooted in the technology acceptance model (Davis, 1985), perceived ease of use reduces cognitive effort and technological anxiety, thereby increasing positive attitudes toward digital systems. Empirical studies confirm that intuitive interfaces and simplified processes enhance user engagement and satisfaction across various sectors (Moon and Kim, 2001; Susilo et al., 2021). Within public administration, user-friendly digital platforms ensure responsiveness and reliability—two essential SERVQUAL dimensions—by enabling citizens to navigate services efficiently and receive timely feedback (Parasuraman et al., 2005). When beneficiaries perceive digital systems as simple, accessible, and

dependable, their overall evaluation of public services improves significantly. In line with these considerations, the following hypothesis is proposed:

- H₃: Digital transformation initiatives have a positive and significant effect on beneficiaries' satisfaction with public services.
- H₄: Service accessibility has a positive and significant effect on beneficiaries' satisfaction with public services.
- H₅: Ease of use has a positive and significant effect on beneficiaries' satisfaction with public services.

3.3. The Mediation Path

While digital transformation initiatives provide the technological foundation for modern public service delivery, their effectiveness in enhancing beneficiaries' satisfaction is not automatic. The literature suggests that technological investments generate value when they are translated into meaningful service experiences. In public administration, satisfaction reflects citizens' evaluations of how well services meet their expectations regarding availability, convenience, and responsiveness (Zolotov et al., 2018). Therefore, the relationship between digital transformation initiatives and satisfaction is likely to operate through intermediate service attributes rather than through a purely direct effect.

Service accessibility constitutes a critical structural mechanism in this process. Digital transformation initiatives expand service channels, integrate platforms, and remove spatial and temporal constraints, thereby increasing the reach of municipal services (Al-Rahbi et al., 2020). However, accessibility must be equitable and inclusive to produce positive satisfaction outcomes. Persistent infrastructure limitations and disparities in digital literacy may restrict the effective use of digital platforms (Zhang et al., 2022). Moreover, variations in network reliability and system performance can influence beneficiaries' perceptions of service availability and dependability (Al-Hinai et al., 2021). These findings imply that digital initiatives enhance satisfaction primarily when they improve accessible service delivery for diverse user groups. Thus, accessibility serves as a mediating pathway that channels digital investments into positive citizen evaluations.

Similarly, ease of use functions as a behavioral and perceptual mechanism linking digital transformation to satisfaction outcomes. User-centered digital platforms reduce procedural complexity and facilitate smoother interactions, thereby strengthening perceptions of service quality. The SERVQUAL framework highlights that responsiveness and reliability are key drivers of positive service evaluations (Parasuraman et al., 2005). In digital contexts, these dimensions are reinforced when systems are intuitive, instructions are clear, and interactions require minimal effort. Research confirms that simplified digital interfaces and efficient feedback mechanisms contribute to higher levels of trust and satisfaction in government services (Al-Hinai et al., 2021).

Nevertheless, ease of use may be undermined by organizational resistance, insufficient digital training, and cybersecurity concerns, which affect user confidence and engagement (Mergel et al., 2019; Almeida et al., 2020; Criado et al., 2021). Consequently, digital

transformation initiatives are more likely to generate satisfaction when they are implemented with strong governance support and user-oriented design principles. Ease of use, therefore, represents a mediating mechanism through which digital initiatives shape beneficiaries' evaluations of public services. Based on this reasoning, we propose:

- H₆: Service accessibility mediates the relationship between digital transformation initiatives and beneficiaries' satisfaction with public services.
- H₇: Ease of use mediates the relationship between digital transformation initiatives and beneficiaries' satisfaction with public services.

Accordingly, the following research model in Figure 1 is proposed:

4. RESEARCH METHOD

To empirically examine the proposed research model, this study adopted a mixed-methods approach to evaluate the impact of digital transformation initiatives on beneficiaries' satisfaction within Dhofar Municipality, Oman. A combination of quantitative survey data and qualitative insights was utilized to ensure methodological and contextual depth. While survey-based research is subject to self-report bias, it provides a systematic means of capturing beneficiaries' perceptions of digital service accessibility, ease of use, and overall satisfaction.

Using a stratified random sampling technique, 400 beneficiaries of municipal digital services were surveyed to ensure representation across different age groups, education levels, and levels of digital service usage. This sampling strategy enhances the generalizability of findings and ensures adequate representation

of diverse demographic segments. A screening question was included to confirm that respondents had prior experience using e-government services, mobile applications, or online municipal portals. The final sample achieved a 95% confidence level with a ±5% margin of error (Creswell and Clark, 2017). To reduce potential common method variance (CMV), several procedural remedies were implemented. Respondents were assured of anonymity and confidentiality to minimize social desirability bias. The survey items were carefully structured and separated by construct to reduce pattern answering. Harman's single-factor test was conducted to assess CMV, and the first factor accounted for <50% of the total variance, indicating that CMV was not a significant concern.

Regarding measurement, multi-item scales were adapted from established literature to ensure reliability and validity. Digital transformation initiatives were operationalized through items measuring beneficiaries' perceptions of e-government services, mobile applications, and online portals. Service accessibility and ease of use were measured using validated indicators aligned with prior digital governance and technology acceptance studies (Zolotov et al., 2018; Parasuraman et al., 2005). Beneficiaries' satisfaction was measured using items reflecting overall evaluation of digital municipal services, perceived efficiency, and trust in service delivery. All constructs were assessed using a 5-point Likert scale ranging from 1 (strongly disagree/strongly dissatisfied) to 5 (strongly agree/strongly satisfied), ensuring consistent and interpretable responses.

In addition to the quantitative component, semi-structured interviews were conducted with 15 municipal officials and IT specialists involved in digital transformation projects. These interviews provided contextual insights into implementation challenges, cybersecurity concerns, infrastructure limitations, and strategies for improving user adoption. Non-participant observations at municipal service centers were also conducted to triangulate findings and assess actual patterns of digital service utilization. For data analysis, structural equation modeling (SEM) was employed using SmartPLS version 4. SEM is particularly suitable for testing complex mediation models and examining both measurement and structural relationships simultaneously (Hair et al., 2019).

Figure 1: Research model

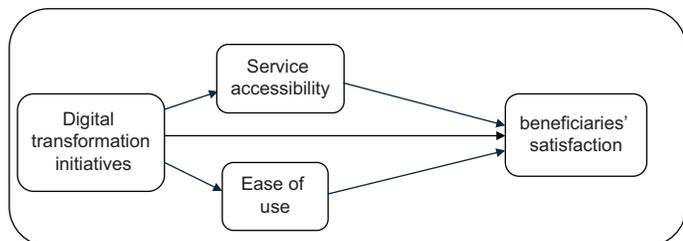


Table 1: The measurement model assessment

Construct	Item	Factor loading	Mean	SD	C α	CR	AVE
Digital transformation initiatives (DTI)	DTI1	0.84	4.12	0.78	0.889	0.912	0.674
	DTI2	0.87	4.18	0.74			
	DTI3	0.82	4.10	0.80			
	DTI4	0.86	4.21	0.76			
Service accessibility (SA)	SA1	0.88	4.25	0.71	0.864	0.903	0.702
	SA2	0.85	4.19	0.75			
	SA3	0.83	4.14	0.77			
Ease of use (EOU)	EOU1	0.89	4.28	0.69	0.878	0.914	0.726
	EOU2	0.87	4.31	0.72			
	EOU3	0.82	4.20	0.75			
Beneficiaries' satisfaction (BS)	BS1	0.90	4.34	0.68	0.915	0.934	0.779
	BS2	0.88	4.29	0.70			
	BS3	0.86	4.27	0.73			
	BS4	0.91	4.36	0.66			

5. RESULTS

5.1. Measurement Model

The measurement model was assessed for reliability and validity, following the guidelines of Hair et al. (2019). Factor loadings, Cronbach's alpha ($C\alpha$), composite reliability (CR), and average variance extracted (AVE) were evaluated. The results presented in Table 1 indicate that all measurement items loaded significantly on their respective constructs, with factor loadings exceeding the recommended threshold of 0.70, confirming indicator reliability. Cronbach's alpha and composite reliability values for all constructs were above 0.80, demonstrating strong internal consistency. Furthermore, AVE values exceeded the minimum acceptable threshold of 0.50, confirming convergent validity.

Discriminant validity was examined using the Fornell–Larcker criterion (Fornell and Larcker, 1981). As shown in Table 2, the square root of each construct's AVE exceeded its correlations with other constructs, confirming adequate discriminant validity.

5.2. Assessment of Structural Model

Following confirmation of measurement validity, the structural model was evaluated. The coefficient of determination (R^2) values further demonstrate satisfactory explanatory power, with $R^2 = 0.411$ for service accessibility, $R^2 = 0.458$ for ease of use, and $R^2 = 0.672$ for Beneficiaries' Satisfaction. These findings indicate that the model explains a substantial proportion of variance in satisfaction outcomes. The overall model fit is acceptable, with SRMR = 0.052, which is below the recommended threshold of 0.08. In addition, model fit was assessed using the standardized root mean square residual (SRMR). The SRMR value was 0.052, below the recommended threshold of 0.08, indicating good model fit. Bootstrapping with 5,000 resamples was conducted to test the significance of the hypothesized relationships. Table 3 presents the results for the direct effects.

Table 2: Discriminant validity (Fornell–Larcker criterion)

Construct	DTI	SA	EOU	BS
DTI	0.821			
SA	0.642	0.838		
EOU	0.676	0.721	0.852	
BS	0.588	0.701	0.748	0.883

Table 3: Direct hypothesis results

No.	Path	β	T-value	P-value	Result
H ₁	DTI→SA	0.642	14.321	0.001	Supported
H ₂	DTI→EOU	0.676	15.874	0.021	Supported
H ₃	DTI→BS	0.214	3.982	0.020	Supported
H ₄	SA→BS	0.286	5.441	0.002	Supported
H ₅	EOU→BS	0.421	8.756	0.000	Supported

Table 4: Indirect hypothesis results

Hypothesis	Original sample	Sample mean	Standard deviation	T-statistics	P-values
H ₆ : DTI→service accessibility→beneficiaries' satisfaction	0.184	0.185	0.041	4.488	0.000
H ₇ : DTI→ease of use→beneficiaries' satisfaction	0.284	0.282	0.052	5.462	0.000
Total indirect effect: DTI→SA & EOU→BS	0.468	0.467	0.060	7.800	0.000

The structural model assessments are presented in Table 3. The results indicate that the direct effect of digital transformation initiatives (DTI) on Service Accessibility is positive and statistically significant at the 1% level (Path coefficient = 0.642, $P < 0.001$); therefore, H₁ is supported. Similarly, the effect of DTI on ease of use is positive and significant (Path coefficient = 0.676, $P < 0.001$), supporting H₂. These findings confirm that digital transformation initiatives substantially enhance both accessibility and usability of municipal digital services.

Regarding satisfaction outcomes, the direct path from DTI to beneficiaries' Satisfaction is positive and significant (Path coefficient = 0.214, $P < 0.001$), supporting H₃. This suggests that digital transformation initiatives directly improve overall satisfaction with public services.

Furthermore, the results demonstrate that service accessibility has a positive and significant effect on beneficiaries' satisfaction (path coefficient = 0.286, $P < 0.001$), thus supporting H₄. Likewise, Ease of Use exhibits a strong positive and significant impact on beneficiaries' satisfaction (path coefficient = 0.421, $P < 0.001$), confirming H₅. Notably, ease of use shows a comparatively stronger effect on satisfaction than Accessibility, highlighting the importance of user-friendly system design in digital governance contexts.

Table 4 shows the mediation analysis, conducted using bootstrapping procedures, reveals that the indirect effect of DTI on Beneficiaries' satisfaction through service accessibility is significant ($\beta = 0.184$, $P < 0.001$), supporting H₆. Similarly, the indirect effect through Ease of Use is also significant ($\beta = 0.284$, $P < 0.001$), supporting H₇. Even after including the mediators, the direct effect of DTI on satisfaction remains significant, indicating partial mediation.

6. DISCUSSION

Public administrations are increasingly leveraging digital transformation initiatives to enhance service efficiency, accessibility, and citizen engagement. Despite the growing investments in e-government platforms, mobile applications, and online portals, limited empirical research has examined the mechanisms through which these initiatives translate into beneficiaries' satisfaction, particularly in municipal contexts within the Gulf region (Al-Shafi and Weerakkody, 2019; Viana, 2021). Addressing this gap, the present study drew upon service quality theory and digital governance literature to examine how digital transformation initiatives influence beneficiaries' satisfaction through service accessibility and ease of use. The empirical findings provide a nuanced understanding of the pathways linking digital initiatives to satisfaction outcomes in Dhofar Municipality.

Consistent with prior studies, our results confirm that digital transformation initiatives positively influence beneficiaries' satisfaction. This finding aligns with Henman (2020) and Al-Khoury (2020), who argued that digital governance reforms enhance administrative efficiency and public responsiveness. Similarly, Al-Rahbi et al. (2020) demonstrated that smart municipal services improve citizen interaction and reduce procedural delays, thereby strengthening satisfaction. The significant direct effect found in this study supports the argument that digital transformation is not merely a technological upgrade but a strategic reform that enhances service quality and user trust (Cordella and Paletti, 2019; Mustafazade, 2024).

More importantly, our findings highlight that service accessibility and ease of use serve as critical mediating mechanisms. This extends the digital governance literature by clarifying how digital transformation initiatives are operationalized into positive service experiences. The significant mediating role of accessibility confirms that expanding service availability, minimizing physical constraints, and enabling inclusive digital channels are central to satisfaction outcomes. However, this must be interpreted in light of persistent digital divide challenges. Prior research has emphasized that older citizens and individuals with limited digital skills often face barriers in accessing digital services (Almeida et al., 2020; Zhang et al., 2022; Choudrie et al., 2013). Our findings suggest that digital transformation enhances satisfaction primarily when accessibility improvements are inclusive and supported by digital literacy initiatives.

Furthermore, ease of use emerged as a strong mediator, underscoring the importance of user-centered system design. Drawing on the SERVQUAL framework (Parasuraman et al., 2005), responsiveness and reliability are key determinants of service evaluations. When digital platforms are intuitive, stable, and provide timely feedback, citizens are more likely to perceive services positively. This aligns with Venkatesh et al. (2012), who highlighted that user acceptance of information systems depends significantly on perceived simplicity and usability. Additionally, Fleischer and Wanckel (2023) showed that digital transformation in the public sector enhances job satisfaction and service delivery outcomes when systems empower users rather than create complexity.

However, the findings must also be contextualized within implementation challenges identified in the study. Digital literacy barriers (42%), cybersecurity concerns (38%), and system reliability issues (29%) reflect structural constraints that may weaken the impact of digital initiatives on satisfaction. These results corroborate Almeida et al. (2020) and Criado et al. (2021), who emphasized that digital governance success depends on robust cybersecurity frameworks and reliable infrastructure. Without secure systems and stable platforms, improvements in accessibility and usability may not fully translate into trust and satisfaction. Similarly, resistance to change and limited digital competencies among stakeholders can undermine transformation efforts (Mergel et al., 2019; Balaji, 2025).

Collectively, the findings contribute to theory by demonstrating that digital transformation initiatives influence beneficiaries' satisfaction through service-level capabilities rather than through

technology deployment alone. While prior research often focused on adoption rates or technological readiness (Zolotov et al., 2018), this study clarifies that satisfaction outcomes depend on the quality of accessibility and usability mechanisms embedded within digital platforms. In doing so, the study extends digital governance literature by integrating service quality theory and digital transformation perspectives within a municipal context.

From a managerial standpoint, the findings suggest that policymakers in Dhofar Municipality and similar contexts should move beyond infrastructure investment to focus on inclusivity, system reliability, and cybersecurity. Strengthening digital literacy programs (Al-Hinai et al., 2021), enhancing data protection mechanisms (Criado et al., 2021), and ensuring continuous system upgrades are essential to maximize the benefits of digital transformation. Moreover, incorporating real-time citizen feedback systems (Parasuraman et al., 2005; Alyas et al., 2024) can ensure that digital services remain user-centric and adaptive to evolving public expectations.

7. CONCLUSION

The relationship between digital transformation and citizen satisfaction has attracted growing scholarly and policy attention amid mounting pressure on public institutions to modernize service delivery while ensuring inclusivity, transparency, and efficiency. Despite widespread adoption of e-government platforms, the mechanisms through which digital transformation initiatives translate into measurable satisfaction outcomes remain insufficiently specified in the literature (Henman, 2020; Viana, 2021). Therefore, the primary aim of this study was to examine the direct and indirect effects of digital transformation initiatives on beneficiaries' satisfaction in Dhofar Municipality, with particular emphasis on the mediating roles of service accessibility and ease of use.

Based on structural equation modeling results, our findings propose a set of meaningful pathways that clarify how digital transformation influences public service outcomes. First, digital transformation initiatives significantly enhance service accessibility and ease of use, confirming that technological investments must materialize in service-level improvements to generate value (Zolotov et al., 2018; Al-Rahbi et al., 2020). Second, both accessibility and ease of use exert significant positive effects on beneficiaries' satisfaction, reinforcing the importance of service quality dimensions such as reliability and responsiveness as conceptualized in SERVQUAL (Parasuraman et al., 2005). Third, the mediation analysis demonstrates that digital transformation enhances satisfaction both directly and indirectly through mechanisms of accessibility and usability, indicating partial mediation.

Importantly, while digital transformation improves satisfaction, the findings also reveal contextual constraints. Challenges related to digital literacy barriers (Almeida et al., 2020; Zhang et al., 2022), cybersecurity concerns (Cordella and Paletti, 2019; Criado et al., 2021), and system reliability issues (Venkatesh et al., 2012; Al-Hinai et al., 2021) suggest that technological deployment alone is insufficient. Satisfaction outcomes depend on inclusive design, infrastructure stability, and institutional trust-building measures.

Taken together, these results address prior debates that often portrayed digital transformation as inherently beneficial without sufficiently examining the mechanisms underlying intermediate services. By empirically validating the pathway from digital transformation initiatives through accessibility and ease of use to beneficiaries' satisfaction, this study provides a more integrated account of digital governance effectiveness in municipal contexts.

8. THEORETICAL IMPLICATIONS

This study contributes to the literature on digital governance and public administration in several ways. First, it advances theory by empirically validating a mediation model that specifies the mechanisms through which digital transformation influences citizen satisfaction. While prior research emphasized adoption rates or technological readiness (Zolotov et al., 2018), our findings clarify that satisfaction outcomes are contingent upon service accessibility and ease of use. This extends digital transformation literature by integrating service quality theory (Parasuraman et al., 2005) and technology acceptance perspectives (Venkatesh et al., 2012) into a unified explanatory framework. Second, the study contributes at the construct level by operationalizing digital transformation initiatives within a municipal context and statistically validating measurement scales for digital transformation, accessibility, ease of use, and satisfaction. These validated constructs provide a foundation for future comparative studies across municipalities and Gulf countries (Al-Shafi and Weerakkody, 2019).

Third, the mediation findings open new theoretical questions regarding boundary conditions in digital governance. The presence of digital divide challenges and cybersecurity concerns suggests that institutional and socio-technical contexts may moderate the effectiveness of digital transformation (Almeida et al., 2020; Criado et al., 2021). Future research may extend this framework by incorporating governance quality, digital literacy, or trust as moderators. Fourth, methodologically, the application of PLS-SEM with bootstrapping strengthens causal inference within digital governance research. By examining both direct and indirect effects, this study provides a more refined understanding of digital transformation's impact compared to single-path adoption models.

9. MANAGERIAL AND POLICY IMPLICATIONS

Beyond theoretical contributions, the findings offer actionable insights for policymakers and municipal leaders. First, digital transformation initiatives should prioritize accessibility and usability over technological sophistication. Investments in digital platforms must be complemented with user-centered interface design and simplified procedures to maximize satisfaction outcomes. Second, bridging the digital divide is critical. Targeted digital literacy programs, community training workshops, and multilingual instructional materials can ensure inclusivity, particularly for elderly and less technologically proficient populations (Al-Hinai et al., 2021; Zhang et al., 2022).

Third, strengthening cybersecurity infrastructure and transparent data protection policies is essential to sustain trust in digital services (Cordella and Paletti, 2019; Criado et al., 2021). Citizens' concerns about data privacy directly influence their willingness to engage with digital platforms. Fourth, system reliability must be continuously improved through infrastructure upgrades, cloud-based solutions, and responsive IT support mechanisms (Venkatesh et al., 2012; Zolotov et al., 2018). Technical stability enhances perceived reliability and satisfaction.

Finally, integrating real-time citizen feedback mechanisms—such as AI-enabled chatbots, digital surveys, and public consultation forums—can ensure continuous improvement and adaptive governance (Parasuraman et al., 2005; Alyas et al., 2024).

10. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite its contributions, this study has certain limitations. First, the reliance on cross-sectional survey data limits the ability to capture the longitudinal effects of digital transformation. Future studies may employ longitudinal or panel data to assess long-term impacts. Second, the study focused on Dhofar Municipality, which may limit generalizability. Comparative studies across multiple municipalities or Gulf countries could provide broader insights into contextual variations in digital governance effectiveness. Third, while accessibility and ease of use were examined as mediators, additional factors such as trust, perceived usefulness, governance quality, and digital literacy may further explain satisfaction outcomes. Future research could incorporate these constructs as moderators or additional mediators. Fourth, incorporating objective service performance indicators—such as actual system uptime, processing times, or cybersecurity breach statistics—would strengthen causal interpretations.

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