

The Mediating Role of Citizen Satisfaction in the Relationship Between Awareness and Continuance Usage of the SANAD App

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Abstract: This study explores the mediating role of citizen satisfaction in the relationship between awareness and continuance usage intention of the SANAD App—Jordan's official mobile government platform. A quantitative, cross-sectional design was employed using a structured electronic questionnaire administered to 350 Jordanian SANAD App users. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results indicated a significant positive effect of awareness on satisfaction ($\beta = 0.165$, $p = 0.003$), and of satisfaction on continuance usage intention ($\beta = 0.476$, $p < 0.001$). Furthermore, satisfaction partially mediated the relationship between awareness and usage intention (indirect $\beta = 0.079$, $p = 0.007$). The findings underscore the importance of not only raising awareness but also delivering satisfactory digital experiences to promote sustainable engagement with e-government platforms. This research provides theoretical contributions to digital adoption models and practical guidance for policy makers aiming to enhance user retention in m-government services.

Keywords: SANAD App, citizen satisfaction, awareness, continuance usage intention, e-government Jordan.

INTRODUCTION

In recent years, the rise of mobile government (m-government) applications has redefined how citizens interact with public services, offering accessibility, convenience, and responsiveness (Sharma, 2017; Alonazi et al., 2019). These platforms have been particularly promising in developing nations where physical infrastructure and traditional service channels face limitations. However, despite their potential, many m-government initiatives have struggled with user retention and sustained engagement. Research suggests that while initial adoption is an important milestone, the long-term success of such platforms depends heavily on users' continuance usage intention (Zubir & Latip, 2022). Most government strategies and theoretical models—such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM)—have concentrated on technical usability and perceived usefulness to explain user behavior. Yet, these models often underrepresent more subtle psychological drivers, such as citizen awareness and satisfaction, which are crucial in shaping consistent digital engagement (Ameen et al., 2022; Talukder et al., 2022). Awareness refers to an individual's capacity to recognize and understand the existence, value, and functionality of a particular digital service. It is not only a precursor to adoption but also a determinant of emotional evaluations such as satisfaction (Rup et al., 2020; Sharma et al., 2021). When citizens are well-informed about a service's purpose and benefits, they are more likely to feel confident, content, and supported in their interactions—thereby influencing their decision to continue using the service. Conversely, a lack of awareness may lead to disengagement, skepticism, or even complete avoidance of the platform (Abudaqa et al., 2019). In the context of Jordan, the SANAD App serves as a central platform for accessing a broad range of government services—from document verification to bill payment (SANAD, 2024). Despite its functionality, public uptake remains suboptimal. Studies attribute this partly to weak awareness campaigns and insufficient communication strategies (Alkhwaldi & Al-Ajaleen, 2022). Moreover, while citizen satisfaction has been frequently studied as an outcome variable, its potential role as a mediator between awareness and continuance usage intention remains underexplored in the local context (Alhadid et al., 2022; Khamis, 2023). Understanding this mediating role is essential for both academic theory and policy implementation. Satisfaction reflects a citizen's affective response to service experience and is known to enhance loyalty, trust, and repeat usage (Alblooshi et al., 2023; Ziba & Kang, 2020). If satisfaction can be strengthened through targeted awareness efforts, this would imply a pathway for improving not just

perception, but actual long-term engagement. This study therefore investigates the mediating role of citizen satisfaction in the relationship between awareness and continuance usage intention of the SANAD App in Jordan.

LITERATURE REVIEW

E-government serves as a mechanism to improve governmental transparency, efficiency, and citizen satisfaction. While adoption models like TAM and UTAUT focus on technological and managerial dimensions, the human and behavioral aspects, particularly satisfaction, have emerged as critical yet underexplored dimensions (Nguyen et al., 2020). Citizen satisfaction reflects the perceived value and fulfillment of expectations from digital services. Research by Chatterjee and Suy (2019) and Nguyen et al. (2020) suggests that satisfaction is influenced by trust, service quality, and user experience. It acts not only as a post-use evaluation but also as a precursor to continued usage. Studies show that awareness significantly contributes to citizen satisfaction. Ilyas et al. (2020) and Malicay et al. (2021) confirmed that individuals with higher awareness levels report greater satisfaction with public services. Awareness informs expectations, and when these expectations are met or exceeded, satisfaction is achieved (Abudaqa et al., 2019). Empirical evidence supports the role of satisfaction as a mediator between various antecedents and continuance usage intention. Alhadid et al. (2022) and Nawafleh (2018) demonstrated that trust and service quality influence continuance indirectly through satisfaction. This implies that awareness may enhance continuance usage intention not just directly but also by increasing satisfaction. The Self-Awareness Theory (Duval & Wicklund, 1972) offers a relevant framework for understanding the mediating role of satisfaction. Citizens who are aware of their needs and available services are more likely to evaluate those services against personal standards. If satisfied, they are more inclined to remain engaged. This behavioral feedback loop underscores the necessity of integrating awareness and satisfaction in models predicting continuance usage. Despite the strategic importance of the SANAD App, little research has been conducted in Jordan to explore the triadic relationship between awareness, satisfaction, and continuance usage. This article contributes by empirically testing satisfaction as a mediating variable within this relationship, offering both academic and practical implications for digital policy and citizen engagement.

METHODOLOGY

Research Design

This study adopts a quantitative, correlational design to examine the mediating role of citizen satisfaction in the relationship between awareness and continuance usage intention of the SANAD App in Jordan. The quantitative approach allows for hypothesis testing using structured data and supports statistical mediation analysis (Creswell et al., 2018; Hair et al., 2019).

Target Population and Sampling

The study targets Jordanian citizens aged 18 and above who have previously or currently use the SANAD App. Given the mediation model complexity, a sample size of 350 was chosen to ensure statistical power, as recommended by Hair et al. (2019). Purposive and convenience sampling were utilized to ensure that participants had relevant usage experience and met the study's inclusion criteria.

Instrumentation

A structured questionnaire was employed to measure three main constructs:

Citizen Awareness (CA) -

Citizen Satisfaction (CS) -

Continuance Usage Intention (CU) -

Items were adapted from validated scales (Dabbous & Barakat, 2020; Li & Shang, 2020; Kaseasbeh et al., 2019), using 5-point Likert scales for independent variables and 7-point scales for dependent variables. The survey was administered electronically through platforms such as WhatsApp and email.

Validity and Reliability

The questionnaire was subjected to both face and content validity by a panel of academic experts. A pilot test involving 100 respondents confirmed instrument reliability, with all Cronbach's alpha values

exceeding 0.9. Factor loadings, AVE values, and KMO tests confirmed convergent and discriminant validity.

Data Analysis Strategy

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is suitable for mediation analysis and handling non-normal data distributions. The analysis involved two main phases: Measurement Model Evaluation: Reliability (CR, Alpha), Validity (AVE, HTMT), and indicator loadings Structural Model Evaluation: Assessment of mediation via bootstrapping (5,000 subsamples) to determine the indirect effect of awareness on usage intention through satisfaction.

Mediation Testing

The mediating role of citizen satisfaction was examined using the bootstrapped indirect effect approach, as recommended by Hair et al. (2017). Significance of the indirect path from awareness → satisfaction → continuance intention was evaluated using t-values and p-values. A significant indirect effect would confirm mediation.

Results

This section presents the empirical results of the study. The analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.1.1.1.

Normality Assessment

Univariate normality was assessed using skewness and kurtosis indicators, while multivariate normality was tested via Mardia's test. Table 4.1 shows that all skewness and kurtosis values fell within acceptable ranges (-3 to +3 for skewness, -8 to +8 for kurtosis), confirming univariate normality. However, Mardia's test results revealed significant multivariate non-normality (skewness $z = 416.48$, kurtosis $z = 10.62$, $p < 0.001$), which is acceptable for PLS-SEM due to its non-parametric nature.

Table 4.1: Normality Assessment

Construct	Skewness	Kurtosis
Citizen Awareness	-0.413	0.113
Citizen Satisfaction	0.175	-0.586
Continuance Usage Intention	0.826	0.492

Convergent Validity

All items showed standardized loadings above 0.70, and the Average Variance Extracted (AVE) for all constructs exceeded the 0.50 threshold, confirming convergent validity.

Table 4.2: Average Variance Extracted (AVE)

Construct	AVE
Citizen Awareness	0.599
Citizen Satisfaction	0.595
Continuance Usage Intention	0.691

Discriminant Validity

Discriminant validity was verified using cross-loadings, the Fornell-Larcker criterion, and the Heterotrait-Monotrait (HTMT) ratio. All values met the required thresholds (Fornell-Larcker diagonals > inter-construct correlations; HTMT < 0.85).

Reliability

All constructs exhibited high reliability with Cronbach's Alpha and Composite Reliability (CR) values exceeding 0.70.

Table 4.3: Reliability Indicators

Construct	Cronbach's Alpha	Composite Reliability
Citizen Awareness	0.905	0.911
Citizen Satisfaction	0.901	0.906
Continuance Usage Intention	0.940	0.965

Common Method Bias (CMB)

Using the marker variable technique, all correlations between the marker and study constructs were below 0.30, indicating negligible method bias.

Coefficient of Determination (R^2)

The R^2 value for Citizen Satisfaction was 0.265, indicating a moderate level of explained variance. For Continuance Usage Intention, the R^2 was 0.227, suggesting a relatively weak explanatory power.

Table 4.4: Coefficient of Determination (R^2)

Construct	R^2
Citizen Satisfaction	0.265
Continuance Usage Intention	0.227

Predictive Relevance (Q^2)

Q^2 values were greater than zero for both endogenous constructs, indicating acceptable predictive relevance.

Table 4.5: Predictive Relevance (Q^2)

Construct	Q^2
Citizen Satisfaction	0.190
Continuance Usage Intention	0.050

Effect Size (f^2)

The effect size was moderate for the path Citizen Satisfaction $\rightarrow$ Continuance Usage Intention and small for Citizen Awareness $\rightarrow$ Citizen Satisfaction.

Table 4.6: Effect Size (f^2)

Path	f^2	Effect Size
Citizen Awareness $\rightarrow$ Citizen Satisfaction	0.034	Small
Citizen Satisfaction $\rightarrow$ Continuance Usage Intention	0.294	Moderate

4.4 Hypothesis Testing

The direct effect of Citizen Awareness on Citizen Satisfaction was statistically significant, supporting the first hypothesis. Similarly, the effect of Citizen Satisfaction on Continuance Usage Intention was also significant.

Table 4.8: Direct Path Coefficients

Path	β	t-value	p-value	Result
Citizen Awareness $\rightarrow$ Citizen Satisfaction	0.165	3.007	0.003	Supported
Citizen Satisfaction $\rightarrow$ Continuance Usage Intention	0.476	10.119	<0.001	Supported

The indirect effect of Citizen Awareness on Continuance Usage Intention through Citizen Satisfaction was statistically significant, confirming a partial mediating role.

Table 4.9: Indirect Effect and Mediation

Path	Indirect β	t-value	p-value	Mediation Type
Citizen Awareness $\rightarrow$ Citizen Satisfaction $\rightarrow$ Continuance Usage Intention	0.079	2.726	0.007	Partial

DISCUSSION

This study examined the mediating role of citizen satisfaction in the relationship between awareness and continuance usage intention of the SANAD App in Jordan. The findings offer valuable insights into how psychological and behavioral constructs contribute to sustained engagement with e-overnment platforms in a developing country context. The results confirmed a statistically significant positive relationship between citizen awareness and citizen satisfaction ($\beta = 0.165$, $p = 0.003$), supporting the hypothesis that awareness is a crucial antecedent of satisfaction. This finding aligns with previous research by Ilyas et al. (2020) and Malicay et al. (2021), which emphasized that higher awareness of digital services leads to more realistic expectations and better alignment between service delivery and citizen needs. When citizens understand the functions, benefits, and value of a service, their satisfaction increases due to informed use and lowered ambiguity (Abudaqa et al., 2019). The direct effect of citizen satisfaction on continuance usage intention was strong and significant ($\beta = 0.476$, $p < 0.001$). This supports the extensive body of literature that frames satisfaction as a key predictor of behavioral loyalty and sustained system use (Nguyen

et al., 2020; Chatterjee & Suy, 2019). In the Jordanian context, where digital transformation is underway but adoption remains inconsistent, satisfaction plays a pivotal role in converting one-time users into regular adopters. This result reinforces the notion that affective evaluations not just technical efficiency is essential for encouraging continued engagement with m-government platforms. The mediation analysis revealed a significant indirect effect from awareness to continuance usage intention through citizen satisfaction (indirect $\beta = 0.079$, $p = 0.007$), indicating partial mediation. This suggests that awareness alone does not fully drive continued use; rather, its impact is partially transmitted through the emotional response of satisfaction. This is consistent with findings by Alhadid et al. (2022) and Nawafleh (2018), which demonstrated that intermediary variables such as satisfaction enhance the predictive power of behavioral models in e-government contexts. From a theoretical perspective, this result supports the Self-Awareness Theory (Duval & Wicklund, 1972), which posits that individuals who are more aware of available options evaluate them more consciously and derive satisfaction when these options meet personal standards or expectations. In practice, this implies that government entities should not only raise public awareness of digital services but also ensure those services deliver positive experiences that foster satisfaction. These findings carry several practical implications. First, policymakers should recognize that awareness campaigns must go beyond basic information dissemination. Strategic communication should highlight the relevance, benefits, and usability of the SANAD App to ensure citizens develop meaningful perceptions. Second, system developers should optimize the user experience to foster satisfaction, as it is this affective response that ultimately supports usage continuation. Finally, integrating feedback mechanisms within the app can help maintain satisfaction by addressing user concerns and adapting to evolving expectations. In line with previous regional studies (Alkhwaldi & Al-Ajaleen, 2022; Alblooshi et al., 2023), the study reinforces the critical role of user-centered design and satisfaction in determining the success of m-government initiatives. The SANAD App represents a national digital gateway, yet its underutilization signals a gap not in functionality but in psychological engagement. This study bridges that gap by revealing how awareness, channeled through satisfaction, enhances usage intention—offering actionable insight for Jordan's digital transformation agenda.

CONCLUSION

This study set out to explore the mediating role of citizen satisfaction in the relationship between awareness and continuance usage intention of the SANAD App in Jordan. The findings revealed that awareness significantly influences citizen satisfaction, which in turn strongly predicts whether users will continue using the app. Importantly, satisfaction partially mediates the link between awareness and continuance usage, underscoring its critical role in sustaining engagement with m-government services. From a theoretical standpoint, the study contributes to the growing body of literature that emphasizes behavioral and emotional factors—beyond system usability—in understanding digital government adoption. By applying Self-Awareness Theory, the research demonstrates how psychological readiness and affective evaluations shape long-term digital behaviors. Practically, the results suggest that increasing user awareness through targeted outreach must be complemented by efforts to enhance satisfaction through user-centric service delivery. For policymakers and developers, this means designing interventions that both inform and delight users—ensuring that their expectations are met and that their interactions with the SANAD App are positive and empowering. In conclusion, for Jordan's digital transformation to achieve its full potential, initiatives like the SANAD App must be supported not only by strong infrastructure and technical innovation but also by strategic efforts that address citizen awareness and satisfaction. These two elements, working together, are fundamental to securing the continuance usage of digital public services.

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