

Development and Preliminary Validation of a Digitalization Acceptance Measurement Instrument for Omani Public-Sector Organizations

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Adopting digitalization has become a urgent necessity for organization globally. In the Oman public-sector institutions digitalization has become a primary objective, a cornerstone of development and improvement, and a fundamental pillar of comprehensive development. Digitalization is not merely a technological shift; it is a socio-organizational process that depends heavily on employee acceptance and institutional readiness. This study aims to develop and validate a tool for measuring and evaluating the extent of digitalization acceptance among public sector employees in the Sultanate of Oman. The study employed a quantitative approach, and based on this, a measurement instrument was developed. It also drew upon the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Theory of Resistance of Change. The validity, followed by pilot testing involving 77 employees from government institutions in the Sultanate Oman. Data analysis included the Content Validity Index (CVI), Fleiss' Kappa Coefficient, Cronbach's alpha, and the Shapiro-Wilk test. The results showed a satisfactory level of content validity, a high level of language clarity, inter-rater agreement, and internal consistency reliability. Most instrument items achieved acceptable I-CVI values, while the overall S-CVI values indicated strong scale-level validity. The pilot test further confirmed the acceptable reliability and preliminary distributional properties of the measurement tool. This study contributes to the limited research in the field of psychometric validation related to the digitalization acceptance in Sultanate of Oman and the Arab public-sector contexts. This validated tool provides an additional new framework for future empirical research and policy evaluation in Omani government institutions.

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1. Introduction

The digitalisation of government institutions has become a key and fundamental factor globally due to its role in improving services, industries, transactions, institutional efficiency, and business quality (Venkatesh et al., 2003). In the Sultanate of Oman, digitalisation has become a strategic priority aimed at enhancing institutional efficiency, transparency, and access to public services (Ministry of Transport, Communications and Information Technology [MTCIT], 2025; Al-Hajri et al., 2024). Digital platforms have played a key role in transforming governance, promoting accountability, supporting public participation, and strengthening trust in government services. Therefore, the sustainability of digitalisation projects depends on the effective integration of government strategies, human behaviour, and technological development (Venkatesh et al., 2003; Bagozzi, 1992; MTCIT, 2025; Al-Hajri et al., 2024). Over the past two decades, Oman has achieved tangible progress in digitalisation. The Digital Oman Strategy (eOman) was introduced in 2003 to establish a knowledge-based society through the use of digital technology, government service development, infrastructure enhancement, and digital literacy improvement (International Telecommunication Union [ITU], 2025). This initiative paved the way for the wider use of e-government services and reflected Oman's long-term commitment to digital development.

In recent years, Oman has intensified its national digitalisation efforts through several strategic initiatives. Oman Vision 2040 identifies digitalisation as a key pillar for government modernisation, innovation, and socio-economic development (Oman Vision 2040 Implementation Follow-up Unit, n.d.). In alignment with this vision, the Ministry of Transport, Communications and Information Technology introduced the Government Digitalisation Programme (2021–2025), known as "Tahawul", which focuses on service automation, inter-agency integration, data-driven decision-making, and citizen-centred digital

services (MTCIT, 2024; Al-Hajri et al., 2024). These initiatives have generated significant progress. By the end of 2023, Oman had digitalised more than 1,545 public services, simplified 2,199 procedures, and recorded more than 11.4 million digital transactions across 48 government organizations (MTCIT, 2024; Oman Observer, 2025). Additionally, by mid-2025, the digitalisation performance improvement rate reached 80%, with 74% of priority services digitised, 81% institutional readiness, and 86% infrastructure preparation (Oman Observer, 2025; Al-Hajri et al., 2024). Oman also achieved progress in the E-Government Development Index, moving from 50th place in 2022 to 41st in 2024 (SAMENA Council, 2024).

Beyond public services, Oman has expanded digitalisation projects in industrial and administrative sectors through partnerships related to Industry 4.0, robotic process automation, and cloud computing technologies (International Centre for Industrial Transformation [INCIT], 2025). Moreover, Oman has achieved a score above 97 in the Global Cybersecurity Index, indicating significant progress in regulatory frameworks, technological infrastructure, and capacity-building efforts (INCIT, 2025). Nevertheless, human and organisational factors remain key barriers to the successful implementation of digitalisation projects. Previous research shows that the success of digitalisation depends heavily on leadership support, employee engagement, organisational culture, and workforce digital competencies (Porkodi et al., 2023; Venkatesh et al., 2003; Al Balushi & Ateeq, 2024). To support these efforts, a change management knowledge community was established to promote the sharing of best practices among government agencies and to strengthen long-term digitalisation through effective human resource management (MTCIT, 2023).

However, several challenges continue to limit digitalisation acceptance among public-sector organisations in Oman. Previous studies have identified obstacles such as limited understanding

of technology, weak digital skills, insufficient training, usability issues, and resistance to change (Al-Shiekh, 2020; Al-Kubaisi et al., 2022). Some government employees possess prior digital experience and technological awareness, which can increase confidence, trust in digital services, and behavioural intention to use technology (Porkodi et al., 2023; Venkatesh et al., 2003). In contrast, some employees continue to rely on traditional administrative practices and data management methods despite the availability of digital alternatives (Muhammad & Al-Qarni, 2021; Al-Hinai et al., 2023).

Previous research further suggests that prior experience and individual capabilities significantly influence attitudes and behavioural intentions toward technology use (Bagozzi, 1992; Taylor & Todd, 1995). Similarly, resistance to change has been associated with emotional and behavioural responses such as fear, uncertainty, and concerns about the consequences of organisational transformation (Oreg, 2003; Scholkmann, 2021). Therefore, digitalisation acceptance should be viewed as a complex process shaped by technological, organisational, behavioural, and psychological factors (Venkatesh et al., 2003; Bagozzi, 1992). Although prior studies have examined technology acceptance and digitalisation adoption in different contexts, most have focused mainly on technological and managerial aspects, with limited attention to behavioural and contextual factors, particularly in Oman and the Arab public sector (Al-Nuaimi et al., 2024; Almahri et al., 2024). Moreover, several studies have been conducted among limited respondent groups, such as university students or employees of specific organisations, which restricts the generalisability of their findings (Al-Badi, 2015; Al-Kubaisi et al., 2022; Al-Shiekh, 2020).

Despite increasing academic interest in digitalisation and technology acceptance, few studies have developed and psychometrically validated context-specific instruments for measuring digitalisation acceptance in Oman and Arab public-sector institutions. Existing studies have often applied technology acceptance models in educational or private-sector contexts and

commonly used existing instruments without rigorous contextual validation (Boateng et al., 2018; Almahri et al., 2024; Al-Hinai et al., 2023). This limitation is particularly evident in the Omani public sector, where institutional, cultural, and administrative factors may significantly influence employees' perceptions of digitalisation (Hussain et al., 2020; Al-Mamari, 2024). Therefore, a contextually grounded and psychometrically validated measurement instrument is needed to accurately assess digitalisation acceptance in Omani government organisations (Boateng et al., 2018; Al-Hinai et al., 2023; International Telecommunication Union [ITU], 2025). Thus, the main purpose of this study is to develop and preliminarily validate a reliable and contextually appropriate measurement instrument for assessing digitalisation acceptance among employees in Omani public-sector organisations. The study also aims to examine the instrument's content validity, language clarity, and internal consistency reliability to support future large-scale empirical research on digitalisation acceptance (Boateng et al., 2018; Polit & Beck, 2006; Brusseau et al., 2022).

From the above overview, this study is interested in addressing the following research questions:

RQ1. Dose the developed instrument demonstrate adequate content validity for measuring digitalization acceptance in Omani public organization?

RQ2. Dose the developed instrument demonstrate acceptable language clarity and comprehensibility for the target population?

RQ3. Dose the developed instrument demonstrate satisfactory internal consistency reliability in pilot testing?

RQ4. Is the developed instrument suitable for future large-scale empirical assessment of digitalization acceptance in Oman public organization?

2. Methodology

2.1 Research Design

This study employed a quantitative instrument development and validation design to develop and preliminarily validate a measurement instrument for assessing digitalization acceptance among employees in Omani public-sector organizations (Mohajan, 2020). The proposed measurement instrument was theoretically grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and the Theory of Resistance to Change (Oreg, 2003; Al-Kubaisi et al., 2022). These theories guided the selection of constructs and the development of measurement items to ensure that the instrument adequately captured both technological and behavioural dimensions of digitalization acceptance (Boateng et al., 2018).

A two-stage validation procedure was adopted. The first stage involved expert validation to assess content validity and language clarity (Polit & Beck, 2006; Brusseau et al., 2022; Yusof, 2019). The second stage consisted of a pilot study involving 77 employees from government institutions in the Sultanate of Oman to examine the instrument's internal consistency reliability and preliminary distributional properties, following established recommendations for pilot testing (Johanson & Brooks, 2010; Hertzog, 2008; Nunnally, 1978).

2.2 Participants and Sample

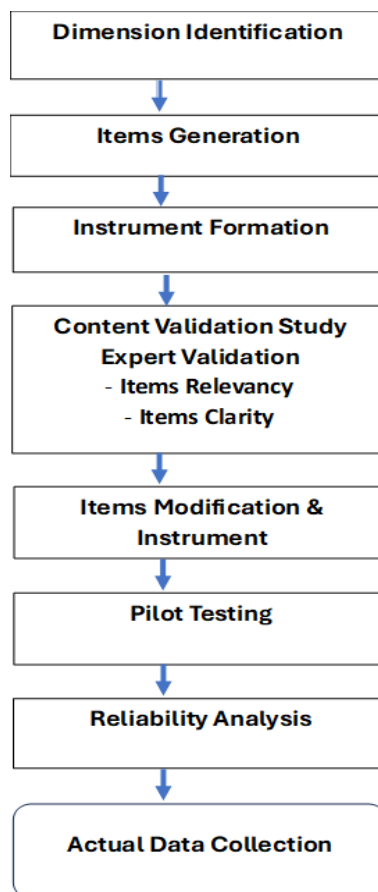
The study involved two samples corresponding to the two stages of the validation process. First, a panel of six subject-matter experts, comprising four academics and two practitioners with expertise in organizational behavior, information systems, digital transformation, and related fields, participated in the content and language validation of the instrument. The experts were selected based on their professional knowledge and experience to ensure a comprehensive evaluation of the questionnaire items. The second stage consisted of a pilot study involving 77 employees from various public-sector organizations in the Sultanate of Oman. The pilot sample was considered appropriate for preliminary psychometric evaluation, as

methodological guidelines recommend sample sizes ranging from 30 to 100 participants for pilot testing and reliability assessment (Johanson & Brooks, 2010; Hertzog, 2008). The pilot study was conducted to examine the internal consistency reliability of the instrument, assess the preliminary distribution of the data, and evaluate the practical applicability of the instrument within the intended research context.

2.3 Instruments

The study employed a self-administered questionnaire developed specifically to measure digitalization acceptance among employees in Omani public-sector organizations. The instrument was developed based on an extensive review of the literature and was theoretically grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) and the Theory of Resistance to Change (Oreg, 2003). The development process followed established guidelines for instrument development and scale construction to ensure theoretical and conceptual adequacy (Boateng et al., 2018; Drost, 2011). The initial version of the questionnaire consisted of 101 items derived from previously validated studies and adapted to suit the Omani public-sector context (Boateng et al., 2018; Almahri et al., 2024). The instrument included items measuring the main constructs of Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Resistance to Change, and Behavioral Intention. Additional demographic questions were also included.

Following expert review and content validation, the questionnaire was refined by removing redundant, ambiguous, and conceptually weak items in accordance with established content validation procedures (Polit & Beck, 2006; Lynn, 1986; Brusseau et al., 2022). As a result, the final pilot version consisted of 49 items, providing a more concise and contextually appropriate instrument while maintaining adequate coverage of all theoretical constructs (Boateng et al., 2018).



Figur (1) The methodological process adopted in this study

2.4 Procedure

The development and preliminary validation of the measurement instrument were carried out in a systematic multi-stage process. First, an extensive review of the literature was conducted to identify the theoretical constructs and existing measurement items related to digitalization acceptance. Based on the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Theory of Resistance to Change, an initial questionnaire consisting of 101 items was developed (Venkatesh et al., 2003; Oreg, 2003; Boateng et al., 2018). Second, the preliminary instrument was submitted to a panel of six experts, including four academics and two practitioners, to evaluate its content validity and language clarity. The experts assessed each item based on relevance, clarity, representativeness, and comprehensiveness using a four-point Likert scale. Their comments and recommendations were carefully reviewed to improve the quality of

the instrument (Brusseau et al., 2022; Polit & Beck, 2006; Lynn, 1986; Drost, 2011).

Based on the expert feedback, duplicate, ambiguous, and conceptually weak items were removed or revised following established instrument refinement and content validation procedures (Boateng et al., 2018; Polit & Beck, 2006; Brusseau et al., 2022). Consequently, the questionnaire was refined from 101 items to 49 items, resulting in a more concise and contextually appropriate measurement instrument. Finally, the revised instrument was administered to a pilot sample of 77 employees from government institutions in the Sultanate of Oman. The pilot study was conducted to evaluate the instrument's internal consistency reliability, examine the preliminary distribution of the collected data, and assess its practical applicability before conducting a large-scale empirical study (Johanson & Brooks, 2010; Hertzog, 2008; Nunnally, 1978).

2.5 Data Analysis

Several statistical techniques were employed to evaluate the psychometric properties of the developed instrument. Content validity was assessed using the Item-Level Content Validity Index (I-CVI) and the Scale-Level Content Validity Index (S-CVI), following the recommendations of Polit and Beck (2006), Lynn (1986), Yusof (2019), and Jalil et al. (2023). Inter-rater agreement among the experts was examined using Fleiss' Kappa Coefficient (Fleiss, 1971; Polit et al., 2007). The internal consistency reliability of the instrument was evaluated using Cronbach's Alpha (α), with values above 0.60 considered acceptable for exploratory and pilot studies (Hair et al., 2020; Nunnally, 1978). In addition, descriptive statistics, including the mean and standard deviation, were calculated to summarize the pilot data. The Shapiro–Wilk test was performed to examine the normality of the data distribution and determine the suitability of the dataset for subsequent large-scale empirical analysis (Razali & Wah, 2011).

3. Results

3.1 Content Validity Results

Table 2A presents the results of the content validity analysis, including the Item-Level Content Validity Index (I-CVI), Universal Agreement (UA), probability of chance agreement (Pc), and the modified Kappa statistic. The initial instrument consisted of 101 items evaluated by six experts. At the item level, 78 items (77.2%) achieved perfect agreement (I-CVI = 1.00), while 17 items (16.8%) obtained an acceptable I-CVI value of 0.80. Only six items scored below the recommended threshold and were therefore considered for revision or deletion. At the scale level, the instrument demonstrated excellent content validity, with an S-CVI/Ave of 0.95 and an S-CVI/UA of 0.77. In addition, Fleiss' Kappa coefficient ($K = 0.659$) indicated moderate to substantial agreement among the experts beyond chance. These findings demonstrate that the instrument possesses satisfactory content validity for preliminary empirical application.

3.2 Language Validation Results

Table 2B presents the results of the language validation analysis. Overall, the findings demonstrated a high level of linguistic clarity and comprehensibility across the instrument items. Specifically, 84 items (83.2%) achieved perfect expert agreement (I-CVI = 1.00), while the remaining 17 items (16.8%) obtained an acceptable I-CVI value of 0.80. No item scored below the recommended threshold, indicating that all questionnaire items met the required standard for language clarity and comprehensibility (Polit et al., 2007; Zamanzadeh et al., 2015). At the scale level, the instrument achieved an S-CVI/Ave of 0.97 and an S-CVI/UA of 0.81, reflecting excellent language validity and strong agreement among the experts. Furthermore, the Fleiss' Kappa coefficient ($K = 0.965$) indicated almost perfect inter-rater agreement, confirming the consistency of the experts' evaluations. Overall, these findings demonstrate that the questionnaire items were linguistically clear, easy to understand, and appropriate for the target population, supporting the suitability of the instrument for pilot testing and subsequent large-scale empirical studies.

3.3 Instrument Refinement

Following the expert validation process, the measurement instrument was refined based on the experts' comments and recommendations. Items identified as redundant, ambiguous, or conceptually weak were either revised or removed to improve the overall quality, clarity, and relevance of the instrument. As a result of this refinement process, the number of questionnaire items was reduced from 101 to 49. This revision produced a more concise and contextually appropriate instrument while preserving adequate coverage of all theoretical constructs. The refined questionnaire was subsequently used in the pilot study to evaluate its reliability and preliminary psychometric properties.

3.4 Reliability Analysis

Following expert validation and instrument refinement, the revised questionnaire was administered to a pilot sample of 77 employees

from various government institutions in the Sultanate of Oman. The internal consistency reliability of the instrument was assessed using Cronbach's Alpha, and the results are presented in Table 5. The Cronbach's Alpha coefficients ranged from 0.640 to 0.910 across the six constructs. The highest reliability coefficient was obtained for Behavioral Intention ($\alpha = 0.910$), indicating excellent internal consistency, whereas Effort Expectancy recorded the lowest coefficient ($\alpha = 0.640$). Although comparatively lower than the other constructs, this value remains acceptable for exploratory and pilot-stage research (Hair et al., 2020). Overall, the findings indicate that all constructs demonstrated acceptable to excellent levels of internal consistency reliability, supporting the reliability of the developed instrument for subsequent large-scale empirical studies.

3.5 Preliminary Distribution Assessment

Descriptive statistics and the Shapiro–Wilk test was employed to examine the preliminary distributional characteristics of the pilot data. The results are presented in Table 6. The descriptive statistics indicated some variation in the mean scores across the six constructs. Performance Expectancy recorded the highest mean score ($M = 4.34$), whereas Effort Expectancy and Social Influence had the lowest mean scores ($M = 3.56$). Regarding score variability, Behavioral Intention exhibited the highest standard deviation ($SD = 0.93$), while Facilitating Conditions showed the lowest variability ($SD = 0.48$). The Shapiro–Wilk test results suggested that the data demonstrated acceptable distributional characteristics for preliminary psychometric evaluation. Overall, the findings indicate that the pilot data were suitable for subsequent large-scale empirical analysis and further validation of the proposed measurement instrument.

4. Discussion

4.1 Interpretation of Validation Findings

The findings of this study demonstrate that the developed instrument possesses satisfactory psychometric properties, including strong content validity, high language clarity, substantial inter-rater agreement, and acceptable internal

consistency reliability. The high I-CVI and S-CVI values indicate strong expert consensus regarding the relevance and adequacy of the questionnaire items, consistent with established recommendations for content validation (Polit & Beck, 2006; Lynn, 1986; Zamanzadeh et al., 2015). Likewise, the Fleiss' Kappa coefficients demonstrated moderate to almost perfect agreement among the experts beyond chance, further supporting the robustness of the content validation process (Fleiss, 1971; Polit et al., 2007). The pilot study also confirmed acceptable levels of internal consistency across all measurement constructs. Although the reliability coefficient for Effort Expectancy was comparatively lower than those of the other constructs, it remained within the acceptable range for exploratory and pilot-stage validation studies (Hair et al., 2020; Nunnally, 1978). Overall, these findings suggest that the developed instrument is suitable for preliminary empirical application and subsequent large-scale validation studies (Boateng et al., 2018; Brusseau et al., 2022; Drost, 2011).

4.2 Comparison with Previous Studies

The findings of this study are consistent with previous research emphasizing the importance of rigorous psychometric validation during instrument development (Polit & Beck, 2006; Boateng et al., 2018; Drost, 2011). Earlier studies on digitalization and technology acceptance have similarly highlighted the need to ensure contextual relevance and linguistic appropriateness when adapting measurement instruments across different institutional and cultural settings (Beaton et al., 2000; Venkatesh et al., 2003; Al-Nuaimi et al., 2024; Almahri et al., 2024). Unlike many previous studies that adopted existing instruments with limited contextual adaptation, the present study developed and preliminarily validated a measurement instrument specifically designed for Omani public-sector organizations. Consequently, the instrument reflects the organizational, administrative, and cultural characteristics of the Omani public sector and provides a contextually appropriate tool for future research (Al-Hinai et al., 2023; Almahri et al., 2024; Boateng et al., 2018).

4.3 Practical and Policy Implications

The validated instrument developed in this study has several practical implications for public-sector administrators and policymakers. First, it provides a systematic tool for assessing employees' acceptance of digitalization initiatives within government institutions. Second, the instrument can support the design of targeted training and capacity-building programs aimed at enhancing digital competencies and reducing resistance to organizational change. Furthermore, government agencies may utilize the instrument to evaluate organizational digital readiness and monitor the implementation of digital transformation initiatives in alignment with the objectives of Oman Vision 2040.

4.4 Theoretical Contribution

This study contributes to the existing literature on technology acceptance and digitalization in several ways. First, it integrates the Unified Theory of Acceptance and Use of Technology (UTAUT) with the Theory of Resistance to Change into a unified measurement framework (Venkatesh et al., 2003; Oreg, 2003). Second, it contributes to the limited body of psychometric validation research conducted within Arab public-sector contexts by applying established instrument development and validation procedures (Boateng et al., 2018; Polit & Beck, 2006; Brusseau et al., 2022). Finally, the study provides a contextually grounded and preliminarily validated instrument that can facilitate future empirical investigations into the determinants of digitalization acceptance among employees in Omani public-sector organizations (Al-Hinai et al., 2023; Almahri et al., 2024; Al-Nuaimi et al., 2024).

4.5 Study Limitations and Future Research

Despite its contributions, this study has several limitations. First, the research focused on the preliminary psychometric validation of the instrument through expert evaluation and pilot testing. Advanced validation procedures, such as Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), were beyond the scope of the present study and should be undertaken in future research.

Second, the pilot sample was limited to employees from selected government organizations in the Sultanate of Oman, which may restrict the generalizability of the findings. Future studies are therefore encouraged to employ larger and more diverse samples from different public-sector organizations. Further research may also investigate the structural relationships among the proposed constructs and examine potential moderating effects using advanced multivariate analytical techniques.

5. Conclusion

This study developed and preliminarily validated a measuring instrument for assessing the acceptance of digitalisation among employees working in Oman's public sector organisations. The instrument was built on fundamental concepts of the Unified Theory of Acceptances and Use of Technology (UTAUT) and Theory of Resistance to Change. The original questionnaire consisted of 101 items including demographic data, performance expectancy, effort expectancy, social influence, facilitating conditions, resistance to change and behavioural intentions. Results showed acceptable levels of content validity, clarity of language, inter-rater agreement and internal consistency reliability. Besides, the study indicate that the instrument is a valid and contextually relevant framework for measuring employees' perceptions towards digitalisation in the Oman public sector. This study contributes to the growing body of literature on digitalisation and technology acceptance by providing one of the few psychometrically validated tools designed specifically for Arab public-sector settings. This approved instrument is expected to be a support tool for future empirical research, policy development, and digitalisation projects in the government institutions in Oman.

In addition, large-scale validation studies are proposed, to enhance the psychometric robustness of the instrument and to explore the structural relations among the proposed constructs using advanced analytical techniques such as Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM).

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8. Appendix

Table (1) Key Metrics Interpretation of the Expert Content Validity Explained

Statistic	Meaning
I-CVI	Proportion of experts who rated an item as relevant (≥ 0.78 is acceptable).
UA	Whether all experts agreed on an item's relevance (1= Relevant, 0 = Not relevant)
Pc	Probability that agreement occurred by chance. Lower values are preferred.
Kappa	Adjusted agreement accounting for chance. Values ≥ 0.74 indicate excellence.
S-CVI/Ave	Average I-CVI across all items (≥ 0.90 is excellent)
S-CVI/UA	Proportion of items with perfect expert agreement

Table 2A (Content Validity)

Questions No.	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q1	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q2	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q3	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q4	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q5	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q6	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q7	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q8	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q9	1	1	1	1	1	0		5	0.8	0	0.1875	0.795
Q10	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q11	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q12	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q13	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q14	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q15	1	1	1	0	0	1		4	0.7	0	0.9375	-4.333

Questions No.	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q16	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q17	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q18	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q19	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q20	0	0	1	1	1	1		4	0.7	0	0.9375	-4.333
Q21	0	0	1	0	1	1		3	0.5	0	2.5000	1.333
Q22	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q23	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q24	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q25	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q26	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q27	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q28	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q29	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q30	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q31	1	1	1	1	0	1		5	0.8	0	0.1875	0.795
Q32	1	1	1	1	0	1		5	0.8	0	0.1875	0.795
Q33	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q34	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q35	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q36	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q37	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q38	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q39	0	1	1	1	1	1		5	0.8	0	0.1875	0.795
Q40	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q41	1	1	1	1	1	1		6	1.0	1	0.0156	1.000

Questions No.	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q42	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q43	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q44	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q45	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q46	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q47	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q48	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q49	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q50	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q51	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q52	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q53	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q54	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q55	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q56	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q57	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q58	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q59	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q60	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q61	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q62	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q63	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q64	0	0	1	0	1	1		3	0.5	0	2.5000	1.333
Q65	0	0	1	1	1	1		4	0.7	0	0.9375	-4.333
Q66	0	0	1	1	1	1		4	0.7	0	0.9375	-4.333
Q67	1	1	1	1	1	1		6	1.0	1	0.0156	1.000

Questions No.	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q68	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q69	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q70	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q71	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q72	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q73	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q74	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q75	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q76	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q77	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q78	1	1	1	1	0	1		5	0.8	0	0.1875	0.795
Q79	1	1	1	1	0	1		5	0.8	0	0.1875	0.795

Table 2B (Language comprehension validation)

No. Questions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q1	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q2	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q3	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q4	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q5	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q6	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q7	1	1	1	1	1	1		6	1.0	1	0.0156	1.000

No. Questions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q8	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q9	1	1	1	1	1	0		5	0.8	0	0.1875	0.795
Q10	1	1	1	1	0	1		5	0.8	0	0.1875	0.795
Q11	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q12	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q13	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q14	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q15	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q16	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q17	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q18	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q19	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q20	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q21	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q22	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q23	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q24	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q25	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q26	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q27	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q28	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q29	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q30	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q31	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q32	1	1	1	1	0	1		5	0.8	0	0.1875	0.795
Q33	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q34	1	1	1	1	1	1		6	1.0	1	0.0156	1.000

No. Questions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q35	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q36	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q37	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q38	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q39	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q40	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q41	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q42	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q43	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q44	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q45	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q46	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q47	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q48	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q49	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q50	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q51	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q52	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q53	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q54	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q55	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q56	1	1	1		1	1		5	0.8	0	0.1875	0.795
Q57	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q58	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q59	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q60	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q61	1	1	1	1	1	1		6	1.0	1	0.0156	1.000

No. Questions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q62	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q63	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q64	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q65	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q66	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q67	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q68	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q69	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q70	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q71	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q72	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q73	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q74	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q75	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q76	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q77	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q78	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q79	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q80	1	1	1	1	1	1		6	1.0	0	0.0156	1.000
Q81	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q82	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q83	1	1	1	1	1	1		6	1.0	0	0.0156	1.000
Q84	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q85	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q86	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q87	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q88	1	1	1	1	1	1		6	1.0	1	0.0156	1.000

No. Questions	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Column1	Expert in Agreement	I-CVI	UA	Pc	KAPPA Value
Q89	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q90	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q91	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q92	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q93	1	1	1	0	1	1		5	0.8	0	0.1875	0.795
Q94	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q95	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q96	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q97	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q98	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q99	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q100	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
Q101	1	1	1	1	1	1		6	1.0	1	0.0156	1.000
								S-CVI/Ave	0.97			
Proportion relevant	1.00	1.00	1.00	0.87	0.98	0.99		S-CVI/UA		0.81		
	Average proportion of items judges as relevance across six experts						0.95					
											Kappa Value	0.965

Table (3) The Interpretation of the Expert Content Validity Explained

Measure	Value	Interpretation
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Total Items Rated	101 items	Complete instrument reviewed by 6 experts
Items with I-CVI= 1.0	78 items	Strong agreement considered highly valid
Items with I-CVI = 0.80	17 items	Acceptable level of agreement
Items with I-CVI = 0.70 or 0.50	6 items	Require revision or elimination
S-CV/Ave	0.95	Excellent overall agreement
S-CVI/UA	0.77	Acceptable proportion of universal agreement
Kappa Value (Average)	0.659	Moderate to substantial agreement beyond chance (Polit et al., 2007)

Table (4) The result of Interpretation Language Comprehension Analysis

Measure	Result	Interpretation
Total Items Rated	101	Full Questionnaire evaluated
Items rated "clear" by all experts	84 items (83.2%)	Excellent clarity (I-CVI=1.0)
Items with I-CVI = 0.80	17 items (16.8%)	Acceptable comprehension
Items with I-CVI < 0.80	0 items	No critical language issues detected
S-CV/Ave	0.97	Excellent average clarity
S-CVI/UA	0.81	Acceptable universal agreement
Kappa Value (Average)	0.965	Excellent inter-rater agreement (Polit et al., 2007)

Table (5) Reliability analysis of items

Constructs	No of Items	Cronbach Alpha	Interpretation
Performance Expectancy	6	0.704	Acceptable
Effort Expectancy	8	0.640	Moderate
Social Influence	6	0.814	Strong
Facilitating Conditions	12	0.791	Strong
Resistance to Change	10	0.718	Acceptable
Behavioral intention to use the digital technology	4	0.910	Excellent

Table (6) Normality analysis

Dimension	Mean	SD	Sig	Interpretation
PE	4.34	0.53	0.001	Near-normal
EE	3.56	0.53	0.004	Near-normal
SI	3.56	0.70	0.128	Normal
FC	3.97	0.48	0.492	Normal
RC	3.92	0.57	0.036	Acceptable
BI	4.13	0.93	0.001	Near-normal