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What determines digital accounting systems' continuance intention? An empirical investigation in SMEs

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This research aims to investigate the factors that determine the intention to continue using digital accounting systems (ICU-DAS) among small and medium-sized enterprises (SMEs). With the increasing adoption of digital technologies in accounting, it has become imperative to understand the factors that influence the decision of SMEs to continue using these systems. By examining the continuance intention, this study contributes to the existing literature on technology acceptance and provides valuable insights for SMEs and accounting professionals. The information systems success model (ISSM), the technology acceptance model (TAM), the expectation-confirmation model (ECM), and a model that combines ISSM, TAM, and ECM were all used and compared in this study to look into the factors that affect ICU-DAS. The research methodology involves a quantitative approach utilising a survey questionnaire distributed among SMEs that implement digital accounting systems. The survey is designed to gather data on the key determinants of continuance intention, including system quality (SQ), information quality (IQ), perceived usefulness (PU), perceived ease of use (PEU), satisfaction (S), and confirmation (CON). The collected data were analysed via structural equation modelling (SEM). The findings revealed that the synthesised model had higher explanatory power than ISSM, TAM, and ECM. The findings implied that SQ, IQ, PU, PEU, and satisfaction are significant factors in ICU-DAS. The research concluded with a set of implications and directions for future research.

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Introduction

Information technology has altered the way almost every industry works, including accounting. This has increased the significance of information technology/systems in business practice. Accordingly, firms are becoming more dependent on information technology/systems to ensure that they can adapt quickly to changes and remain competitive (Jaklič et al., 2018; Ritchi et al., 2019; Al-Hattami et al., 2021c; Almaqtari et al., 2023).

In today's business environment, employees, managers, and policymakers have to make a number of decisions every day, and they frequently choose to base them on facts driven by reliable and sufficient data and information (Kowalczyk and Buxmann, 2015; Jaklič et al., 2018; Harris, 2018; Al-Hattami and Kabra, 2022). Digital accounting systems (DAS) are decision support systems that are employed to enhance business decisions by providing reliable, sufficient, and timely financial/accounting information (Romney and Steinbart, 2016; Alawaqleh and Al-Sohaimat, 2017).

Today, DAS have gained significant prominence as crucial tools for managing financial transactions, recording data, and facilitating decision-making processes. Small and medium enterprises (SMEs) increasingly adopt DAS to streamline their financial operations and enhance efficiency (Al-Hattami et al., 2021b; Al-Hattami, 2022). Studies denote that using DAS provides an advantage to these firms by promoting their organisational performance (Grande et al., 2011; Al-Hattami et al., 2021b). Specifically, research demonstrates that DAS-based decision-making exhibits higher and more effective decision quality (Al-Hattami, 2022). This will encourage firms to raise their investments in the DAS field, as it is deemed a vital resource for leading success and business competition (Mohammad, 2018; Zain and Hussin, 2019; Ritchi et al., 2019; Al-Hatami et al., 2022). However, the successful implementation and continued usage of these systems depend on various factors that influence SMEs' intentions to continue using them. This empirical investigation aims to identify and examine the determinants of digital accounting systems' continuance intention in SMEs.

The literature argues that firms' success in leveraging information technology/systems relies more on continuance than initial adoption or use, which may be followed by rejection (Bhattacherjee, 2001; Yan et al., 2021; Zain and Hussin, 2019; Mishra et al., 2023). Although the practical decision-making benefits of DAS adoption have received a lot of attention (Al-Hattami, 2021; Al-Hattami, 2022; Al-Hattami et al., 2022b; Akrong et al., 2022), there has not been enough research to determine what influences users' intention to continue using DAS (ICU-DAS) after their adoption. So far, to our knowledge, little attention has been given to the user's ICU-DAS, particularly for organisational uses.

The literature generally shows extensive studies on user acceptance and continued use of information technology/systems (Venkatesh et al., 2012; Hou, 2016; Ashfaq et al., 2020; Al-Hattami et al., 2021a; Chiu et al., 2021; Al-Debei et al., 2022; Qutaishat et al., 2023). Yet, fewer studies have discussed behaviour intention towards continuing to use DAS (Li and Wang, 2021). Notably, previous research on DAS continuation intention is very limited, particularly among SMEs in less developed countries. Research has shown that SMEs are confronted with a lot of challenges and difficulties due to the COVID-19 epidemic (Adam and Alarifi, 2021). In light of this, the researchers predicted that SMEs' responses and practices would concentrate on the exploitation and adoption of digital technology, including accounting systems (Al-Hatami et al., 2022; Guo et al., 2020). Unfortunately, no study has yet considered what determines the users' ICU-DAS in such a period or context.

Numerous models of technology acceptance have been developed to investigate and comprehend an individual's intention to embrace and utilise a specific system/technology. The IS success model (ISSM) of DeLone and McLean (1992) is one of the models that can be used in the examination of behavioural intention (Al-Hattami et al., 2021a; Veeramootoo et al., 2018). Davis's (1989) technology acceptance model (TAM) is also among the most widely used models for analysing behavioural intention (Zhou et al., 2018; Yan et al., 2021). Additionally, Bhattacherjee's (2001) expectation-confirmation model (ECM) is one well-established model that can explain what drives users to keep using information technology/systems (Yan et al., 2021; Chiu et al., 2021; Mishra et al., 2023). These models gained prominence due to their adaptability to various samples and contexts. They have been adopted and expanded in many developed and developing nations to prove their validity. For instance, Zhou et al. (2018) expanded TAM by integrating it with ECM to explore users' e-finance continuation intention in China, while Khayer et al. (2020) integrated ISSM with ECM to determine cloud computing success in 300 Chinese firms. Al-Hattami et al. (2021a) used ISSM with the trust factor to investigate behavioural intention in the context of Indian banking systems. Hou (2016) compared ECM and TAM to investigate the model that could better describe users' intentions to continue using business intelligence systems in Taiwanese electronics firms. In the same vein, ECM, ISSM, and the task-technology fit (TTF) model were combined by Cheng (2019) to investigate whether quality characteristics and TTF, as the antecedents to user beliefs, can influence organisational users' continued intention to adopt cloud ERP in Taiwanese firms. In the United States, Ashfaq et al. (2020) suggested an analytical framework combining ECM, TAM, and ISSM to examine users' continuous intention to use chatbot e-services. Interestingly, these models have not been extensively tested within LDCs, particularly in the context of DAS (Al-Hattami, 2022; Al-Mamary et al., 2019). Adapting a theory to different contexts is a popular method of expanding a theory; this assists in making the theory more powerful and increases its predictive validity (Venkatesh et al., 2012; Williamson and Johanson, 2017). Granić and Marangunić (2019) also highlighted the importance of further evaluating such models and theories in a variety of contexts and countries to raise their cross-cultural validity. Yet, no study has used these models (i.e., ISSM, TAM, and ECM) together to explore behavioural intention in the context of ICU-DAS, especially in LDCs such as Yemen.

In an effort to fill the research gaps mentioned above, this research focuses on determining the main factors that drive organisational users to keep using DAS. More specifically, this research compares four theoretical models: ISSM, TAM, and ECM, as well as a synthesised model of ISSM, TAM, and ECM, to investigate which model can better account for the intention to keep using DAS in SMEs. Such research does not exist, especially in LDCs like Yemen. Thus, the present study expands these models' interpretive strengths in a novel context and a different culture. According to the results, the synthesised model had higher explanatory power than ISSM, TAM, and ECM. The findings further implied that system quality, information quality, perceived usefulness, perceived ease of use, and satisfaction are significant factors in ICU-DAS in SMEs. These study results are essential as they can provide valuable insights into the dynamics of DAS adoption and continuance within the context of SMEs. They have the potential to benefit SMEs, policymakers, technology providers, and the broader economy by facilitating informed decision-making and fostering sustainable digitalization efforts.

The next section outlines the research background and hypotheses. Section 3 identifies "the methodology". The analysis

and results are included in Section 4. Section 5 outlines "the discussion". The sixth section summarises the study's conclusion and implications.

Research background and hypotheses development

The context description. Yemen, located in the Arabian Peninsula, has a predominantly informal economy, with a significant portion of businesses classified as SMEs. Yemeni SMEs account for 97% of registered companies in the private sector (ASI, 2013). They are defined as those employing up to 50 employees, according to YMIT (2014). SMEs in Yemen are essential for job creation, economic growth, and poverty reduction. Particularly, they are deemed as a motor of economic growth and a substantial factor in boosting fair development, as well as achieving the highest employment growth rate (UNCTAD, 2018; Al-Hattami, 2022). Moreover, their contribution to the GDP is significant, considering the amount of capital invested, which confirms their crucial role in development far beyond large firms (OCHA, 2021). However, SMEs in Yemen face challenges and difficulties, including the negative impact brought by the country's political instability and the COVID-19 pandemic on the other hand (OCHA, 2021; Saleh and Manjunath, 2020). Despite these challenges, these enterprises have the potential to trigger socioeconomic transformation in Yemen. Technology, including DAS, can offer opportunities for these businesses to improve their operations, expand their reach, and contribute to economic recovery (Al-Hattami, 2022; Al-Hattami et al., 2022a; Abdullah et al., 2018). However, many Yemeni SMEs are still unaware of the importance and role of these systems in enhancing their success (Al-Hattami et al., 2021b). On the other hand, some SMEs fail to continue using such systems. Several studies examined determinants of the adoption and use of DAS in Yemeni SMEs (e.g., Al-Hattami, 2022; Al-Hattami et al., 2022a, b; Al-Hattami and Kabra, 2022). Since the success of companies in leveraging information technology/systems depends more on continuous use rather than adoption/initial use, which may be followed by rejection, it is important to study the determinants that drive users to continue using DAS (Bhattacherjee, 2001; Yan et al., 2021; Zain and Hussin, 2019; Mishra et al., 2023). Unfortunately, none of the prior studies examined the determinants that drive users to continue using DAS in SMEs, particularly in Yemen. This gap in the literature highlights the need for further research in this area to enhance our understanding of the factors influencing DAS adoption and sustained usage in this specific context. Exploring these determinants is crucial not only for academic advancement but also for informing policy and practice in Yemen's SME sector, where effective financial management can significantly impact business performance and economic development (Al-Hattami and Kabra, 2022; Nair et al., 2020).

ICU-DAS. The idea of "ICU-DAS" refers to individuals' or organisations' readiness to continue using digital tools and software for accounting and financial management duties. This is especially true in enterprises like SMEs and large corporations, where DAS are critical for managing financial data, tracking transactions, and generating financial reports (Al-Hattami and Kabra, 2022; Almaqtari et al., 2023; Dalloul et al., 2023). User commitment, long-term adoption, user satisfaction, factors determining continuation, business effect, and adaptation to technological developments are all important aspects impacting this purpose (Li and Wang, 2021; Mishra et al., 2023). Business owners, managers, accountants, and finance experts are more inclined to stick with a certain digital accounting system over time. System quality, information correctness, simplicity of use, perceived usefulness, and overall user experience are all factors

that would influence continuation (Bhattacherjee, 2001; Li and Wang, 2021; Cheng, 2020). The decision to continue utilising a DAS has consequences for corporate operations since it improves the efficiency and accuracy of financial processes, influences decision-making, and aids in regulatory compliance (Cheng, 2020; Almaqtari et al., 2023; Veeramootoo et al., 2018).

ISSM. DeLone and McLean (1992) made a substantial contribution to the literature on measuring the performance of IS through their ISSM, which is now extensively used as a framework to assess the effectiveness and success of IS (Mehta et al., 2022). ISSM has three dimensions: quality, use, and impacts. The first dimension includes two constructs—system quality and information quality; the second includes two constructs—use and satisfaction; and the third includes two constructs—individual impact and organisational impact (DeLone and McLean, 1992). Notably, a specific set of dimensions or constructs can be used according to the study's objective (Floropoulos et al., 2010; Fadelelmoula, 2018). The model can also be expanded with dimensions or constructs independent or subordinate to other models, such as ECM (Khayer et al., 2020; Franque et al., 2021; Veeramootoo et al., 2018; Akrong et al., 2022; Cheng, 2019). This gave the model sufficient flexibility to accurately measure different ISs in several scenarios. This also made it possible for the model to be used with any level of analysis that the researcher thought was most pertinent (Petter et al., 2008; Al-Hattami, 2022; Dalloul et al., 2023). The current research measures users' intention to continue using DAS; thus, it takes the use dimension from ISSM along with the quality dimension as a determinant of the use dimension. In addition, the study integrates ISSM with two well-established models (TAM and ECM) to measure continuity intention in the context of DAS (Fig. 1).

TAM. Davis (1989) first proposed the TAM theory of IS, which describes how users accept and use technology. TAM generally implies users' decision to purchase, implement, or use a system in the long run. It is one of the most influential models of technology acceptance, with two key constructs: perceived usefulness (PU) and perceived ease of use (PEU) (Davis, 1989; Verkasalo, 2008). The interaction of these two constructs results in an intention on the part of the user to use the technology in question, leading to the actual use of the system (Charness and Boot, 2016; Schöpfel et al., 2019). More specifically, TAM postulates that PEU directly affects PU and indirectly affects behavioural intent, and PU, directly and indirectly, affects behavioural intent (Davis, 1989). TAM uses "attitude" as a mediator, but rather, "satisfaction" can be used since satisfaction in a post-usage stage is an assessment of pre-usage attitude, intention to use, and continuance intention of information technology or systems, which are similar constructs (Bhattacherjee, 2001; Cheng, 2020).

Although the research on TAM has provided insights into the acceptance and use of technology, scientific studies have confirmed the significance of integrating TAM with other factors in continuance use (Hou, 2016; Zhou et al., 2018; Ashfaq et al., 2020). Therefore, based on the prior research on continuous use, the present study expanded the TAM with ISSM and ECM to determine DAS continuous use (Fig. 1).

ECM. One of the most popular models employed in a variety of areas related to the continuity of information technology/systems is the ECM (Veeramootoo et al., 2018; Cheng, 2020; Mishra et al., 2023). ECM assumes that users' continued intent relies on their PU of post-adoption, the extent of their confirmation, and their satisfaction with information technology/systems (Bhattacherjee, 2001; Cheng, 2020). However, behavioural intention towards continued
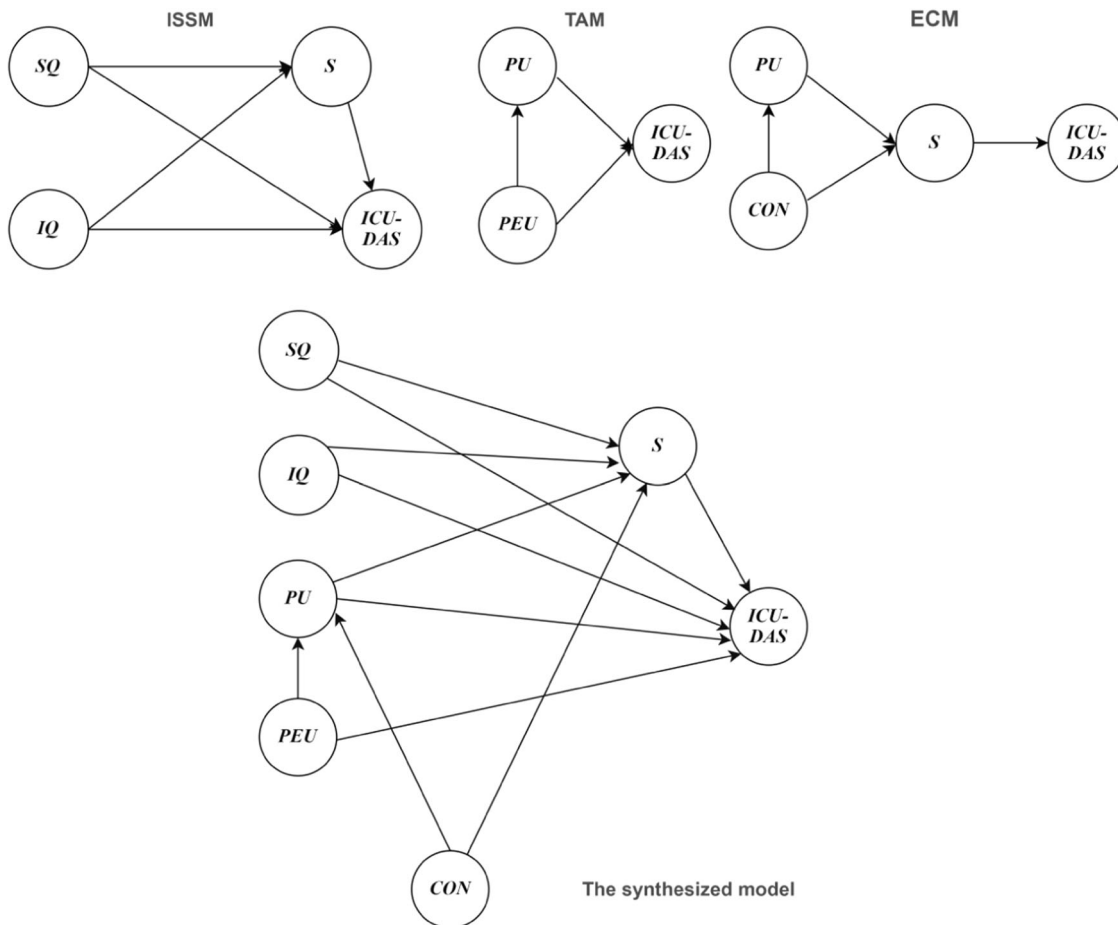
Fig. 1 The study model. The study model comprises four models: ISSM, TAM, ECM, and a synthesized model.

Table 1 Construct definition.		
Construct	**Definition**	**Source**
System quality (SQ)	It refers to a DAS's coveted characteristics, including reliability, ease of use, flexibility, and accessibility.	Al-Hattami (2021a)
Information quality (IQ)	It refers to the capability of a DAS to handle information in terms of accuracy, completeness, relevance, and timeliness.	Al-Hattami (2021a)
Satisfaction (S)	It is the opinion of users about the DAS they use in their work environment.	Doll and Torkzadeh (1988)
Perceived usefulness (PU)	It reflects the projected benefits of utilizing DAS.	Davis (1989); Verkasalo (2008)
Perceived ease of use (PEU)	It reflects whether DAS can be learned and used without difficulty or effort.	Schöpfel et al. (2019)
Confirmation (CON)	The degree of compatibility between the user's expectations for DAS usage and its actual performance is referred to as confirmation.	Bhattacherjee (2001)
Intention to continue using DAS (ICU- DAS)	It is described as a user's tendency to keep using DAS after implementing it.	Bhattacherjee (2001)

use of IS would also be influenced by other constructs, such as system quality, information quality, and ease of use. Consequently, this study considers the possibility of incorporating a number of constructs from other models, including ISSM and TAM, to develop a comprehensive IS continuity model in the DAS context. Some researchers (e.g., Ashfaq et al., 2020) have supported such a synthesis, but in a context other than DAS and in a different culture. Hence, incorporating these models' constructs in the DAS context would give an expanded perspective on IS continuance research.

In light of the above three theories (models), the study model of this research, consisting of seven constructs, is illustrated in Fig. 1. Table 1 shows a definition for each construct. The study model is made up of seven various constructs that are related to

the goal of ICU-DAS. These constructs are linked and contribute to a better understanding of ICU-DAS. A higher system quality could affect other components in the model favourably because a well-functioning system improves user satisfaction. Moreover, having high information quality allows consumers to trust data for decision-making, which contributes to increased perceived utility and enjoyment (Floropoulos et al., 2010; Al-Hattami, 2022). In the same context, easy-to-use technology can boost user happiness and perceived utility. Additionally, positive confirmation promotes satisfaction and perceived utility, but negative confirmation may result in unhappiness and a decreased inclination to utilise the system in the future (Bhattacherjee, 2001; Mishra et al., 2023). Finally, ICU-DAS shows users'

Table 2 Reviewed literature.

Study	Model/theory	Determinants of	Context
Al-Hattami (2022)	ISSM	adoption/ use	AIS of SMEs in Yemen
Al-Hattami (2021a)	ISSM	adoption/ use	AIS in Yemeni banks
Floropoulos et al. (2010)	ISSM	adoption/ use	Greek taxation information system
Akrong et al. (2022)	ISSM	adoption/ use	ERP in Ghana
Al-Okaily et al. (2022)	ISSM	adoption/ use	DAS in Jordanian banks
Li and Wang (2021)	ISSM	continuance usage	Cloud financial information system in China
Cheng (2020)	TAM and ECM	continuance usage	Cloud ERP in Taiwan
Halilovic and Cicic (2013)	TAM and ECM	continuance usage	Integrated accounting and budgeting software in Bosnia and Herzegovina
Hou (2016)	TAM and ECM	continuance usage	Business intelligence system in Taiwanese electronics industry
Khayer et al. (2020)	ISSM and ECM	adoption/ use	Cloud-computing in Chinese firms
Veeramootoo et al. (2018)	ISSM and ECM	continuance usage	e-government service in Mauritius
Zhou et al. (2018)	TAM and ECM	continuance usage	e-finance in China
Al-Mamary et al. (2023)	TAM and ECM	adoption/ use	Learning management system in Nigeria
Ashfaq et al. (2020)	ISSM, TAM and ECM	continuance usage	Chatbots in United States

readiness to employ the digital accounting system in the future. All of the preceding constructs could have an impact on it. Users are more likely to indicate a favourable desire to continue using a system if they believe it to be of good quality, gives reliable information, is easy to use, and is valuable for their jobs. This model gives a comprehensive perspective of the interactions between these dimensions and aids researchers and practitioners in understanding the dynamics that influence ICU-DAS.

Hypotheses. Based on previous studies, some of which are detailed in Table 2, this paper develops eleven hypotheses for the empirical test of the revised model, as elaborated below.

System quality (SQ). ISSM posits that system quality affects satisfaction and usage intention (DeLone and McLean, 2003; Petter et al., 2008; DeLone and McLean, 1992). SQ represents DAS's technical capacity to give users quick and easy access to information while ensuring security and reliability (Al-Hattami, 2021a; Belfo and Trigo, 2013). A number of studies indicate that SQ positively affects satisfaction and continuation intentions in different contexts. For example, Veeramootoo et al. (2018) found a significant association between SQ and satisfaction and continued intention of e-filing use. However, Sharma and Sharma (2019) found that SQ does not influence user satisfaction or the intention to continue using mobile banking services. In another context, Zheng et al. (2013) concluded that SQ directly affects satisfaction and indirectly affects continuance intention. In the context of DAS, Al-Hattami et al. (2022b), Al-Hattami (2022), and Al-Hattami and Kabra (2022) found SQ to positively affect satisfaction and actual use. Similarly, Li and Wang (2021) disclosed that SQ positively impacts satisfaction. However, no research was found concerning the relationship between SQ and ICU-DAS, particularly in LDCs such as Yemen. Therefore, the next relevant paths are framed:

H1: *SQ positively affects satisfaction.*
H2: *SQ positively affects ICU- DAS.*

Information quality (IQ): According to ISSM, information quality affects user satisfaction and intention to use (DeLone and McLean, 2003; Petter et al., 2008; DeLone and McLean, 1992). Xu et al. (2003) identify IQ as information fit for institutional use. Al-Hatami (2022) argues that DAS is fit if it generates complete, relevant, timely, and accurate information that meets decision-making needs. At the level of DAS, the impact of IQ on satisfaction and actual usage showed positive results (Al-Hattami and Kabra, 2022; Al-Hattami et al., 2022b; Al-Hattami, 2022). On the

other hand, Li and Wang (2021) implied that IQ directly affects satisfaction and indirectly affects continuance intention. In another context, Sharma and Sharma (2019) found that SQ positively affects satisfaction and continuance intention. However, in the case of SMEs in LDCs like Yemen, such an effect was not studied. Thus, this study suggests:

H3: *IQ positively affects satisfaction.*
H4: *IQ positively affects ICU- DAS.*

Perceived usefulness (PU): PU is one of the independent constructs in TAM and ECM (Fig. 1). Accordingly, PU directly affects both behavioural intention and satisfaction (Davis, 1989; Bhattacherjee, 2001). The role of PU has been widely recognised in the areas of electronic banking (Rahi et al., 2022), electronic shopping (Al-Hattami, 2021b), and electronic learning (Suzianti and Paramadini, 2021). According to them, PU is the subjective possibility that the use of technology would improve a user's ability to perform a particular task. They reported PU as a key determinant of behavioural intention and satisfaction. Similarly, users who believe that utilising DAS can promote their work performance tend to be satisfied with it as well as gain a more favourable continuation intention of DAS use, i.e., the PU of users for DAS can positively influence satisfaction and ICU-DAS (Cheng, 2020; Floropoulos et al., 2010). Accordingly, this paper poses the following hypotheses:

H5: *PU positively affects satisfaction.*
H6: *PU positively affects ICU- DAS.*

Perceived ease of use (PEU): Undoubtedly, users benefit more from technologies that are easier to use (Mishra et al., 2023). TAM suggests that PEU significantly impacts PU and behavioural intention (Davis, 1989; Cheng, 2020). According to Ramayah et al. (2012), the key factor affecting behavioural intention relies on how simple it is to utilise or access a system. Cheng (2019) denotes that when users believe that DAS is simple to utilise and demands little effort and time, their satisfaction and perceptions of usefulness increase dramatically. Similarly, Cheng (2020) reported that PEU enhances satisfaction and increases continuance intention. Accordingly, it is assumed:

H7: *PEU positively affects PU.*
H8: *PEU positively affects ICU- DAS.*

Confirmation (CON): Based on ECM, CON significantly affects PU and satisfaction (Bhattacherjee, 2001). Accordingly, when users' initial expectations (i.e., before use) are confirmed during their actual use, their confirmation of their expectations towards information technology/systems positively affects their PU and

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Table 3 Measurement model B.

Variables	SQ	IQ	PU	PEU	CON	S	ICU- DAS	AVE
SQ	**0.863**							0.745
IQ	0.515	**0.871**						0.758
PU	0.557	0.594	**0.814**					0.663
PEU	0.551	0.454	0.603	**0.753**				0.567
CON	0.126	−0.02	0.148	0.030	**0.893**			0.797
S	0.649	0.619	0.672	0.734	0.077	**0.797**		0.635
ICU- DAS	0.596	0.628	0.687	0.645	0.102	0.709	**0.861**	0.742
VIF	*1.583*	*1.713*	*1.824*	*1.001*	*1.051*	*2.261*	*-*	*–*

Notes: - √AVE are presented in bold.
- All VIF values (*italic*) were lower than 3.3, indicating that multicollinearity and CMB are not concerns in this study (Kock, 2015).

satisfaction. Prior research on information technology/systems (e.g., Al-Hattami, 2021a; Hou, 2016; Cheng, 2019; Cheng, 2020; Kumar and Natarajan, 2020; Mishra et al., 2023) has revealed significant and positive links between CON & PU and satisfaction. Accordingly, this paper assumes that users' confirmation of their expectations towards DAS can positively affect their PU and satisfaction, which ultimately causes their continued intention to use DAS. That is, this study postulates that:

H9: CON positively affects PU.
H10: CON positively affects satisfaction.

Satisfaction (S): Users are satisfied with an information technology/system when its functions, performance, and benefits meet or exceed their expectations (Mishra et al., 2023). According to the literature on ISSM and ECM, satisfaction is an essential factor in determining usage intention (DeLone and McLean, 1992; DeLone and McLean, 2003; Bhattacherjee, 2001). In reviewing research on continuance intention, Bhattacherjee (2001) argued that satisfaction, resulting from actual use, mostly influences continuance intention. Pre-adoption assessments are based on perceptions, but post-adoption (actual use) behaviour represents the genuine feelings of consumers, making post-adoption satisfaction assessment even more crucial (Bhattacherjee, 2001; Mishra et al., 2023). Related studies have demonstrated that satisfaction significantly affects continuance intention (Al-Debei et al., 2022; Veeramootoo et al., 2018). In the case of DAS, a number of authors investigated the positive role of satisfaction in promoting actual use (Al-Hatami, 2021; Al-Hatami, 2022; Al-Hattami et al., 2022b). In addition, Li and Wang (2021) pointed to a positive relationship between satisfaction and ICU-DAS. However, in the case of SMEs in LDCs such as Yemen, research on such a link is still lacking. Hence, this research proposes:

H11: Satisfaction positively affects ICU- DAS.

Methodology

Measurement. The DAS continuance intention model's seven constructs were "system quality," "information quality," "perceived usefulness," "perceived ease of use," "confirmation," "satisfaction," and "intention to continue using DAS." Each construct was gauged using scales adapted from past studies and reworked to match the present context of DAS use. Scale items are presented in Annex 1. A Likert scale with five points was used to evaluate each item.

Data. In this paper, the data collection stage resulted in 318 responses from 440 distributed questionnaires, i.e., a response rate of 72.3%. Since most of the targeted population (72.3%) replied to the survey request for this research, the non-response bias was a less serious issue. This is likely due to respondents'

Table 4 The sample characteristics.

	Number	Percent
Gender		
M	271	88
F	37	12
Position		
Manager	197	64
Owner	111	36
Age		
Less than 25	40	13
25–35	138	45
Over 35 years	130	42
Expertise		
Less than 5	33	11
5–10	98	32
11–15	93	30
Over 15	84	27
Education		
School/Diploma	43	14
Bachelor	196	64
Postgraduate	69	22

reassurance of the confidentiality of their responses (Rubin and Babbie, 2016). Using VIF's test (Kock, 2015), the common method bias (CMB) was also looked at, and it was confirmed that there was no CMB in the data (Table 3).

Of the 318 responses received, 308 were valid for analysis. The sample characteristics are presented in Table 4, which shows 88% of men, 64% of managers, 36% of owners, etc. The study targeted Yemeni SMEs, defined as those employing up to 50 employees (YMIT, 2014). Specifically, this research targeted managers and owners of those enterprises that apply DAS and have an accounting background. Most of them have educational backgrounds and professional experiences that exceed 5 and 10 years (Table 4). They are crucial decision-makers who determine whether the system will be accepted and funded in the future (Al-Hattami, 2022; Al-Hattami and Kabra, 2022). Thus, their opinion on the system's utility can have a significant impact on its continued use. Recognising this distinct point of view provides vital insights into the system's significance from a managerial and ownership standpoint. Notably, the respondents to our survey came from a wide range of industries, including manufacturing, services, and commerce. This deliberate selection sought to capture a diverse range of opinions within the SME sector. We sought general conclusions that could be applied to a wide range of SMEs by including a variety of businesses while understanding that distinct sectors may have specific accounting demands and issues. Table 5 shows factor loadings, Cronbach alpha (CA), and composite reliability (CR), all of which were satisfactory.

Table 5 Measurement model A.

| Variables	Acronym	SQ	IQ	PU	PEU	CON	S	ICU- DAS	CA	CR
System quality	SQ1	**0.804**	0.446	0.477	0.506	0.168	0.514	0.445	0.828	0.897
	SQ2	**0.882**	0.492	0.466	0.397	0.108	0.558	0.518		
	SQ3	**0.900**	0.402	0.501	0.526	0.063	0.604	0.571		
Information quality	IQ1	0.454	**0.886**	0.614	0.423	0.039	0.565	0.608	0.841	0.904
	IQ2	0.364	**0.843**	0.382	0.330	−0.097	0.507	0.446		
	IQ3	0.516	**0.883**	0.533	0.424	−0.008	0.542	0.572		
Perceived usefulness	PU 1	0.417	0.536	**0.802**	0.491	−0.028	0.538	0.457	0.748	0.855
	PU 2	0.502	0.391	**0.801**	0.504	0.294	0.604	0.650		
	PU 3	0.429	0.541	**0.839**	0.475	0.057	0.487	0.549		
Perceived ease of use	PEU1	0.434	0.377	0.455	**0.708**	−0.065	0.424	0.39	0.735	0.796
	PEU2	0.397	0.253	0.282	**0.715**	0.017	0.406	0.344		
	PEU3	0.424	0.375	0.558	**0.829**	0.088	0.737	0.643		
Confirmation	CON1	0.146	0.042	0.141	−0.040	**0.937**	0.064	0.103	0.870	0.921
	CON2	0.139	0.030	0.122	−0.054	**0.935**	0.041	0.080		
	CON3	0.058	−0.113	0.130	0.155	**0.800**	0.095	0.086		
Satisfaction	S1	0.633	0.502	0.584	0.590	0.132	**0.861**	0.589	0.805	0.874
	S2	0.451	0.384	0.537	0.686	−0.046	**0.813**	0.508		
	S3	0.543	0.414	0.506	0.577	0.098	**0.816**	0.622		
	S4	0.42	0.666	0.51	0.491	0.045	**0.687**	0.529		
Intention to continue using DAS	ICU- DAS1	0.471	0.437	0.538	0.515	0.151	0.578	**0.794**	0.824	0.896
	ICU- DAS2	0.496	0.572	0.566	0.554	0.043	0.607	**0.919**		
	ICU- DAS3	0.565	0.600	0.66	0.591	0.077	0.642	**0.865**		

The bold values show factor loadings.
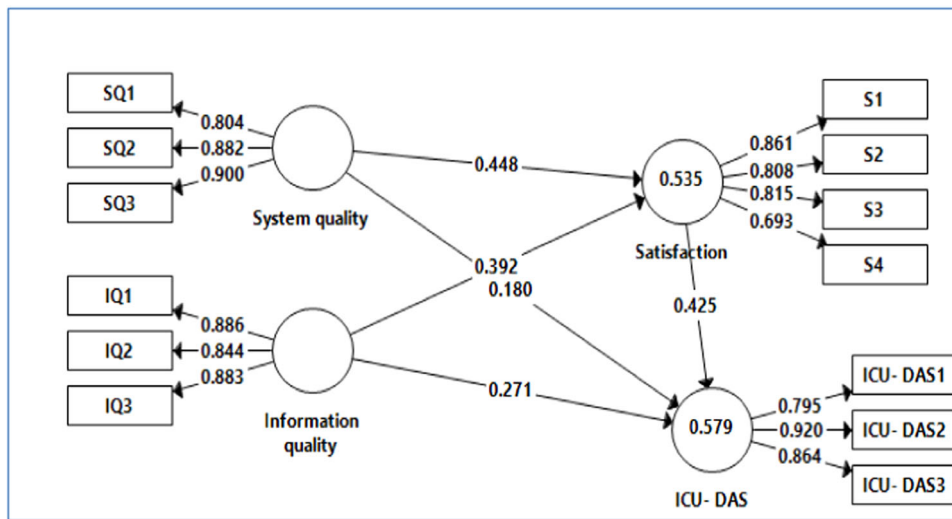
Fig. 2 Results of ISSM. This fig. displays the standardised path coefficients for the ISSM.

Statistical tool. The study model was tested using partial least squares (PLS) via the Smart-PLS programme. Smart-PLS's advantages led us to prefer it over the regression approach or even the approach based on covariance (CB-SEM). Smart-PLS is preferable in complex models with several constructs; such models would not be suitable for the regression strategy (Gefen et al., 2000). Unlike CB-SEM, PLS can be used with non-normally distributed data, so it makes use of bootstrapping to lessen estimation bias (Hair et al., 2017). Besides, it does not have strict requirements regarding sample size (Afthanorhan, 2013). As a result, information technology and systems researchers frequently prefer Smart-PLS in their data analysis (Al-Hattami, 2022; Henseler et al., 2016; Alzahrani et al., 2019).

Results presentation

Testing the research model and assumed paths was the next step in the data analysis process. Particularly, this study examined the original ISSM, TAM, and ECM continuance models as baseline reference models along with the study's synthesised model. The results are shown in Figs. 2–5. According to the results, the four models offered a satisfactory fit for the data. Figure 2 displays the standardised path coefficients for the ISSM. ISSM explained 57.9% of the variance in ICU-DAS. Further, system quality, information quality, and satisfaction significantly influenced ICU-DAS. Additionally, system quality and information quality significantly influenced satisfaction. According to Fig. 3's TAM results, perceived usefulness and ease of use play a major role in determining ICU-DAS. Further, TAM explained 55.6% of the variance in ICU-DAS. In Fig. 4, ECM confirmed its role in strengthening ICU-DAS and explained 50.1% of the variance in ICU-DAS. All of ECM's paths were positive, except for the relationship between confirmation and satisfaction. Figure 5 and Table 6 show the synthesised model's standardised path
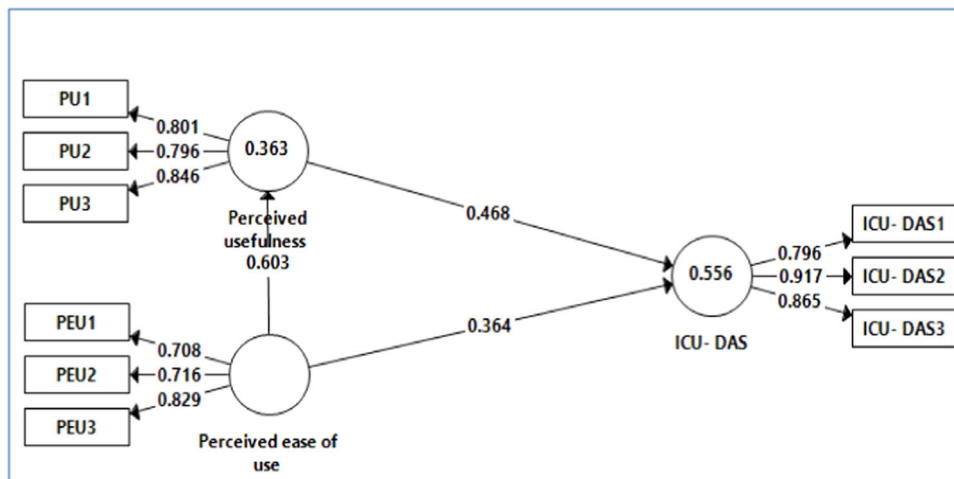
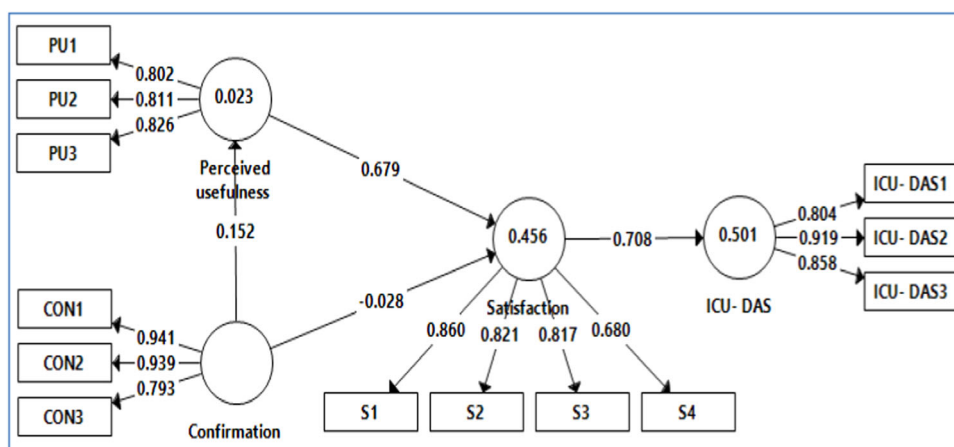**Fig. 3 Results of TAM.** This fig. displays the standardised path coefficients for the TAM.

Fig. 4 Results of ECM. This fig. displays the standardised path coefficients for the ECM.

coefficients. As expected, every path between variables was significant except one (CON - > S), which was insignificant. System quality (H1; B = 0.334***), information quality (H3; B = 0.243**), and perceived usefulness (H5; B = 0.343***) positively influenced satisfaction, whereas confirmation (H10; B = −0.011 ns) did not. Meanwhile, confirmation (H9; B = 0.130*) and perceived ease of use (H7; B = 0.599***) positively affected perceived usefulness. Lastly, system quality (H2; B = 0.115*), information quality (H4; B = 0.213***), perceived usefulness (H6; B = 0.250***), perceived ease of use (H8; B = 0.192**), and satisfaction (H11; B = 0.194**) positively influenced ICU-DAS.

The comparison of the DAS's explanatory power shows that the synthesised model has a higher explanatory capacity (63.6%) than ISSM (57.9%), TAM (55.6%), and ECM (50.1%). When compared to the variance in PU described by CON alone in ECM (2.3%), the variance explained by CON and PEU was substantially higher (38.1%) and was almost near to that explained by PEU alone in TAM (36.3%). In comparison, 59.7% of the variance in satisfaction was interpreted in the synthesised model, which is better than 53.5% in the ISSM and 45.6% in the ECM.

Discussion
Intention to continue use is a commonly investigated precedent to predict user behaviour after adoption because it represents the user's decision to keep using a system after initial adoption

(Chen et al., 2021; Bhattacherjee, 2001). The primary goal of the current paper is to explore the key factors that drive organisational users to continue utilising DAS. Based on the ISSM, TAM, ECM, and synthesised model, this study examined multiple hypotheses related to the key constructs of these models. The main results supported all the proposed hypotheses, except H10. According to the results, confirmation was significantly related to PU, which aligns with the previous research (Cheng, 2019). Interestingly, there was no significant association between confirmation and satisfaction (H10). This contradicts the claim that satisfying user expectations should result in greater satisfaction with information technology and systems (Bhattacherjee, 2001; Hou, 2016; Cheng, 2020; Mishra et al., 2023). Although users realised that DAS was much better than they expected, they were not very satisfied.

As for the rest hypotheses (paths), the variable of system quality in the study positively affected satisfaction, consistent with research by Li and Wang (2021) and Al-Hattami (2022). Consistent with other past IS research (e.g., Chen et al., 2021; Veeramootoo et al., 2018), SQ also positively affected ICU-DAS. Based on that, DAS users are more likely to be satisfied if the system meets their needs in terms of flexibility, accessibility, and reliability. Such system characteristics can also enhance the users' intention to continue using DAS. Furthermore, information quality positively affected satisfaction and ICU-DAS. This outcome is consistent with past research revealing that IQ influences satisfaction in DAS (Al-Hattami and Kabra, 2022; Li and Wang,
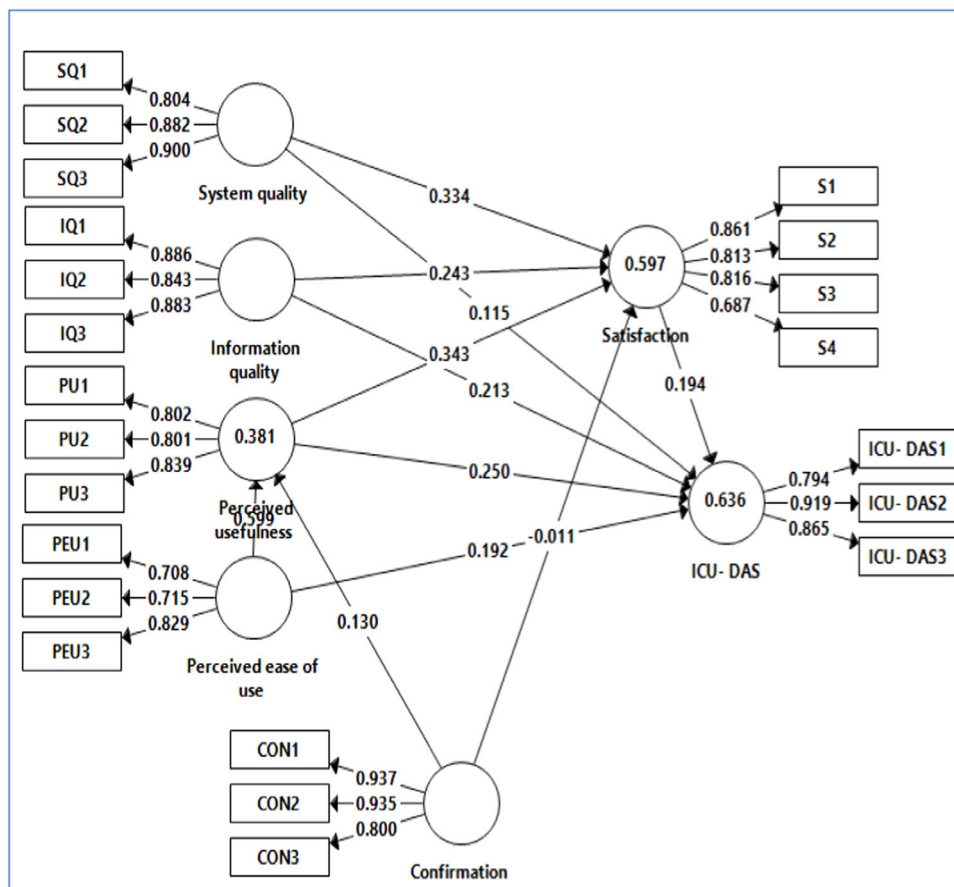
Fig. 5 Results of synthesized model. This fig. displays the standardised path coefficients for the synthesized model.

Table 6 Summary of hypotheses testing.

Hypothesis		Std. Beta	Std. Deviation	T values	P values	Decision	R²/Q²
H1	SQ - > S	0.334***	0.058	5.752	P < .001 (.000)	Accept	PU
H2	SQ - > ICU- DAS	0.115*	0.046	2.507	P < .05 (.012)	Accept	0.381/0.243
H3	IQ - > S	0.243**	0.072	3.373	P < .01 (.001)	Accept	S
H4	IQ - > ICU- DAS	0.213***	0.057	3.739	P < .001 (.000)	Accept	0.597/0.361
H5	PU - > S	0.343***	0.060	5.702	P < .001 (.000)	Accept	ICU- DAS 0.636/ 0.458
H6	PU - > ICU- DAS	0.250***	0.055	4.585	P < .001 (.000)	Accept	
H7	PEU - > PU	0.599***	0.047	12.745	P < .001 (.000)	Accept	
H8	PEU - > ICU- DAS	0.192**	0.059	3.228	P < .01 (.001)	Accept	
H9	CON - > PU	0.130*	0.049	2.658	P < .05 (.008)	Accept	
H10	CON - > S	−0.011 ns	0.045	0.240	P > .05 (.810)	Reject	
H11	S - > ICU- DAS	0.194**	0.066	2.938	P < .01 (.003)	Accept	

Not significant (ns) at P > 0.05, significant at * P < 0.05, ** P < 0.01, *** P < 0.001.

2021; Floropoulos et al., 2010) and continuance intention in other fields (Teo et al., 2008; Sharma and Sharma, 2019). Users believe that DAS can provide relevant, timely, and accurate information to meet their needs, thus raising their satisfaction and interest in the continued use of DAS.

In contexts requiring mandatory usage, such as DAS, perceived usefulness is more proper to assess system performance (Floropoulos et al., 2010; Fadelelmoula, 2018). The current study revealed that satisfaction and ICU-DAS were positively impacted by perceived usefulness. In line with related past research, a DAS that is viewed as useful is more likely to increase satisfaction and continue usage (Floropoulos et al., 2010; Cheng, 2020). In cases where highly helpful DAS are adopted and used by large numbers of users, usefulness indicates users' favourable assessments of DAS (Cheng, 2019).

This positive assessment results in satisfaction and ICU-DAS, which was confirmed by the current research results.

Utilisable information technology/systems are those that are simple to use. More intuitive and less effortless technologies/systems reduce users' cognitive load and assist users in getting things done efficiently (Mishra et al., 2023). In support of that, numerous studies have attested to the crucial part played by PEU in raising satisfaction and continuing use (Cheng, 2020; Kumar and Natarajan, 2020). The current research also supports this role, with results concluding that PEU positively affects PU and ICU-DAS. Users are satisfied with DAS and value them when they enable them to perform tasks with less effort. This is why it is critical to have a consistent DAS with a simple and intuitive user interface (Uzialko, 2022). Lastly, ICU- DAS was strongly

influenced by satisfaction. Users are more inclined to continue using DAS when they are satisfied with DAS performance. The result validates the expectation idea put forward by Bhattacherjee (2001). A system is more likely to be used continuously if it fulfils (or surpasses) users' perceptions of performance. The outcome is consistent with past research that investigated the role of satisfaction in the context of information systems/technology like cloud ERP, business intelligence systems, and e-finance (Cheng, 2020; Hou, 2016; Zhou et al., 2018).

In all, in DAS, SQ is critical for user satisfaction and efficiency. A high-quality system reduces errors, assures data accuracy, and offers a consistent user experience. When users encounter fewer hassles and frustrations, they are more inclined to continue using the system. A system with quality flaws, on the other hand, might cause unhappiness, eroding trust and driving consumers to seek alternatives. The quality of financial information generated by the system is critical for decision-making (Al-Hattami, 2022). Accurate and relevant data are critical for financial reporting, analysis, and compliance (Monteiro et al., 2022; Al-Hattami and Kabra, 2022; Rubino and Vitolla, 2014). Incorrect data can lead to costly mistakes and damage the system's effectiveness, making it less likely that users will continue to use it. The PU of a digital accounting system is an important driver of user motivation and readiness to utilise it (Floropoulos et al., 2010). Users are more likely to use a system on a regular basis if they believe it helps them complete their tasks more efficiently. Furthermore, usability is important for user acquisition and retention. A simple system lowers the learning curve for users, making it more accessible. Users are more likely to adopt a system that does not necessitate substantial training or complex processes. High user satisfaction is a composite measure of these elements, indicating the total user experience with the digital accounting system.

Conclusion and implications

The research exclusively examined three original models for the DAS continuation intention and proposed a synthesised model. Specifically, this research compared four theoretical models: ISSM, TAM, ECM, and a synthesised model to investigate which model could better account for the intention to keep using DAS. The results reveal that the synthesised model has greater explanatory power than ISSM, TAM, and ECM, with 63.6%, 57.9%, 55.6%, and 50.1%, respectively. The hypotheses contained in the model were largely supported by the results, and they demonstrated the potential to integrate ISSM, TAM, and ECM into a single unified model. The results demonstrated that ICU-DAS is determined by system quality, information quality, perceived usefulness, perceived ease of use, and satisfaction. On the other hand, satisfaction is affected by system quality, information quality, and perceived usefulness. Additionally, confirmation and perceived ease of use play a positive role in enhancing perceived usefulness.

Overall, various factors influence the interaction between users and digital accounting systems in SMEs. SQ, IQ, PU, PEU, and S are all important characteristics of system interaction. A high level of SQ ensures a smooth and efficient user experience, reducing technical issues and allowing users to have confidence in the system's operation. IQ guarantees that financial data is accurate, thorough, and relevant, which improves interaction. Positive interactions occur when the system improves productivity and streamlines procedures, and PU represents how users perceive the system's contribution to their work. Ease of use lessens user annoyance and the learning curve, boosting comfort and willingness to use the technology in the future. However, difficulty accessing or comprehending the system may cause consumers to avoid it entirely or to utilise it only unwillingly. Another key component in the relationship between users and

digital accounting systems is S. High satisfaction suggests a pleasant overall experience, whereas low satisfaction shows a number of negative interactions, such as encountering problems, receiving poor-quality data, or having difficulty with usability. The efficacy of the system in keeping users in SMEs is directly determined by the quality of these interactions. In aggregate, these factors influence users' intentions to continue using digital accounting systems in SMEs. They are not system properties in and of themselves but rather components of the system's interaction with users. Users are more motivated and eager to continue using the system when these elements are beneficial. In contrast, if these elements are lacking or bad, users are more likely to abandon the system.

The current work makes significant contributions to the field of study. First, this work contributes to the expanding corpus of knowledge on DAS by integrating ISSM, TAM, and ECM into a limited, different, non-Western context. This study contributes to the academic understanding of information systems and technology continuance by focusing on a specific context, namely SMEs in Yemen, a less Arabic-developed country. It extends existing theoretical frameworks and models by examining how these theories apply in a unique setting. It also helps validate and refine existing theories in the context of DAS. Hence, the study's suggested model promotes our comprehension of continuance intention regarding DAS across cultures (Venkatesh et al., 2012; Williamson and Johanson, 2017; Granić and Marangunić, 2019).

Overall, the study would deepen our understanding of the factors influencing technology adoption and usage in the accounting domain, specifically within the SME sector. It will also provide a foundation for future research on the topic, exploring additional factors and examining the potential differences in continuance intention across various industries and regions.

Practically, the results of this study would have several significant implications. For SMEs and policymakers, understanding the determinants of continuance intention can assist in making informed decisions about the adoption and long-term usage of digital accounting systems. Moreover, the findings can guide organisations in developing strategies to enhance system quality, information quality, and user satisfaction, ultimately improving the overall acceptance and effectiveness of these systems. The literature emphasises the importance of DAS and its benefits for SMEs, as their adoption has become a crucial factor in the success and survival of such enterprises (Ismail et al., 2003; Mohammad, 2018). This is because a DAS is an important and needed regulatory mechanism for planning, business monitoring, and effective decision management (Al-Hattami and Kabra, 2022; Al-Hattami et al., 2022b; Al-Hattami, 2022). In return, the success and continuation of these enterprises aid in the nation's economic development (Ramdani et al., 2022; Andoh-Baidoo, 2016). Thus, policymakers and industry associations can use this research to develop guidelines and policies that support SMEs in adopting and sustaining DAS, potentially boosting the overall economic landscape.

For technology vendors, software providers in the accounting technology space can use the findings to improve their products and services, ensuring they align better with SME users' needs and preferences.

In summary, an empirical investigation into the determinants of DAS' continuance intention in SMEs not only contributes to the academic literature but also has practical implications that can benefit SMEs, technology vendors, and policymakers. It helps bridge the gap between theory and practice, leading to more effective and informed decision-making in the rapidly evolving field of accounting technology.

Finally, the limitations of this study should be identified in order to direct future research. First, the current study used the original ISSM, TAM, and ECM to examine the behavioural ICU-

DAS. As a result, future research should take into account the extended models put forth by DeLone and McLean (2003), Venkatesh et al. (2003), and Bhattacherjee et al. (2008). Second, the demographic variables' effect was not examined in this study; identifying their impact on ICU-DAS may provide deeper insights. Third, since DAS, as a technological tool, is experiencing considerable developments in its versions and functions, users' ongoing behaviour may change over time. Thus, the longitudinal analysis could compare DAS users' behaviour across dissimilar periods of time. Fourth, the lack of a direct relationship between confirmation and satisfaction was unexpected and warrants further investigation. Last, as this research concentrated on SMEs in Yemen, an LDC, it will be interesting to see if the outcomes of this study are applicable to other firms and countries.

Annex 1 Questionnaire items

Constructs	Items
System quality (Al-Hattami, 2021a)	SQ1- DAS are flexible. SQ2- DAS are accessible. SQ3- DAS are reliable.
Information quality (Al-Hattami, 2021a)	IQ1- Information generated by DAS is accurate. IQ2- Information generated by DAS is relevant to my business. IQ3- Information generated by DAS is available when needed (on time).
Perceived usefulness (Bhattacherjee, 2001; Cheng, 2019)	PU1- DAS improve my organisational performance. PU2- DAS increase my productivity in managing financial issues. PU3- Using DAS gives me greater control over work.
Perceived ease of use (Davis, 1989)	PEU1- Interacting with DAS does not necessitate a great deal of mental effort. PEU2- A DAS is simple for me to utilise. PEU3- My interaction with DAS is clear and understandable.
Confirmation (Bhattacherjee, 2001)	CON1- My experience with utilising DAS was better than my expectations. CON2- DAS exceeded my expectations in terms of the level of service provided. CON3- Overall, DAS confirmed the majority of my expectations.
Satisfaction (Bhattacherjee, 2001; Floropoulos et al., 2010)	S1- DAS meet my expectations. S2- I am satisfied with the support of my work by DAS. S3- My interaction with DAS is satisfactory. S4- I am totally satisfied with DAS.
Intention to continue using DAS (Bhattacherjee, 2001; Cheng, 2019)	ICU-DAS1- I intend to keep using DAS. ICU-DAS2- I intend to keep using DAS instead of using any alternative means. ICU-DAS3- Generally, I will use DAS on a regular basis.

Data availability

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Author contributions

Competing interests

The authors declare no competing interests.

Ethical approval

This article does not contain any studies with human participants performed by any of the authors.

Informed consent

Consent was not deemed necessary for this study, as the data collected using anonymous identity of the respondent. All sources used by this study have been considered and cited.

Additional information