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An integrated model of UTAUT to understand digital accounting systems acceptance: A hybrid PLS-SEM-artificial neural network modelling approach

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Abstract. In the era of the fourth industrial revolution, the digitalisation of small and medium-sized enterprises (SMEs) is imperative for their sustainable growth. Employing digital technologies, including digitisation, digitalisation, and digital transformation, is essential for enhancing operational efficiency within enterprises. An adapted model derived from the Unified Theory of Acceptance and Use of Technology (UTAUT) was employed in this study to investigate the behaviour of accountants towards adopting digital accounting systems (DAS). By employing a descriptive cross-sectional survey design, a quantitative study was conducted. The extended UTAUT model functioned as the foundation for the study's theoretical framework and incorporated the concept of personal innovativeness. A two-step process, combining partial least squares structural equation modelling (PLS-SEM) with artificial neural network (ANN) techniques, was applied to analyse the dataset. The findings demonstrated that the study's variables, specifically effort expectancy, social influence, facilitating conditions, and personal innovativeness, positively influence accountants' intention to adopt DAS. Interestingly, the impact of performance expectancy on this intention was statistically insignificant. Furthermore, it was observed that personal innovativeness exhibited a significant correlation with the intention to adopt the system, thereby emphasising the necessity of endorsing technologies, such as DAS, within SMEs. By confirming the impact of personal innovativeness on the intention to adopt and highlighting the precise measurement framework in Jordanian SMEs, the study's findings notably contribute to the UTAUT theory.

Keywords: Behavioural intention; effort expectancy; digital accounting system; personal innovativeness; artificial neural network (ANN); PLS-SEM.

1. INTRODUCTION

The COVID-19 pandemic has profoundly impacted various sectors, prompting a fundamental re-evaluation of established processes and technological strategies to ensure sustainability amidst dynamic regulatory changes (Mansour et al., 2024). Leaders and managers across different domains, from politics to healthcare and senior business management, faced unparalleled disruptions as they viewed the pandemic as a crucible that tests their decision-making abilities (Shubita et al., 2024; Tran, 2023). Undeniably, the pandemic posed an unprecedented challenge in timely and accurate decision-making. Within the business landscape, COVID-19 has given rise to a slew of new challenges, necessitating adept management of crisis-induced repercussions and implementing efficient decision-making processes (Alqudah et al., 2024; Imjai et al., 2023). Notably, decision-making and system utilisation have emerged as the foremost challenges that demand meticulous attention, as overlooking these aspects could potentially result in catastrophic consequences.

Numerous scholars, including Oleiwi (2023), Anthony Jnr and Abbas Petersen (2021), and Lutfi et al. (2022), underscored the crucial significance of technology, specifically digital accounting systems (DAS), in mitigating the complex challenges posed by the worldwide COVID-19 pandemic. Technology adoption has emerged as a cornerstone strategy for businesses navigating the uncertainties caused by the pandemic (Al Khasawneh, 2023; Lutfi et al., 2024). As the pandemic serves as a global catalyst for developing and deploying appropriate technology, businesses have actively responded by incorporating efficient and cutting-edge technological solutions into their operations (Hung et al., 2023). This surge in technology integration has given rise to innovative business models, the flourishing of e-commerce platforms, and the proliferation of online enterprises (Karnik et al., 2022). Concurrently, the progress and improvement of technology and automation infrastructure systems, particularly in the case of DAS infrastructure, has been accelerated by the pandemic (Alrfai et al., 2023; Wutthirojrungsee, 2023).

Digitalisation is the process by which an industry, organisation, or nation adopts or extends the use of computer technology (Deniz, 2021). Although the positive impact of digitalisation on economic growth, social well-being, and government efficiency varies significantly from one nation to another, its positive consequences are undeniable (Gullkvist, 2011; Khassawneh, 2014). Businesses that adopted digital transformation efforts experienced substantial benefits, including increased profit margins, productivity, customer retention, cost savings, rapid product or service deployment, and revenue growth (Cepêda, & Monteiro, 2022). Companies shifting from paper-based to technology-based alternatives or digitising their business processes improve business efficiency by enabling automated data collection that provides essential insights into company performance, cost drivers, and potential risks (Alshirah et al., 2021; Riso, & Morrone, 2023). Lutfi (2021) stated that the process helps companies reduce costs, save time, and conserve human resources.

Nevertheless, while technology adoption has been a prevailing theme, a notable asymmetry exists in how different businesses have embraced and leveraged technology in response to the pandemic. This asymmetry is caused by various factors, such as financial resources, technological readiness, and the nature of industry. As a result, while some businesses thrive and evolve in this technology-driven environment, others continue to grapple with the challenges posed by the

digital divide and the need for comprehensive digital transformation strategies (Mansour et al., 2024). Addressing the asymmetry in technology adoption and utilisation remains a critical consideration for policymakers and businesses seeking to build resilience in the face of future uncertainties.

Businesses rely on accounting information to address immediate and enduring challenges, providing essential insights needed to strengthen their operational aspects, encompassing control, monitoring, and financial areas, such as cost, expenditures, and cash flow management (Tongsuksai et al., 2023). Accounting information assumes a pivotal role in shaping long-term strategic planning for business in a marketplace environment characterised by intense competition and constant dynamism (Yaser Saleh et al., 2023). The assimilation of information technology (IT) and IT-driven solutions holds a pivotal position in enabling the collection and distribution of accounting information, thereby guaranteeing the competitiveness of businesses enduring efficiency (Jaatinen et al., 2021). In the contemporary landscape, IT seamlessly integrates into the fabric of accounting processes, functioning as an extensive and cohesive framework (Samarghandi et al., 2023).

Besides, IT is significant for businesses in general, with a particularly noteworthy impact on small and medium enterprises (SMEs), primarily due to its capability to boost accounting operations (Tongsuksai et al., 2023). The efficient utilisation of IT systems guarantees the prompt and accurate generation of accounting reports and unrestricted access to financial data, profoundly influencing the company's overall performance and decision-making processes (Phornlaphatrachakorn, & Na Kalasindhu, 2021). Considering the crucial role that SMEs play in the development of the national economy, the sustainability of these businesses remains a top priority. As integral contributors to economic vitality, SMEs are encouraged to enhance and sustain their competitiveness and productivity proactively (Alrawad et al., 2023; Hidayati et al., 2023). In alignment with this perspective, Lutfi (2022) aptly underscored that a pivotal determinant of SME success or failure hinges on how adeptly they harness accounting information.

Prior studies on financial and accounting reports have consistently emphasised their crucial function as essential repositories of information for businesses. As an example, DAS can be characterised as an information systems (IS) or IT tools that makes a substantial contribution to the comprehensive collection, processing, and

secure storage of accounting and financial data, ultimately equipping managers with the information they need to make informed decisions (Lohapan, 2021; Romney & Steinbart, 2016). In simpler terms, skillfully using accounting information and having a well-organised financial reporting system form the basis for achieving organisational goals effectively and efficiently (Meraghni et al., 2021). The expansive capabilities provided by IT have led to the advent of DAS, making them instrumental tools for efficiently managing and disseminating accounting and financial information to enterprises (Okpo, & Eshiet, 2023).

Jordanian SMEs, similar to numerous other emerging economies, have underutilised the vast potential of DAS in their daily business processes and operations significantly. Remarkably, a mere 14% of SMEs in Jordan have embraced DAS as their primary internal business reporting system (Aldabbas et al., 2023). The limited incorporation of IS or IT for essential operations, particularly in accounting functions, has constrained these companies from fully leveraging their resources to boost their competitiveness (Idris & Mohamed, 2016). Furthermore, the sparse utilisation of DAS within these enterprises has led to suboptimal data quality, thereby detrimentally impacting the decision-making process. In essence, the lukewarm adoption of IT or IS-related solutions has curtailed Jordanian SMEs' capacity to improve both their productivity and competitiveness (Alshirah et al., 2021). Brunila et al. (2021) stated that a critical challenge for SMEs is the inadequacy of financial information and the lax management of accounting records, which several researchers argue are the top two reasons for SME failures. Low adoption of DAS leads to reduced efficiency in SMEs, a higher risk of errors, and delays in financial reporting. Without timely and accurate financial data, SMEs struggle to make informed strategic decisions and remain competitive. Limited digitalization also affects transparency and regulatory compliance, increasing financial and legal risks. These consequences emphasize the need to understand the factors that influence DAS adoption to enhance SME performance and sustainability.

Scholars have emphasised that a pivotal remedy for mitigating SMEs' failure rate involves a proactive enhancement of their financial management practices and modernising their accounting systems (Xavier et al., 2023). As Saad et al. (2022) articulated, the differentiating factor between successful and unsuccessful SMEs fundamentally lies in how adeptly they harness accounting data. Undoubtedly,

accounting information assumes a central role in the augmentation and support of business operations. Notably, adopting DAS has emerged as an effective means to foster long-term survival and retain sustainable competitiveness (Zain & Hussin, 2019). Besides, DAS facilitate the timely and accurate generation of accounting reports and the seamless acquisition of financial information, enabling managers to gain comprehensive insights into the ramifications of their business decisions and processes on the overall organisational performance (Grande et al., 2011; Ritchi et al., 2020).

When harnessed adeptly, DAS plays a pivotal role within firms by yielding long-term advantages such as cost savings, revenue enhancement, bolstered competitiveness, and heightened productivity (Lemos et al., 2023). In essence, the proficient utilisation of a DAS has the potential to fulfil user expectations and positively influence the comprehensive functioning of a firm. Nevertheless, despite the manifold benefits associated with DAS adoption, numerous studies undertaken in the Jordanian context revealed that SMEs do not consistently generate digital accounting reports. For example, Lutfi et al. (2022) observed that DAS was associated with the collection of suboptimal data among Jordanian SMEs. On the other hand, Al Khasawneh (2023) noted that electronic accounting system face challenges and obstacles in providing the security and control requirements of financial information in Jordanian companies, these challenges are related to the rapid development of electronic financial systems. Therefore, providing flexibility becomes necessary for businesses to be able to update and modify their financial systems in a manner that is compatible with the current environment and modern development.

Case studies have delved into the examination of DAS from the organisational perspective (Lutfi et al., 2022). Nevertheless, there is no unanimous agreement on the methodology that companies should use to evaluate the possible value and effects of DAS (Li & Wang, 2021). Recognising the potential of a DAS requires substantiating and validating its effects, feasibility, and value for businesses, specifically SMEs (Hermann et al., 2023). Consequently, there is an urgent requirement for additional research to provide insights into the opportunities and obstacles associated with the intention to adopt of DAS within these businesses (Lutfi et al., 2022). Moreover, it is imperative to scrutinise the limitations of DAS use concerning its intrinsic value. Pertinently, scant attention has been directed

towards the adoption considerations associated with DAS, particularly in emerging economies (Adam, & Alarifi, 2021; Guo et al., 2020). A thorough understanding of the entire influence of DAS utilisation in SMEs can only be attained during the adoption phase. Understanding the factors influencing the adoption of DAS can support policymakers, technology providers, and SME managers in designing targeted interventions that enhance adoption rates. By clarifying how filling this gap can lead to improved decision-making, increased operational efficiency, and better utilization of digital technologies in Jordanian SMEs, the justification for the study is now more robust and practically grounded. Hence, an investigation into the developmental consequences of DAS performance in an emerging economy such as Jordan is necessary.

The growing landscape of DAS necessitates a profound understanding of its potential for value generation and its influence on organisational outcomes. In order to tackle this pivotal concern, this study undertakes the formulation and examination of a comprehensive model concerning DAS adoption and its subsequent impacts. Consequently, the research questions addressed in the present work are as follows:

(1) What factors precede the behavioural intention to adopt DAS?

(2) Among the factors, which has a greater association with intention to adopt DAS?

(3) Does personal innovativeness influence effort expectancy and facilitating condition?

The study utilised the Unified Theory of Acceptance and Use of Technology (UTAUT), a strong conceptual foundation with enhanced explanatory capability, to gauge the behavioural intention of users towards accepting DAS among Jordanian SMEs. It recognises that a user's willingness to embrace new technologies is influenced not only by their personal perspectives but also by their social, organisational, and environmental surroundings. Besides, UTAUT is an extensively employed model for comprehending the adoption and acceptance of technology. It has been utilised in various research to investigate the elements that impact the acceptance and usage of technology in diverse settings. This study explores the factors that impact the adoption of DAS through UTAUT. The key factors used to assess the intentions related to the usage of DAS are performance expectation, effort expectancy, social influence, facilitating condition, personal innovativeness, and

behavioural intention. Identifying the factors influencing the intention to use DAS provides theoretical and practical insights into why Jordanian SMEs exhibit low adoption of these technologies. By uncovering the key determinants—whether organizational, behavioral, or technological —the present study helps highlight the specific barriers that hinder implementation and the enablers that can support successful usage. This alignment demonstrates how achieving the work objectives directly contributes to understanding and addressing the low uptake of DAS in the Jordanian SMEs.

Furthermore, by incorporating the UTAUT model and applying a robust two-stage PLS-ANN methodology to investigate the factors that affect accountants' intention to utilise DAS, this study sought to address the gaps in the current literature. The study is structured as follows: Section 2, the literature review, offers insights into the utilisation of DAS in business operations, the theoretical basis, the conceptual framework, and the formulation of hypotheses. The methodology section details the research design and materials employed to explore the factors influencing accountants' behavioural intention to utilise DAS. The findings of the structural modelling equation (SEM), which was derived through the PLS method, and the findings of the artificial neural network (ANN) are offered in the fourth section. The subsequent section is dedicated to the examination of the study's findings, delving into their implications, and delivering valuable insights for practice and policy. It also offers recommendations and discusses the study's contributions. The study's limitations and future research suggestions are highlighted in the limitations and recommendations.

2. LITERATURE REVIEW

2.1. Importance of digital systems for SMEs

Undeniably, SMEs have traditionally been acknowledged as significant contributors to global economic growth and development. In recent times, the swift advancement of technology has underscored the significance of incorporating information systems into SMEs operations. Information systems encompass various technologies and tools that facilitate effective communication, decision-making, and data handling (Hermann et al., 2023). Information systems empower MSMEs by simplifying procedures, reducing operational inefficiencies, and enhancing overall productivity. They offer a structured framework for overseeing business activities, encompassing inventory management, sales tracking, and

customer relationship management. Through the use of information systems, SMEs can access real-time data, facilitating data-driven decision-making and delivering insights into market trends, customer preferences, and the competitive landscape (Karnik et al., 2022).

Technology remains a continually evolving driver that transforms human lifestyles and careers, assuming a central role in modern society. Its importance extends to various aspects, with far-reaching consequences for businesses, particularly SMEs. On the whole, technology has transformed the way humans communicate, retrieve information, and carry out everyday responsibilities. It has reduced geographical barriers, enabling global connectivity and cooperation. In the business world, technology has emerged as the cornerstone for competitiveness and effectiveness. Automating repetitive functions or enabling data-informed decision-making equips enterprises to streamline their activities, enhance efficiency, and access new markets. Technology serves as an equaliser for SMEs by allowing them to compete with larger counterparts. It provides cost-effective tools for marketing, sales, customer service, and financial management. Moreover, technology democratises innovation, enabling SMEs to develop and deliver innovative products and services, driving economic growth and fostering entrepreneurship. Hence, the significance of technology in the modern world, particularly for SMEs, cannot be overstated, as it offers new opportunities, enhances resilience, and fuels progress in an ever-evolving global landscape.

While technology has allowed organisations to harness their capabilities, the SME sector has notably been sluggish in adopting these advancements (Brunila et al., 2021). In essence, DAS constitutes a system designed to collect, store, record, and process data, culminating in the generation of valuable insights for managers and decision-makers, thereby facilitating efficient and well-informed decision-making (Okpo & Eshiet, 2023). The information acts as an essential instrument in reducing decision-making uncertainty and improving activities associated with control and strategic planning.

2.2. Related works

In the current body of literature, research that investigates the factors impacting DAS adoption in SMEs' system is limited (Lutfi et al., 2022; Okpo & Eshiet, 2023). This study seeks to address this limitation by creating a research model rooted in the UTAUT framework. The study presents hypotheses concerning the efficient

utilisation of DAS within Jordanian SMEs, tackling a significant gap in the existing body of literature. Only a few earlier studies have delved into explaining the adoption of DAS (Adam & Alarifi, 2021; Guo et al., 2020; Lutfi et al., 2022). Lutfi (2021) stated that competitive pressures, owner or manager commitment, government support, compatibility, and business relative advantages are among the factors influencing DAS adoption. As Lohapan (2021) highlighted, expertise in management accounting and management's active involvement in system implementation are the two key predictors of DAS performance.

In this study, the scope was extended to include various aspects by drawing from the work of authors who incorporated widely utilised variables derived from established theories. These aspects encompassed elements such as attitudes, pre-satisfaction, intention to continue, fundamental baseline variables and the impact of financial incentives on behaviour. Within this comprehensive framework, the mediating variables were attitudes and utility, with relative advantage being the most prominent factor influencing attitudes towards DAS and satisfaction. Both of these variables were observed to influence the intention to retain DAS (Ali et al., 2012; Lutfi et al., 2022) significantly. Consistent with this study, it was evident that adopting the right DAS system conferred a notable competitive advantage, with distinct cause-and-effect connections between the utilisation of DAS and organisational impact (Apriyanti & Yuvitasari, 2021; Ali et al., 2012). Furthermore, Alnasrallah and Saleem (2022) underscored that quality dimensions (service, information, and system quality) are the essential factors for DAS success, and these factors significantly influence organisational performance. It was also emphasised that an organisation's culture plays a critical function in improving performance by safeguarding the quality of information, data, and systems. Consequently, organisations are encouraged to cultivate an environment conducive to employee well-being, motivation, and diligence. In a parallel vein, Hasbolah et al. (2021) determined that both self-efficacy and management commitment have effects on the perception of ease of use and perceived usefulness, which, in turn, impacts the intention to adopt DAS.

Undoubtedly, DAS adoption has remained a primary concern for both researchers and practitioners. Existing literature, including works by Lohapan (2021), Hasbolah et al. (2021) and Khassawneh (2014), has revealed various factors that exert significant influences on the adoption and utilisation of DAS. Notwithstanding

these valuable contributions, a notable void exists in the scholarly landscape, particularly concerning studies that delve into the DAS utilisation. Hence, the current study aims to fill this gap in Jordanian SMEs' context.

3. THEORETICAL FOUNDATION

By utilising theories such as the Theory of Planned Behaviour (TPB) (Huang, 2023), Technology Acceptance Model (TAM) (Alsyouf et al., 2023; Alsyouf et al., 2021; Alshirah et al., 2021), and UTAUT2 (Alsyouf & Ishak, 2018; Tongsuksai et al., 2023; Venkatesh et al., 2012), previous studies in IS usage have emphasised individual viewpoints. Theories such as the TOE framework (Idris & Mohamed, 2016; 2017), Diffusion of Innovation (DOI) Theory (Lutfi & Alqutah, 2023), and RBV Theory (Ismail, 2009) have been prominently employed at the organisational level. Nevertheless, as pointed out by Williams et al., (2015) in their literature review, research on IS usage generally considers UTAUT model factors that influence the adoption of IS innovation.

Certain prior studies have embraced a multifaceted framework for exploring IS adoption, and among these, UTAUT2 has emerged as the most prominent and influential. This model has undergone thorough examination in various empirical studies encompassing diverse forms of innovations (Alsyouf et al., 2022; Venkatesh, 2022; Zhou, 2011). Besides, UTAUT2 has also been acknowledged as a valuable instrument for comprehending the adoption of complex information systems innovations (Williams et al., 2015). In this framework, possible factors influencing a company's decision to adopt a particular IS technology have been extensively studied, offering a more comprehensive and robust explanation.

The UTAUT2 model, created by Venkatesh et al. (2012) through an analysis of eight existing technology acceptance theories, is a widely recognised and extensively employed framework that underpins this study. The UTAUT2, originally conceived for organisational contexts, was subsequently adapted to centre on individual consumers. This model comprises seven independent factors: effort expectancy, performance expectancy, facilitating conditions, social influence, price value, hedonic motivation, and habit. These variables serve as measures of users' behavioural intention to embrace new technologies. The model's outcome variables encompass behavioural intention and usage behaviour. Furthermore, the moderating roles of experience, gender, and age were incorporated into the UTAUT2 framework by Venkatesh et al. (2012).

The UTAUT is a comprehensive framework that considers a range of factors affecting both the intention to utilise and the real utilisation of IT. The seven constructs within the UTAUT model, stand out as the principal drivers of user adoption and use conduct (Venkatesh et al., 2012). These factors primarily revolve around how users perceive the system's effectiveness in improving their productivity and the ease of acquiring the skills to utilise it. Furthermore, the influence of influential individuals within their workplace significantly impacts people's behaviours regarding IT usage. Moreover, individuals' perceptions regarding resource availability and support for system usage also play crucial roles (Alsyouf et al., 2023; Alsyouf et al., 2021).

Nonetheless, despite combining the most optimal elements derived from preceding models, UTAUT is not without its shortcomings, as pointed out by Alsyouf and Ishak (2018). As highlighted by Dadayan and Ferro (2005), one of its notable limitations is the relatively insufficient attention it places on the influence of individual factors on intention. In this context, Williams et al. (2015) have underscored the IT or IS literature's substantial body of evidence by illustrating the impact of individual differences on IT usage. Consequently, it is imperative to thoroughly map the network of these differences' effects on IT acceptance and usage, especially the mechanisms that drive users to adopt and use new IT or IS. As outlined by Venkatesh et al. (2011), to tackle this challenge effectively, a model well-suited for such intricate analysis is the UTAUT model. As demonstrated by Alsyouf (2020), individual factors have consistently been shown to exert a notable impact on cognitive IT/IS interpretation, with numerous previous studies connecting several of these factors to outcomes in technology acceptance. Among these factors, personnel innovativeness has consistently stood out in relevant literature as meriting thorough evaluation and investigation. In this study, an extension of this model involves the inclusion of another contextual determinant variable, specifically personnel innovativeness. This addition aims to explore the key factors influencing users' willingness to adopt DAS, which is suggested to be highly relevant for technology acceptance in educational settings (Lutfi et al., 2022). In various technology adoption studies, researchers contend that the UTAUT model can explain up to 70% of the variation in user intentions.

4. CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

4.1. Effort expectancy

Venkatesh et al. (2003) stated that the term "effort expectancy" within a system pertains to its user-friendliness. The authors clarified that complexity, user-friendliness, and perceived user-friendliness are the key components employed to characterise the effort expectancy construct. Within the study's scope, users' greater perceived ease of use of the DAS aligns with a stronger behavioural intention to utilise it. In other words, users are more inclined to intend to use it if they view the DAS as requiring minimal effort or being user-friendly. In the study's context, effort expectancy denotes the accountants' perception of the easiness of learning and becoming skilled in using the DAS. The review of existing literature demonstrates that effort expectancy substantially affects the behavioural intention to use the system (Venkatesh et al., 2011). Effort expectancy pertains to the perception of how easy it is for accountants to utilise DAS and how quickly they can acquire the skills necessary for its effective use. Essentially, it indicates the simplicity with which accountants can attain proficiency in utilising DAS. A thorough examination of the existing literature consistently highlights the substantial impact of effort expectancy on the intention to adopt technologies, a pattern observed in studies conducted by Alsyouf et al. (2021), Tongsuksai et al. (2023) and Venkatesh et al. (2011). Interest in digital systems is positively and considerably impacted by one's assumptions of how much work would be involved. Thus, this study postulates the hypothesis stated below:

H1: Effort expectancy has a positive influence on accountants' behavioural intention to adopt DAS.

4.2. Facilitating condition

Venkatesh et al. (2011) explained that a "facilitating condition" pertains to the level of trust an individual has in the organisation's existing structures, resources, and support systems in place to assist the usage of a particular system. The construct of facilitating conditions includes components such as compatibility, perceived behavioural control, and the presence of supportive resources. Venkatesh et al. (2011) describes facilitating conditions as objective factors that contribute to the smooth completion of a task. Additionally, they emphasise the importance of training users and providing support when they encounter difficulties with

technology usage. In the context of this study, facilitating conditions (FCs) are characterised as the users' perception of particular factors within the organisation that can either impede or ease their acceptance and usage of the DAS. It includes factors such as computer access, software, internet connectivity, technical support, and training provided to users. If users perceive that the facilitating conditions for using DAS are favourable and supportive, it can enhance their intention to use it. The literature review revealed that FCs impact behavioural intention to adopt (Alsyouf et al., 2022; Lutfi, 2022). In the present study, facilitating conditions are defined as the accountants' perceptions of specific factors within SMEs that either hinder or facilitate the acceptance and utilisation of accounting information systems (AIS). As evidenced by studies such as those conducted by Tongsuksai et al. (2023), and Lutfi (2022), extensive literature demonstrates that FCs exert a significant impact on the intention to adopt systems. A study by several authors (Alsyouf et al., 2022; Lutfi, 2022) found that this variable significantly impacts the adoption intentions of AIS and financial information systems. Alamin et al. (2015) study explored the connection between facilitating conditions and usage behaviour. The study found that it positively affected use behaviour. Thus, this study proposes the hypothesis below:

H2: Facilitating condition has a positive influence on accountants' behavioural intention to adopt DAS.

4.3. Performance expectancy

Performance expectancy pertains to individuals' perceptions of how the utilisation of a particular technology will assist them in efficiently and effectively accomplishing tasks in the workplace (Venkatesh et al., 2012). The elements of the performance expectancy construct, as defined by Venkatesh et al. (2012), encompass extrinsic motivations, job suitability, perceived usefulness (PU), and outcome expectations. These factors contribute to individuals' expectations regarding the benefits and outcomes they anticipate from using the technology. The degree to which users believe they can execute their jobs better after implementing and utilising the system is usually recognised as their "performance expectancy" (Venkatesh et al., 2012). It signifies a user's perception of how the use of technology will enhance their performance or provide expected benefits (Alsyouf et al., 2022). In this context, the higher the perceived performance or benefits by accountants towards the DAS, the higher their behavioural intention to use it. Thus, the

accountant will be more likely to have the intention to embrace DAS if the accountants believe that using DAS will improve their abilities in digital accounting or provide expected benefits.

Performance expectancy in this study pertains to the perception held by accountants concerning how DAS utilisation will improve their productivity and effectiveness, enabling them to carry out job duties swiftly and enhance their work quality. Earlier research indicates that the intention to use the technology can be influenced by performance expectancy (Lutfi, 2022; Tongsuksai et al., 2023; Venkatesh et al., 2011). Therefore, the following hypothesis is suggested in this study:

H3: Performance expectancy has a positive influence on accountants' behavioural intention to adopt DAS.

4.4. Social influence

Within the UTAUT framework, it is understood that individuals' intentions to use technology are affected by the social factors in their environment (Tongsuksai et al., 2023; Raza et al., 2021). Social influence is characterised as an individual's perception of the significance people in their life place on their adoption of a new system (Venkatesh et al., 2011). Furthermore, the elements of the social influence construct include image, subjective norms, and social factors. In this context, social influence signifies the impact of social interactions, opinions, and recommendations from peers, instructors, or others on users' intention to use the DAS. Users tend to develop a higher intention to utilise DAS if they perceive positive social influence regarding the use of the system, such as their peers or instructors endorsing its benefits and importance in digital accounting. In this study's context, social influence represents accountants' perception of how their colleagues and superiors at work allow or disallow utilising the DAS. The literature review indicates that social influence can affect the intention to utilise the system continuously (Tongsuksai et al., 2023). As a result, this study puts forth the following hypothesis:

H4: Social influence has a positive influence on accountants' behavioural intention to adopt DAS.

4.5. Personnel innovativeness

In this study, a new attribute called personal innovativeness was introduced to the UTAUT model. An individual's openness and capability to adapt to new technologies and embrace innovativeness is reflected by personal innovativeness.

It indicates how much an individual is ahead in adopting new systems or technologies (Agarwal & Prasad, 1998). Research suggests that individuals with higher levels of personal innovativeness are more receptive to experimenting with new systems or technologies. Personal innovativeness significantly influences the intention of accountants to utilise a DAS. Personal innovativeness is crucial in terms of accountants and their utilisation of DAS since these systems signify a technological shift from the traditional manual process. The benefits of utilising a DAS, such as increased efficiency, accuracy, and access to real-time information, are more likely to be perceived by accountants with a higher level of personal innovativeness. Besides, individuals with greater personal innovativeness are more willing to embrace change and are inclined to portray positive behaviour towards technological development. Their positive attitude enables them to be more willing to adopt and explore new tools and software, such as DAS. Resultantly, compared with accountants with lower levels of personal innovativeness, those with higher levels are more inclined to utilise DAS. They are motivated to leverage technology and embrace innovative solutions that can enhance their work processes and productivity.

In the field of research on the widespread adoption of innovations, it is widely recognised that highly innovative persons proactively seek information about innovative concepts (Brusch & Rappel, 2020). These individuals can effectively handle a significant amount of ambiguity and cultivate more positive attitudes towards adoption. User innovativeness is the propensity to experiment with new IT. Identifying individuals who are more predisposed to experiment with IT can be valuable, as they can act as catalysts for change and pioneers in introducing new IT implementations within organisations (Soliman et al., 2019). Numerous empirical studies have consistently demonstrated a strong connection between employee innovativeness and their behavioural intent to use technology (Chauhan et al. 2022; Iranmanesh et al. 2017; Tech, 2020). According to Chauhan et al. (2022), personal innovativeness strongly impacts technology usage. Nevertheless, Twum et al. (2022) confirmed the effects of personal innovativeness on facilitating condition and effort expectancy on students' e-learning and e-book adoption. The following hypotheses have been posited based on the explanation above:

H5: Personal innovativeness positively influences users' behavioural intention to use DAS.

H6: Personal innovativeness positively influences the effort expectancy.

H7: Personal innovativeness positively influences the facilitating condition.

Based on empirical literature and the formulated hypotheses, a tailored UTAUT2 model was employed in this study to investigate the determinants affecting accountants' behavioural intention to embrace DAS for their routine business operations. Figure 1 depicts the envisioned research framework for the study.

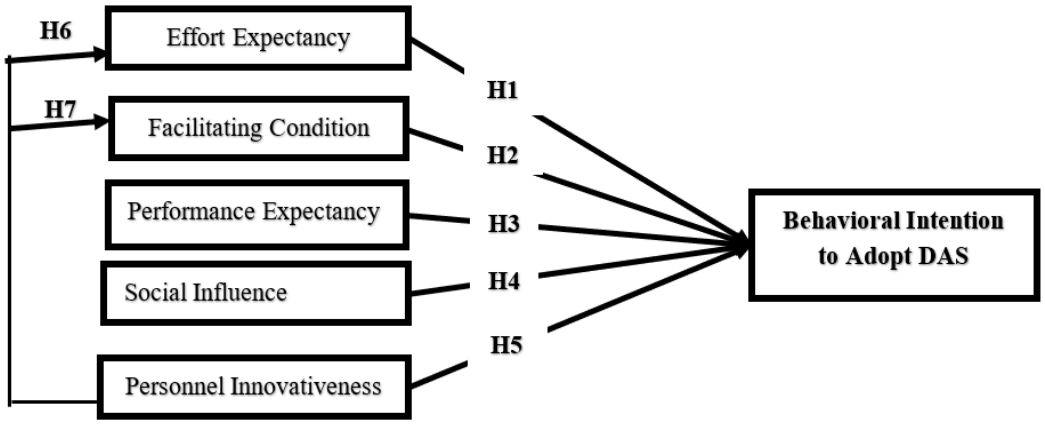

Figure 1. Conceptual Framework

5. RESEARCH METHODS

5.1. Population and procedure for data collection

A quantitative methodology was applied to empirically examine the formulated hypotheses and validate the statistical representation of the conceptual model's variables. With the objective of capturing the respondents' assessments of performance expectancy, effort expectancy, facilitating conditions, social influence, personnel innovativeness, and their connections with the intention to use DAS within Jordanian SMEs, a questionnaire survey was employed as the principal data-gathering instrument. Medium-sized enterprises have 50 to 249 full-time employees, while small enterprises employ ten to 49 individuals (Alshirah et al. 2020). As accountants possess relevant knowledge and information concerning the system, they make up the unit of analysis. They were chosen according to their user status and high familiarity with DAS.

Before commencing data collection, participants received a thorough overview of the study's nature and goals. With the assurance that they could withdraw at any

point without any repercussions, their voluntary participation was emphasised. These details were explicitly outlined in the questionnaire's instructions. Participants were also assured of their anonymity, with no personal information being recorded. The questionnaire items were meticulously developed to eliminate any potential ambiguities that might confuse respondents. These precautions were meticulously implemented to uphold ethical standards, given the sensitive and potentially incriminating nature of the research. By using items derived from prior literature, the latent variables were measured and assessed on a five-point Likert scale, ranging from 1 (indicating strong disagreement) to 5 (indicating strong agreement). The study began by compiling a comprehensive list of manufacturing SMEs from the manufacturing sector obtained through the Jordanian Chamber of Industry (JCI, 2017).

This list encompassed detailed information on a total of 17,892 SMEs. Notably, all businesses in the country must be registered to acquire a work license, as per the JCI mandate. Hence, this list was rather comprehensive. The study applied the formula delineated by Krejcie and Morgan (1970) to determine an appropriate sample size for this sizable population. This calculation suggested a sample size of 377 SMEs. Nevertheless, as per the recommendations of scholars such as and Alshir'ah et al. (2016), the author opted to distribute a larger number of questionnaires to improve the response rate. This decision was grounded in prior literature, indicating that response rates ranging from 20% to 40% were considered appropriate within Jordanian enterprises (Alsyouf, 2021). Consequently, 700 questionnaires were distributed to SMEs, effectively increasing the sample size by 85%.

Due to its lower bias rate and its capacity to yield more generalisable findings, the study adhered to the probability sampling technique. This practice has been supported by various authors, such as Zikmund-Fisher (2013). In order to select 700 respondents from the JCI list, a random sampling method was employed in this framework. With a sampling interval of 26 (calculated as 17,892 divided by 700), elements #26, #52, #78, and subsequently were systematically chosen until the final sample was reached. A total of 213 completed questionnaires were collected from the distributed questionnaires. After the exclusion of seven copies due to various issues, 206 usable responses were included in the analysis, yielding a 29.4% response rate.

5.2. Data collection instruments

A survey questionnaire, modelled after the tool created by Venkatesh et al. (2011, 2012), the creators of the UTAUT framework, was distributed to gather information from accountants working in SMEs. The questionnaire included 24 questions that corresponded to six factors. These factors were evaluated using a five-point Likert scale, consistent with prior similar research (Venkatesh et al., 2012). The questionnaire encompassed intention to adopt (4 items), EE (4 items), PE (4 items), SI (4 items), FCs (4 items), and personal innovativeness (4 items). Intention to adopt was utilised as the outcome variable, while EE, FCs, personal innovativeness, PE, and SI were used as predictor factors.

5.3. Data analysis and processing

Following the data screening process to remove incomplete or inaccurate surveys, it was coded and inputted into Statistical Package for Social Science (SPSS) for analysis. Subsequently, the data was exported as a comma-separated values (CSV) file for use in the Smart-PLS 3.2.9 software. Initial analysis included evaluating data normality through skewness and kurtosis examination, besides testing the multicollinearity assumption using the variance inflation factor. Measurement, evaluation, and structural assessment were undertaken in data analysis. The measurement model was used to evaluate the reliability and validity of the constructs, whereas the structural model was employed to assess the significance of path coefficients and explanatory power (Hair et al., 2021).

In order to investigate the research hypotheses, PLS-SEM was utilised (Hair et al., 2021). Alternative multivariate methods, including CB-SEM (covariance-based SEM) or multiple regression, are also feasible choices. Nevertheless, PLS-SEM was selected for the following key reasons. First, PLS-SEM has been frequently employed to examine technologies acceptance model, making it capable of managing both reflective and formative latent variables (Hair et al., 2021). This method also facilitates better comparisons with existing literature. Secondly, PLS-SEM appeared more suitable than CB-SEM due to the model's complexity. Lastly, PLS-SEM offers more flexibility regarding variable distribution and sample size prerequisites than CB-SEM (Hair et al., 2021).

Although PLS analysis provides valuable statistical outcomes, it has constraints in handling intricate, non-linear connections. Researchers have employed a two-stage

analysis approach by integrating PLS-SEM with ANN analysis to overcome this limitation (Priyadarshinee et al., 2017), as evidenced in research by Sharma et al. (2021). Furthermore, ANN technique was utilised to categorise the relative impacts of solely significant predictors identified through the PLS-SEM analysis (Sharma et al., 2021).

6. RESULTS

6.1. Assessment of measurement model

The measurement model in the present research was assessed against parameter criteria by executing the initial PLS algorithm (Table 1). As per the minimum threshold suggested by Hair et al. (2021), the factor loadings (0.719 to 0.890) for the items within the different constructs exceeded 0.5. Additionally, as suggested by Fink (2017), Cronbach's alpha values (0.758 to 0.878) were all higher than 0.7. The model's reliability was further confirmed by composite reliability values (0.846 to 0.916) that exceeded .70. Furthermore, the average variance extracted (AVE) values varied between.580 and.735, surpassing the acceptable threshold value of.500. Hence, the convergent validity for all the constructs is at satisfactory levels (Hair et al., 2021).

6.2. Discriminant validity test

Discriminant validity assesses the exclusiveness of all the constructs defined in a hypothesised model. By utilising both Fornell-Larcker and strict heterotrait-monotrait (HTMT) ratio criteria, this study ascertained each construct's uniqueness in the model (Table 2). Table 2 illustrates that all the square roots of the AVE in the Fornell-Larcker criterion surpassed the inter-factor correlations (Fornell & Larcker, 1981). Additionally, calculated based on the correlation between two latent variables, the HTMT ratios were utilised to evaluate discriminant validity (Hair et al., 2021). As recommended by Hair et al. (2021), the values of HTMT for the model's latent constructs should not surpass .900, signifying discriminant validity. Table 3 demonstrates that all values remained below this threshold, indicating that distinct concepts were represented by the latent variables without any overlap.

Constructs	No. of Items	Item	Factor Loading	CA	CR	AVE
EE	Four (4)	EE1	0.682	0.766	0.847	0.583
		EE2	0.823			
		EE3	0.739			
		EE4	0.800			
IUDAS	Four (4)	IUDAS 1	0.907	0.900	0.941	0.804
		IUDAS 2	0.895			
		IUDAS 3	0.922			
		IUDAS 4	0.759			
FC	Four (4)	FC1	0.791	0.861	0.868	0.708
		FC2	0.880			
		FC3	0.881			
		FC4	0.806			
PI	Four (4)	PI1	0.895	0.855	0.859	0.701
		PI2	0.774			
		PI3	0.770			
		PI4	0.898			
PE	Four (4)	PE1	0.847	0.875	0.878	0.729
		PE2	0.837			
		PE3	0.893			
		PE4	0.835			
SI	Four (4)	SI1	0.874	0.878	0.881	0.733
		SI2	0.873			
		SI3	0.819			
		SI4	0.853			

Table 1. Reliability Assessment and Convergent Validity

Note: EE - Effort Expectancy, IUDAS - Intention to Use Digital Accounting System, FC - Facilitating Condition, PI - Personal Innovativeness, PE - Performance Expectancy, SI - Social Influence, CA – Cronbach Alpha, CR - Composite Reliability, Average Variance Extracted - AVE

Construct	EE	FC	IUDAS	PE	PI	SI
EE	**0.764**					
FC	0.368	**0.841**				
IUDAS	0.377	0.481	**0.898**			
PE	0.459	0.515	0.524	**0.855**		
PI	0.389	0.267	0.417	0.423	**0.838**	
SI	0.374	0.506	0.480	0.460	0.265	**0.857**

Table 2. Fornell-Larcker Result

Note: diagonal elements in Bolde are the square root of the AVE.

Note: (EE): Effort Expectancy, (IUDAS): Intention to Use Digital Accounting System, (FC): Facilitating Conditions, (PI): Personal Innovativeness, (PE): Performance Expectancy, (SI): Social Influences.

Construct	EE	FC	IUDAS	PE	PI	SI
EE						
FC	0.439					
IUDAS	0.414	0.524				
PE	0.524	0.578	0.581			
PI	0.454	0.303	0.468	0.489		
SI	0.437	0.571	0.531	0.521	0.303	

Table 3. HTMT Criteria

Note: (EE): Effort Expectancy, (IUDAS): Intention to Use Digital Accounting System, (FC): Facilitating Conditions, (PI): Personal Innovativeness, (PE): Performance Expectancy, (SI): Social Influences.

6.3. Multicollinearity assumption

Collinearity among exogenous latent variables must be examined when developing an internal model to observe if any variables should be removed, combined, or converted into latent variables of a higher order. Collinearity issues within the inner model are evaluated by calculating the variance inflation factor (VIF) values. The VIF should be lower than 3. Hair et al. (2021) indicated that values up to 5 are considered appropriate. The collinearity test results are summarised in Table 4. The results indicate that no VIF values are more than 3, signifying that collinearity did not present an issue in this study.

Constructs	VIF
FC	2.438
EE	2.868
PI	2.022
PE	2.861
SI	2.032

Table 4. The Multicollinearity Test
Source: Authors

6.4. Structural model analysis

Bootstrapping using a two-tailed test with a sample size of 5,000 and a significance level of 5% was undertaken to test the study's hypotheses. According to Hair et al. (2021), the path coefficient (β) indicates the extent to which one variable affects another. There is a positive association between the exogenous and endogenous variables when T-statistics are at least 1.96 and the path coefficient is above 0.2 (Hair et al., 2021).

A statistically significant positive association between the exogenous and endogenous variables was required to support the hypotheses, using a 5% significance level (P-value < 0.05) (Hair et al., 2021). The bootstrapping analysis

of the structural model (Table 5) indicates that H1 is supported, as effort expectancy demonstrates a positive and statistically significant effect on the willingness to adopt DAS ($\beta = 0.149$, $T = 2.210$, $p < 0.05$). The results also suggest that facilitating conditions indicates a preference for the desire to adopt DAS ($\beta = 0.172$, $T = 2.869$, $p < 0.05$), providing evidence for acceptance of H2. A favourable and statistically significant relationship between social influence and willingness to utilise DAS was discovered ($\beta = 0.318$, $t = 5.828$, $p < 0.001$). Thus, H4 was supported. Personal Innovativeness also had a statistically significant and beneficial influence on adopting DAS ($\beta = 0.190$, $t = 2.943$, $p < 0.01$), suggesting that H5 is also supported. Additionally, H6 and H7 are also supported by the data ($\beta = 0.417$, $t = 6.677$, $p < 0.001$; $\beta = 0.386$, $t = 6.221$, $p < 0.001$) since a positively statistically significant correlation exists between personal innovativeness and both effort expectancy and facilitating conditions. Nevertheless, the data ($\beta = 0.019$, $t = 0.349$, $p > 0.05$) do not support H3, demonstrating that performance expectancy does not exert significant influence on the desire to utilise or adopt DAS.

Hyp	Path	Mean (β)	T Value (≥ 1.960)	P Values (< 0.050)	Supported ?
H1	EE -> IUDAS	0.149	2.210	0.031	Yes
H2	FC -> IUDAS	0.172	2.869	0.006	Yes
H3	PE -> IUDAS	0.019	0.349	0.724	No
H4	SI -> IUDAS	0.318	5.828	0.000	Yes
H5	PI -> IUDAS	0.190	2.943	0.004	Yes
H6	PI -> EE	0.417	6.677	0.000	Yes
H7	PI -> FC	0.386	6.221	0.000	Yes

Table 5. Hypotheses Path Analysis

Note: (EE): Effort Expectancy, (IUDAS): Intention to Use Digital Accounting System, (FC): Facilitating Conditions, (PI): Personal Innovativeness, (PE): Performance Expectancy, (SI): Social Influences.

The model's explanatory power is measured by its R2 coefficient. As per Hair et al. (2021), the R^2 coefficient gauges a model's strength by indicating how much variance its core components explain. Values ranging from 0.50 to 0.75 represent a considerable explanation, while values between 0.25 and 0.50 are considered poor but adequate.

The Q2 value characterises the model's performance in explaining the data's variation and possible generalisability to additional data (Hair et al., 2021). The Q2 values are more diagnostic for accurate predictions when the gap between the predicted and original values is smaller. Based on Hair et al. (2021), predictive

power for an endogenous latent variable is low, moderate, and high for values of at least 0, 0.25, and 0.5, respectively. Table 6 displays the Q-square of the intention to use a digital accounting system (IUDAS).

Variables	Q-Square	R-Square
IA DAS	0.547 (Strong)	0.61 (Moderate)

Table 6. Results of Q-Square and R-Square

Note: IADAS - Intention to Adopt Digital Accounting System

6.5. ANN analysis results

As described by Sharma et al. (2021), by employing ten neural networks to prevent the model from overfitting the training data, a tenfold cross-validation method was considered, making them deep-learning model. The ANN model was assessed and supported deep learning an all-neuron modes through its two hidden layer deep structure. In order to activate the input and hidden layers, sigmoid functions were used and applied by the researcher in order to hidden neurons and output neurons. The neural networks underwent training with 0.90 of the available data, while the remaining 0.10 was set aside for testing. A sensitivity analysis model was performed to evaluate the significance of the input neurons. In order to express the significance of each neuron in a standardised manner, their relative importance was converted into a percentage by dividing each neuron's importance by the highest observed importance (Alhumaid et al., 2025).

Furthermore, in line with the recommendation of Akour et al. (2022), to evaluate the model's performance, the root mean square error (RMSE) was calculated for the ten neural networks. The RMSE values mean obtained from both the testing and training processes, which were notably low, falling within the range of 0.409 to 0.538. Therefore, the results of the ANN analysis exhibit a high degree of precision, and we can conclude that using ANN model enhances the research model accuracy. Comprehensive

Additionally, Sharma, and Sharma (2019), and Qasem et al. (2020) ranked the predictors according to their normalised relative importance in predicting the endogenous variable. The results of the sensitivity analysis are displayed in Table 7. PI has the highest influence, with a normalised relative importance of 100%, followed by SI, which accounts for 94.7% of the predictive power. Facilitating conditions hold the third position with 63.8%, and effort expectancy contributes

60.3%. These outcomes provide insight into the respective significance of each factor in forecasting behavioural intention to adopt DAS.

	Importance	Normalize Importance	Rank
EE	0.53	%60.3	4
FC	0.56	%63.8	3
SI	0.83	%94.7	2
PI	0.88	%100	1

Table 7. Sensitivity Analysis

A methodology similar to the method used by Sharma and Sharma (2019) was employed in this study to ascertain the R-square (R^2) values of the ANN analysis. The findings revealed that the analysis demonstrates an impressive accuracy level of 96.97% in forecasting behavioural intention to adopt DAS. Comparatively, the R^2 value for the ANN model outperformed the partial least squares-structural equation modelling (PLS-SEM) method, which yielded an R^2 value of 61.0%.

Qasem et al. (2020) assessed the path coefficient and normalised relative importance to compare the PLS-SEM and ANN analysis findings, respectively. The comparison between the findings of the ANN method and the PLS beta values analysis is outlined in Table 8.

Paths	PLS Beta Value (Path Coefficient)	PLS Rank	ANN – NI	ANN Rank
PI -> IUDAS	.190	2	%100.000	1
SI -> IUDAS	.318	1	%94.700	2
FC -> IUDAS	.172	3	%63.800	3
EE -> IUDAS	.149	4	%60.300	4

Table 8. PLS and ANN Analysis Results

According to Table 8, in both the ANN model and the PLS-SEM analysis results, social influence, facilitating condition, personal innovativeness, and effort expectancy are ranked similarly. The comparative analysis between the PLS and ANN methods reveals no substantial differences in the ranking of factors for IUDAS. Both methods identify PI and SI as the most influential variables. PLS-SEM showed SI a high beta value of 0.318, and ANN ranked it second-place in normalized importance. In the model, PI follows, with a beta value of 0.190 and a first ranking in the ANN method. Followed by FC with a beta value of 0.172 and a third-place ranking in the ANN method. EE has the least influence on IUDAS in

both models, with a beta value of 0.149 and a fourth-place ranking in ANN. The alignment of rankings between ANN and PLS strengthens the reliability of the findings by confirming that PI and SI play a more significant role in IUDAS than other factors.

7. DISCUSSION

The effect of effort expectancy on accountants' behavioural intention to utilise DAS was investigated as the primary research hypothesis in this study. The study uncovered a notable positive impact of effort expectancy on accountants' behavioural intention to utilise DAS, affirming prior research findings (Alsyouf et al., 2022; Lutfi, 2021). The hypothesis suggests that effort expectancy significantly predicts behavioural intention when adopting DAS. According to these results, businesses in Jordan, particularly in the manufacturing sector, are more likely to implement DAS that are user-friendly and make their financial process easier. The word "positively substantial" indicates a strong correlation between increasing effort expectancy and increasing behavioural intention to utilise DAS.

The findings, also reflected in comparable values across the averages of the variables, reveal that users do not face considerable obstacles while utilising the system. Hence, the users' experience with these systems is generally positive, and they find them intuitive and easy to navigate. These findings are consistent with Lutfi (2022), who underlined the importance of accountants viewing a system as user-friendly to increase the likelihood of consistently using it. Besides, these results are correlated with several UTAUT studies, which found that effort expectation was a significant predictor of behavioural intention to use technology (Lutfi, 2022; Venkatesh et al., 2011). Thus, the design of user-friendly accounting apps is crucial as it facilitates familiarity with the system's contents and operation for MSMEs (Lutfi, 2022). It fosters the opinion that using the system to undertake accounting tasks is simple and effortless. In general, effort expectancy significantly impacts accountants' willingness and motivation to use DAS. Therefore, considering and understanding this factor in the design of digital systems could enhance the success rates of accountants opting for DAS.

Furthermore, the effect of facilitating conditions on the accountants' behavioural intention to employ DAS was explored in the second research hypothesis. The study determined that the intention to use DAS was significantly impacted by facilitating conditions, corroborating results from other works, such as Lutfi (2022). This

finding implies that accountants typically perceive that the necessary resources and support from their organisations are easily accessible, thereby boosting their intention to employ DAS. This outcome can be linked to the presence of comprehensive training programmes and resources that enable quick access to centralised information, especially those made available by colleagues. The availability of easily accessible information not only simplifies the workflow but also nurtures a willingness to use the system. With abundant resources, accountants tend to favour interacting with the system. The assessment of these resources, which provide information and support during system implementation, cultivates significant perceptions of facilitating conditions, ultimately strengthening the intention to persist in using the system.

The term "positively significant" denotes that an increase in supporting conditions within SMEs results in an increased intention to use accounting software. Consequently, encouraging more SMEs to use accounting applications requires improving the facilitating condition, which includes organisational and technological infrastructure support (Venkatesh et al., 2011). This finding corroborates with Lutfi (2022) and Imjai et al. (2023), who assessed the eagerness to utilise accounting and financial information systems correlated with facilitating conditions. Mustolih and Mahardhika (2022) stated that knowledge, accessible resources, help, and supplied facilities are all part of evaluating and facilitating circumstances for SMEs to adopt the technology. Endorsing this hypothesis signifies that these factors are readily accessible in Jordan, providing support for the behavioural intention to employ DAS in manufacturing businesses. Facilitating environments are also created when SMEs can access enough resources, such as necessary equipment, training, and assistance (Lutfi, 2021). Increased availability of facilitating conditions encourages the use of systems (Imani & Anggono, 2020; Lutfi, 2020; Venkatesh et al., 2011).

Furthermore, this study assessed the effect of performance expectancy on accountants' intention to use DAS. Surprisingly, the findings indicated that performance expectancy did not exert a significant influence on their intention. This discovery contrasts with the outcomes of previous empirical investigations (Arain et al., 2019; Khalilzadeh et al., 2017; Lutfi, 2022; Kumar & Bervell, 2019). Similarly, this result contradicts prior UTAUT research conducted by Venkatesh et al. (2011), which identified users' expectations of a system as significant factors

influencing a company's decision to adopt a system (behavioural intention). Lutfi's (2022) study also supports the finding that SMEs in Jordan have higher intentions to continue utilising accounting information systems if they have higher expectations of future performance. The finding is also consistent with Saad et al. (2022), who found that using financial applications increased accuracy, fastened the accounting process, and facilitated the early detection of errors. One possible explanation relates to the characteristics and quality of DAS currently available in Jordan, which may offer limited functionalities that do not substantially enhance accountants' daily tasks, thereby weakening perceptions of performance benefits. Additionally, many accountants may have insufficient knowledge or training regarding the capabilities of DAS, reducing their ability to recognize its potential value. Organizational factors such as resistance to change, inadequate management support, or resource limitations may also play a stronger role in shaping adoption decisions, potentially overshadowing performance-related beliefs. These contextual factors may collectively explain why performance expectancy did not emerge as a significant determinant in this study.

Additionally, it was posited that social influence would exert an impact on intention to utilise DAS. The investigation disclosed that social influence had a statistically significant and positive influence on their intention. This outcome corresponds with prior research (Zhou, 2011; Venkatesh et al., 2011), which similarly recognised social influence as a pivotal predictor of users' adoption of technology. The results highlight the constructive role of social influence, which pertains to the impact of others on individuals' attitudes and behaviours, in accountants' usage for DAS. It implies that accountants who perceive their peers or influential figures, such as parents or teachers, endorse the importance and value of using DAS and are more inclined to embrace this technology for business purposes. This discovery underscores the potential of social influence as a potent tool for enhancing the adoption and utilisation of technology-based accounting tools among accountants.

The study determined the influence of personal innovativeness on facilitating conditions, effort expectancy, and IUDAS, confirmed and concurred with other studies (Twum et al., 2022). The characteristics of creative user's personalities may be responsible for this result. These creative users may be risk-takers and eager to experiment with various novel technical services as they are inquisitive, adventurous, and stimulation-seeking and can handle a high degree of uncertainty.

Users who are personally innovative are intrigued by novelties in high-tech services since they are open to risks and fresh experiences. Therefore, they are interested in using high-tech devices to discover their capabilities, making them happy and excited. Users will believe DAS is simpler to use and offer greater benefits if they are willing and able to experiment with new technology. The ease with which users with higher personal innovativeness use other technologies and the advantages they experience when using them will increase the possibility that they will intend to employ DAS. The positive association identified between personal innovation and the intention to use DAS can be further understood by considering how innovative individuals typically engage with new technologies. Accountants with high levels of innovation are generally more willing to explore unfamiliar digital tools, experiment with new system functionalities, and adapt their workflows to incorporate emerging technologies. Such individuals may actively seek opportunities to integrate DAS with other digital applications—for example, linking DAS outputs with data visualization software or automation tools—which enhances their perception of the system's usefulness. Their openness to change and proactive learning orientation thus increases their likelihood of adopting DAS, providing a clear rationale for the positive effect observed in the study.

In conclusion, the study utilised an ANN model to forecast accountants' behavioural intention to use DAS. The findings of the ANN model are closely aligned with those of the PLS-SEM. The results of the ANN model illustrated its capacity to provide highly accurate predictions, achieving an impressive precision level. Additionally, the ANN model demonstrated a greater explanatory power level (R^2) in comparison to the PLS-SEM model, signifying its greater effectiveness in forecasting accountants' intentions to adopt DAS. This innovative discovery highlights the potential of the ANN model as a valuable tool for anticipating the adoption of DAS by accountants. In summary, this study underscores the capacity of the ANN method in predicting accountants' propensity to utilise DAS, surpassing the predictive capability of other modelling methodologies.

8. CONCLUSION

The study's primary objective was to investigate the determinants influencing accountants' behavioural intention to adopt DAS through a two-stage approach that combines SEM and ANN. The study's results highlight the effectiveness of this dual approach in identifying critical factors that impact accountants' behavioural

intention to embrace DAS. A deeper understanding of these factors can empower managers to provide better support and cater to accountants' technology adoption behaviour.

The UTAUT model was extended by introducing the concept of personal innovativeness to assess the intention to adopt DAS and to identify the key factors influencing accountants' intention to utilise the system. The findings indicated that the intention to use DAS was impacted by effort expectancy, facilitating conditions, social influence, and personal innovativeness. Furthermore, the study revealed the substantial influence of personal innovativeness on both effort expectancy and facilitating conditions.

Research implications for policies

As discussed below, numerous policy implications can be inferred based on the positive effects of effort expectancy, facilitating conditions, social influence, and personal innovativeness on accountants' behavioural intention to use DAS. Encouragement of Digital Integration: Policymakers should devise strategies that encourage the incorporation of digital systems into various business operations. These policies should ensure that users receive the essential resources and assistance needed to make effective and efficient use of digital technologies.

Engagement with Non-Governmental Organisations (NGOs) and Technology Firms: Establishing partnerships with non-governmental organisations, technology companies, and internet service providers holds significant potential for delivering DAS and digital tools to businesses. Through collaborative efforts, these organisations can collectively provide the necessary resources and assistance to promote the extensive adoption of digital technologies in the field of accounting. Encouraging Positive Social Norms: Establishing a culture that not only normalises but also places a high value on DAS usage is vital. Collaborative initiatives involving the Amman industry chamber, senior management, and key decision-makers can cultivate an atmosphere where the incorporation of digital technologies is welcomed and regarded as highly desirable.

Training and Assistance Initiatives: Offering workshops, online materials, and technical support plays a pivotal role in equipping users with the essential competencies required for proficiently employing digital technologies in their business operations. Government-led programmes should be organised to elevate

users' expertise in harnessing digital tools as indispensable assets for their businesses. These policy implications aim to encourage the widespread adoption of DAS among accountants, leading to increased efficiency and effectiveness in the accounting industry.

Research implications for practice

Because of the significant effects of effort expectancy, facilitating conditions, social influence, and personal innovativeness on accountants' behavioural intention to use DAS, the following implications for practice can be identified:

Acknowledging the impact of social elements on the behavioural intention of accountants, it becomes essential to encourage group engagements, virtual forums, and peer-to-peer interactions. Facilitating platforms for users to cooperate and exchange their encounters with digital technology utilisation can significantly enhance their acceptance and adoption.

Underscoring the significance of personnel innovativeness and facilitating conditions in the context of digital technologies can cultivate a significant attitude towards their adoption. Ensuring widespread access to technologies is vital for simplifying its utilisation. Managers should strive to create an equal environment, eliminating obstacles that hinder the accessibility of digital technologies to enhance the perceived importance and ease of access for their adoption.

Furthermore, providing training and support is crucial for addressing users' concerns about the perceived effort expectancy related to digital technologies. Managers should arrange training programmes and provide ongoing assistance to assist users in building the requisite skills for efficient system utilisation. By delivering guidance and support, users can overcome any perceived challenges and develop confidence in employing DAS for their daily operations.

Additionally, monitoring and evaluating the utilisation of DAS is crucial for assessing their effectiveness and pinpointing areas in need of improvement. Managers should conduct regular assessments of the factors influencing users' behavioural intention to adopt and collect feedback from their experiences. This valuable feedback can inform customisation in operational strategies, ensuring the optimal integration of DAS into the business processes. By implementing these strategies, organisations can foster an environment that promotes the acceptance, adoption, and effective use of digital technologies among accountants.

Theoretical implications

This work contributes to the existing literature on the application of UTAUT in exploring the adoption and utilisation of technology within SMEs. Firstly, in addition to the UTAUT's constructs, personal innovativeness was considered in the model. To the author's knowledge, limited studies have empirically assessed theoretical models of the determinants influencing IADAS. The model is expected to help build a good understanding of users' behaviour towards DAS. If the DAS providers wish to be proactive in offering tactics that will encourage users and businesses to utilise digital systems, a contribution to this work is required.

This study's outcomes are expected to be helpful to SME managers and decision-makers who must choose which particular forms of digital systems they need to use and how their decisions and context-specific aspects may affect the prospective usage of the DAS. The researcher also anticipates that the model can serve as a first step in developing a theory for the use of DAS by identifying significant variables to be evaluated, allowing future studies to explore their interactions with one another and with other relevant constructs. Secondly, this study marks a significant milestone in Jordan as it introduces a hybrid SEM-ANN methodology for modelling users' behavioural intention towards adopting DAS. The findings highlight a breakthrough discovery as the ANN model exhibits remarkably high accuracy in predicting users' intention to embrace technology in accounting. Consequently, the study's two-stage SEM-ANN approach contributes to the existing empirical research on applying this methodology.

Limitations and recommendations for future studies

Although the author attempted to cover all necessary aspects of the studied topic, the study has limitations. The study solely focused on Jordanian SMEs. Nevertheless, different results may emerge when examining larger organisations or different levels, such as managers, within Jordan or across diverse geographical boundaries. Moreover, although the total sample size met the minimum criteria, it is advisable for future research to gather more extensive data to improve the precision of the DAS adoption model. The constraints open the door to additional research opportunities. Therefore, future investigations could delve into cross-cultural comparisons of the extended UTAUT model in diverse emerging economies. Researchers have the capacity to adapt the research model laid out in

this study by integrating diverse contextual factors, including elements like hedonic motivation, habit, and other facets of perceived risk, such as security risk.

Furthermore, although efforts were made to include a diverse range of SMEs, the representativeness of the sample cannot be fully guaranteed, as participation was based on voluntary responses and may not reflect the broader population of Jordanian firms. Additionally, accountants' responses may have been influenced by social desirability bias, particularly given the increasing institutional emphasis on digital transformation, which could lead participants to overstate their intention to use DAS. Moreover, the study did not control for potentially influential organizational characteristics such as firm size, industry sector, or technological readiness, all of which may shape adoption behaviors. Future research should aim to employ stratified sampling techniques, incorporate measures to reduce response bias, and include these organizational variables to strengthen the robustness and generalizability of the findings.

Moreover, future studies may delve into environmental aspects, such as the influence of government support on the adoption of digital systems. Therefore, using the developed model in other countries and varying circumstances might be intriguing. Additionally, future research can assess other relevant variables by conducting interviews with professional experts who are capable of explaining the intention to adopt DAS. Assessing the moderating and mediating roles of important variables can also be a new direction for future studies. Furthermore, future studies are also suggested to include other variables in the UTAUT2 model, such as perceived risk, top management support, government support, habit, and other elements of perceived risk, such as security risk. Finally, as sensitivity analysis revealed, personal innovativeness is the most significant factor behind DAS adoption. Therefore, personal innovativeness significantly influences an accountant's intention to use a DAS by shaping their attitudes, perceptions, and openness towards technology adoption. Thus, organisations should recognise the importance of personal innovativeness and encourage their accountants to attend training sessions, provide them with resources, and create a supportive environment that fosters a culture of innovation. This approach can further strengthen the intention to use DAS among accountants with varying degrees of innovativeness. Additionally, scholars are encouraged to conduct research on the proficiency side of DAS users and examine its impact on digital technology use.

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