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The Role of E-Accounting Adoption on Business Performance: The Moderating Role of COVID-19

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Citation: Lutfi, Abdalwali, Saleh Nafeth Alkelani, Hamza Alqudah, Ahmad Farhan Alshira'h, Malek Hamed Alshirah, Mohammed Amin Almaiah, Adi Alsyouf, Mahmaod Alrawad, Abdelhameed Montash, and Osama Abdelmaksoud. 2022.

The Role of E-Accounting Adoption on Business Performance: The Moderating Role of COVID-19.

Journal of Risk and Financial Management 15: 617. <https://doi.org/10.3390/jrfm15120617>

Academic Editor: Kentaka Aruga

Received: 27 October 2022

Accepted: 8 December 2022

Published: 19 December 2022

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Abstract: In the last decade, information systems (ISs) have made dynamic developments in light of their ability to enhance the performances of businesses. In relation to this, an organization that is effectively and efficiently managed often displays optimum performance using financial systems such as electronic accounting (e-accounting). Thus, essentially, e-accounting is utilized for the automation of operational processes and for improving business efficiency and performance. More currently, e-accounting dynamic development has laid credence to the performance of businesses in a way that the influence cannot be exaggerated. Nevertheless, past studies evidenced that successful e-accounting depends on critical success factors, and hence this study primarily aims to conduct an evaluation of e-accounting using DeLone and McLean's information system model (DM ISM) among firms in Jordan. More specifically, this study determines the influence of information quality, system quality, service quality, system usage, and user satisfaction on business performance. The current study adopted a quantitative method, applying a self-administered survey questionnaire for the purpose of data collection from 104 e-accounting users. This study employed partial least squares structural equation modeling (PLS-SEM) to validate the data, and based on the findings, system quality and information quality affect system use; service quality of e-accounting had no significant impact on use, but e-accounting use had a significant influence on the satisfaction of users. Moreover, e-accounting system use and user satisfaction positively influence business performance. This study is an extension of the current IS literature, particularly of those focused on determining the effects of e-accounting benefits. This study validated the proposed model in the context of Jordanian firms and contributes to both the literature on and practice of e-accounting. This study provided implications, limitations, and recommendations for future research.

Keywords: DeLone and McLean IS success model; DM ISM; electronic accounting; e-accounting usage; COVID-19; user satisfaction

1. Introduction

Current business models have been significantly influenced by globalization, dynamic digitalization, information and knowledge competition, and dissemination (Lutfi et al. 2022a). In addition, the present technological era has led to great investment in data processing computerization in different activities, industries, and sectors. In essence, technological progressions are linked with the use of technological methods and applications, and eventually, these have led to several changes in business processes (Lutfi 2022a). In other words, using IT and IS has ultimately brought on several opportunities and benefits to all business types (Lutfi 2021). More specifically, financial firms are continuously faced with logistical determinants and issues compared to their larger counterparts due to a smaller number of employees and lower allocation of budget (Ghobakhloo et al. 2019; Lutfi 2022b). Despite the similar demands in experiences, these conditions are more conducive to a computer environment with fewer complications compared to major firms. Notably, there is an urgent need among financial firms to enhance their service levels to meet their objectives in light of regulation, monitoring, cost reduction, procurement of materials, controlling inventory, and using their meager resources (Alshirah et al. 2021a). They are expected to conduct activities in tandem with their IT department, which is why they have turned to the use of electronic accounting (e-accounting) for improvement. Such improvements relate to market competitiveness, expense reduction, management, better service delivery, management functionality, and fewer errors (Lutfi et al. 2022b).

Moreover, computerized ISs have been utilized in businesses to meet objectives and goals and for greater management effectiveness and efficiency (Al-Mugheed et al. 2022; Lutfi 2020; Elshaer and Saad 2022; Syahidi and Asyikin 2018) in a way that ISs have become an indispensable business element for issues resolution (Lutfi et al. 2020; Bokhari 2005). In fact, without top technologies, enterprises cannot function, as they are essential in resolving issues related to their businesses (Al-Frijat 2014; Alshira'h and Abdul-Jabbar 2020a). Consistent with this argument, Saarinen (1996) evidenced ISs' role in business endeavors' success, and similarly, Thong and Yap (1996) focused on the IS level that contributes to goal achievement and performance enhancement among organizations.

In relation to the above discussion about ISs, e-accounting lies at the core of enterprises, without the use of which, the integration, coordination, and control of activities would be impossible (Alshirah et al. 2021b; Das 1989). This is because e-accounting forms a part of management information systems that collects, analyzes, categorizes, addresses, and provides various financial information to the concerned beneficiary, users, and managers for informed decision making (Al-Dalaien and Dalayeen 2018; Arora and Kumar 2022). This is reflected by Hurt's (2013) definition of the term as a set of documents, activities as well as technologies that work interdependently but in tandem for gathering, processing, and reporting information to several parties (internal and external stakeholders) to make informed and accurate decisions concerning the organization. Essentially, e-accounting functions towards documenting events and transactions after which it generates information for the evaluation of performance while providing a complete picture of the financial transaction processes of the firm (Alshirah et al. 2021c). The system also encapsulates an integration of computer-based and information technology (IT)-linked resources to keep abreast of and report accounting activities and transactions of organizations.

In the past several years, firms in Jordan have adopted efforts towards using e-accounting in order to enhance their business operations' efficiencies and capabilities. As a result, the increasing number of e-accounting firm adopters has encouraged the Jordanian government to appropriate initiatives and grants to resolve limited companies' resources (Idris and Mohamad 2016). Nonetheless, Jordanian firms, similar to those in developing nations, have been struggling in their e-accounting usage to leverage its full potential, specifically when it comes to business analytics and decision support (Lutfi et al. 2022c) because of the complex decisional modules and costs of system implementation. Such use has generally led to the exploitation of real-time information provision for evaluating and analyzing functional data as reflected by the positive decision-making outcome for

enhanced business performance. E-accounting usage enhances the efficiency and effectiveness of the flow of information, enabling effective management of decision making and meeting organization aims and objectives (Khassawneh 2014; Saad et al. 2022).

Therefore, the present study aims to identify and evaluate the influence of e-accounting on business performance because notwithstanding the numerous studies that have been dedicated to the topic (Lutfi 2022a; Lutfi et al. 2017), an organized assessment of the effects on business performance remains elusive and up for debate. This study is based on a thorough literature review of studies evidencing the direct relationship between e-accounting and the IS area and business performance (e.g., Fitrius 2016; Ghobakhloo et al. 2019; Eid and Abbas 2017; Nguyen and Nguyen 2020; Okon et al. 2021). This study follows its predecessor studies in using DM ISM (2003) (e.g., Fadelelmoula 2018) in evaluating business performance in light of quality dimensions, e-accounting usage, and user satisfaction. This study proceeds to analyze the variables' relationships, assuming that the outcome would be optimum business performance. The influence of critical success factors on business performance and the way businesses can improve performance still needs evaluation, and considering the streamlined use of e-accounting among businesses, there is a need to examine the factors that play a key role in improving decision-making quality among organizations for their enhanced performance.

Thus, this study is organized as follows: Section 1 introduces the study and its overview, and Section 2 reviews the literature concerning the topic based on the study foundation and presents the empirical model based on empirical findings. This is followed by Section 3, which is dedicated to the presentation of the theoretical background and framework. Adopted methods for this study's completion, covering data foundation, and sample frame as well as data analyses were elaborated on in Section 4. Section 5 presents and discusses the findings and their implication while the final section, Section 6, enumerates the study limitation, upon the basis of which recommendations are listed for future studies.

2. Literature Review and Hypotheses Development

2.1. Information Quality

Literature concerning ISs is saturated with works on information quality (IQ) that consider IQ to be one of the important factors for IT use among businesses. IQ is described as the ability of the system to provide relevant, accurate, complete, and timely information to the concerned users for their decision-making processes. It measures the output quality of the information generated by IT (DeLone and McLean 1992, 2003), and such quality mitigates errors during transactions, which makes it possible to produce accurate and valuable information for the process of decision making. Past studies that examined the relationship between IQ and using IT have revealed inconsistent findings, and as a result of which, a solid conclusion could not be reached (Li and Wang 2021). For instance, Anggadini (2015) found that IQ had a significant effect on e-accounting use in Indonesian firms whereas Alzoubi (2011), in his study of financial accountants and managers of Jordanian firms, found that information quality had a significant effect on e-accounting. Other studies, on the other hand, supported an insignificant effect of IQ on e-accounting (e.g., Daoud and Triki 2013; Jaoua et al. 2022) while Al-Hiyari et al. (2013) found similar insignificant effects of several IQ dimensions on IT use. Thus, this study develops the following hypothesis for testing:

H1. *Information quality has a significant influence on the use of e-accounting.*

2.2. System Quality

Another top construct of DM ISM is system quality (SQ), and it is referred to as the level of technical efficiency in terms of the system's easy use, time of response, reliability, flexibility, and security (DeLone and McLean 1992, 2003). E-accounting systems of high quality are capable of providing adopters with ratings on the basis of their perceptions of the

e-accounting system and its simplicity of usage. SQ is considered to be a top determinant of e-accounting IS use among firms, and this is reflected in DeLone and McLean's (2003) study, which claimed that the effective use and design of an IS can promote its effectiveness despite the lack of theories supporting a direct effect. A majority of studies have tested such a relationship and reported mixed findings.

Thus, the present study considered system quality a factor of the DM ISM to examine its effect on e-accounting use among businesses for enhanced decision making and performance. On the basis of the results in past studies, there is a significant relationship between system qualities and IS use (e.g., Almaiah et al. 2022a; Quintero et al. 2009; Shagari et al. 2015). More specifically, Lutfi et al. (2022g) examined post-IS usage and reported a significant effect of SQ on using IS. This held true for the reported findings by Xu et al. (2013); when using a 3Q model (integrated technology model proposed by Nelson et al. 2005), the authors focused on the system quality effect on IS adoption. Based on their findings, SQ had a significant effect on IT use.

Similar to the above studies, Negash et al. (2003) revealed positive SQ web-based customer use of the support system relationship, focusing on such a system in the organization. Regardless of the above studies, there remains a need to investigate the constructs in other contexts and countries, and thus this study proposes that:

H2. *System quality has a significant influence on e-accounting use.*

2.3. Service Quality (SQ)

The third variable of the DM ISM investigated for its effects is SQ, and it consists of indicators, namely assurance, as well as empathy. An IS furnishes knowledge and information that needs to be free from hazards and risks (Alrawd et al. 2023; Zybin and Bielozorova 2021), with the system use being convenient for communication of the needs of the user. Service quality is a factor that gauges the quality of the services provided by the IS, and it is used by marketing entities to examine the SQ (Dehghanpouri et al. 2020). It is deemed to be one of the IS effectiveness determinants, as it supports users via the IS department and is frequently measured using system reliability, support empathy, and responsiveness (Alsmadi et al. 2019, 2020; Jiang et al. 2000).

IT service analysis has increasingly gained importance throughout the years, with service quality as one of the significant dimensions of ISs used for competitiveness Arshah et al. (2012) revealed that SQ effectiveness, in light of e-accounting, brings about and improves the system combination throughout the departments of the business, supporting the user and contributing to organizational performance. Moreover, Chang et al. (2012) reported a positive relationship between service quality and the use of IS.

However, in some studies, such as Negash et al. (2003) and Petter et al. (2008), no significant relationship was found between the two variables, and thus mixed findings still prevail concerning the relationship. In this regard, the DM ISM that proposes SQ dimensions may possess different weights on the basis of analysis and context findings, and hence the current work proposes the following hypothesis for testing:

H3. *Service quality has a significant influence on e-accounting use.*

2.4. E-Accounting Usage

The literature on ISs describes system use as the level of effort made to use an IS, which equates to the level of output of the system in terms of a time unit (Trice and Treacy 1988). The use of an IS basically depends on the system assessment by the user/adopter in that if they are convinced that it improves the performance of tasks, this would result in enhanced satisfaction and use frequency (Bokhari 2005). The satisfaction of users is described as the level to which the user views the information provided by the system as something that meets their requirements, and it stems from the user's experience with the

information search, their overall satisfaction, and the outcome of their decision-making process (Almaiah et al. 2022b; Chou et al. 2014).

Added to the above, user satisfaction is an e-accounting construct that is connected to its use (Chou and Hong 2013; Hamdan and Al-Hajri 2021), with the latter supporting and promoting efficiency, performance, and productivity (Almaiah et al. 2022c; Alsmadi et al. 2022; Lin 2010). User satisfaction and usage can be gauged, and in earlier research, three use measures were notable namely, time in hours, frequency of usage, and level of usage (Chou et al. 2014; Lin et al. 2006; Ramli 2013). Other studies in the same line (e.g., Hsu et al. 2015; Wixom and Todd 2005) proposed the use of four measures in their evaluation of use satisfaction, and they are service satisfaction, SQ satisfaction, information satisfaction, and overall e-accountings satisfaction. Moreover, prior studies generally reported a positive relationship between e-accounting use and user satisfaction with the system, and thus this study proposes a positive relationship between e-accounting use and user satisfaction with e-accounting:

H4. *E-accounting use has a significant influence on user satisfaction with the system.*

H5. *E-accounting use has a significant influence on business performance.*

2.5. User Satisfaction

Another DM ISM considered factor is user satisfaction, and it consists of repeat purchase and visits indicators, with the first one being the difference between needed and obtained information (Alsyouf and Ishak 2018; Hambali 2020; Sabah et al. 2021). Moreover, information satisfaction comes from the comparison between the needs of an IS and the received performance outcome. On the contrary, repeat purchase is the global satisfaction of the system analyzed through the level of IS and system satisfaction and the advantages received on the basis of the input–output process (Almaiah et al. 2022d; Alsyouf et al. 2021).

As for performance, it is referred to as the user's interaction with the system that results in a specific outcome (Petter et al. 2008). In the case of e-accounting, the ability of the system to provide accuracy, precision, and reliable information is used as a measurement of system performance (Alalwan et al. 2014; Ritchi et al. 2020). Based on the study by Bhattacharjee (2001), system use effectiveness is partially dependent on the satisfaction of the user, and, therefore, the level and frequency of using e-accounting and user satisfaction would bring about improved performance. On this basis, this study proposes that:

H6. *User satisfaction has a significant influence on business performance.*

2.6. Moderating the Effect of COVID-19 on the Relationship between E-Accounting Usage and Business Performance

The COVID-19 pandemic has produced an unprecedented crisis for businesses, affecting their operations and environment and creating threats (Alsyouf et al. 2022a; Almaiah et al. 2022e; Lutfi et al. 2023). The consensus is that the pandemic will reshape the business landscape within businesses and surrounding them (Azazz and Elshaer 2022; Song et al. 2022). To handle restrictions and control measures (e.g., strict isolation measures, travel restrictions, home isolation, etc.), firms will likely depend on e-accounting to minimize the pandemic's impact. Additionally, the COVID-19 pandemic has brought about an uncertain recovery of the economy, which is predicted to end in 2025 in the face of extensive life loss and an unclear pattern of recovery (Lutfi et al. 2022d; Jaber et al. 2022), threatening the survival of firms. Such a mutated, uncertain environment can be addressed by firms through innovative, new value creation and logic by depending on information sources. Firms should thus leverage e-accounting in examining new value sources, making a significant relationship between e-accounting usage and its impacts.

Thus far, the COVID-19 pandemic represents the biggest challenge to the leadership and management of businesses (Almaiah et al. 2022f; Sobaih et al. 2022), with one of the

top issues being the inaccurate information sourced that may be lacking completeness, precision, certainty, reliability, clarity, and authenticity. Leaders and managers are faced with the task of making critical decisions without the required information and data (Lutfi et al. 2022e). On the one end, there is a lack of data due to the nature of the virus and the speed of its proliferation, and on the other end, decision makers possess a large amount of unreliable data and information that need to be filtered and cleaned.

Due to the unfamiliarity of the COVID-19 pandemic, decision makers are at a loss; uncertainty prevails concerning the reliability of information sources (Aliedan et al. 2022; Almaiah et al. 2022g), unpredictable and uncharacteristic human behavior, the irrational response of the financial markets, economic volatility, the lack of accurate data to gauge the impact of lockdowns, unclear patterns of outbreaks, and many others. Decision making in a timely manner using incomplete information within a high-outcome environment is unprecedented in its level of uncertainty.

In businesses, decision makers at different levels have to contend with the risks that arise and the extreme outcomes from their wrong decisions; this is clear from the leaders, healthcare managers, and professionals who are required to make life-or-death decisions daily in the face of uncertainties (Almaiah et al. 2022h; Song et al. 2022). Such decision makers need to assess risks and adopt the right actions while minimizing the risks they may face. In the case of the current pandemic, decision making is made in uncertain circumstances, where the wrong decisions can potentially lead to irreversible harm in light of the number of deaths and economic turmoil. According to Wade and Hulland (2004), a significant relationship exists between firm resources (e-accounting usage) and their effect on the functioning of the firm in an uncertain environment. Aligned with this argument, this study proposes the following:

H7. *COVID-19 moderates the relationship between e-accounting use and business performance.*

3. Theoretical Underpinning and Framework

3.1. DeLone and McLean IS Success Model (DM ISSM)

The DM ISSM (2003) was selected to be used in this study, as it is capable of evaluating complex information systems as well as analyzing the procedure information in its creation, dissemination, and implementation, along with its causal dimensions that may influence end-users. The effectiveness levels based on the results culled from 180 research papers regarding IS/IT performance using the DM ISM (1992) indicated that different IS success categories can be obtained from six factors, namely SQ, IQ, use, user satisfaction, and individual and business effects (DeLone and McLean 1992). DeLone and McLean (2003) updated the initial model by integrating SQ and by exchanging individuals' and organizations' impact with net benefits, thus, the new model posits that the attitudes and subsequent behaviors are affected by user belief of the SQ and user experiences. The model also showed that relationships between information quality, system quality, and service quality interrelate with user intention and user satisfaction, which would affect the net benefits perceptions of the user (DeLone and McLean 2003; Petter and McLean 2009).

In addition, the model is useful as an IS success framework, particularly in measuring effectiveness (Petter et al. 2008) and applying it to different analytical degrees on the basis of the tasks performed. In other words, the system's quality dimensions, namely information, system, and service, have a significant influence on the whole performance success. A successful model is measured using the use of the system, satisfaction of the user, and the net benefit, and hence the updated version of the model is selected as the underpinning theory for evaluating its application in different contexts, such as the use and adoption of e-accounting.

Accordingly, this study adds new antecedents of the perceptions of user satisfaction that are different from the system's technical considerations, SQ and IQ, in order to represent some of the organizational aspects that also have a hand in IS usage success (Urbach and Ahlemann 2010; Cullen and Taylor 2009). The primary aim behind an IS is directed

towards developing and facilitating linkages of different business establishments operating in one supply chain (Cullen and Taylor 2009; Purwati et al. 2021) while covering aspects other than the system’s technical aspects and those dimensions that are capable of illustrating the interaction and working together of IS users. Specifically, this work extends the IS framework by including the net benefit of e-accountings usage, which was never incorporated before in the literature or DM ISM. Although there is extensive use of an IS success model for evaluating IS success, this line of study has mostly ignored the usage of that model to assess e-accounting at the organization level (Ifinedo et al. 2010), and to examine the relationship in a way that the exogenous variable is the performance of the business.

Prior literature on IT/IS technologies’ effect on business performance, such as Kharuddin et al. (2015) Chou and Hong (2013) and Xie et al. (2014), also selected the DM ISM as their underpinning theory, and their findings validated its strength in explaining the associations between innovation and improved performance of organizations.

3.2. Theoretical Framework

On the basis of past studies, e-accounting use has been evidenced to have support from the integration and control of the whole management levels of the organization. Thus, the present study aims to focus on determining the influence of SQ, IQ, and SQ (exogenous factors) on e-accountings usage, user satisfaction, and business performance (endogenous factors). This paper examines the association between e-accounting usage and user satisfaction (US) and firm performance. The proposed theoretical research framework is presented in Figure 1.

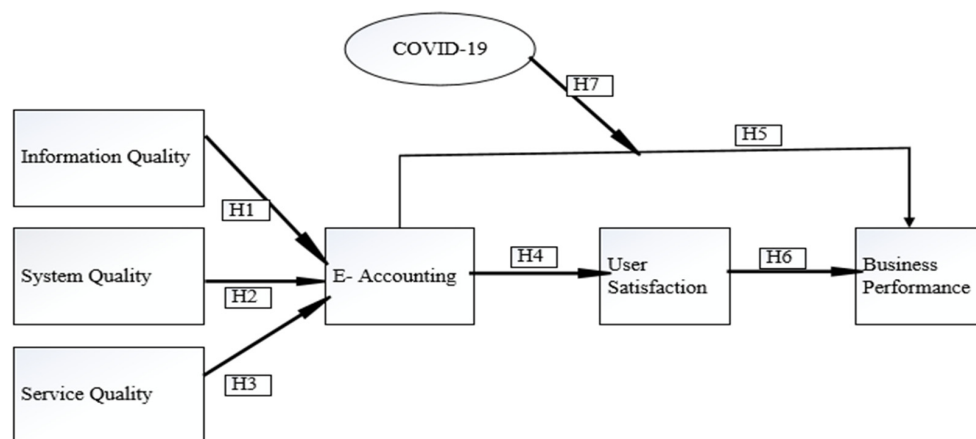


Figure 1. Research Framework.

4. Methodology

Measurement Development and Data Collection

The current study questionnaire was structured in English and subsequently translated into Arabic for hypothesis testing. Meanwhile, the measurement items were chosen parallel to past e-accounting or IS research. In terms of questionnaire metrics, no modifications were made to retain their relevance within the study setting. This questionnaire was initially developed and reviewed by five experts in the field of e-accounting/IS. A preliminary pretest was duly established to ascertain question comprehensibility, clarity, unambiguity, and relevance (Alsmadi and Oudat 2019; Alsyof et al. 2022b; Almaiah et al. 2022i; Sekaran and Bougie 2013). The research questionnaire was reviewed and assessed by four senior managers and six directors employed in Jordanian organizations that incorporated e-accounting. Several questions were redeveloped for enhanced questionnaire readability post-pretest completion. All the items were evaluated with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Appendix A presents the measurement predictors employed in this research.

The study’s survey targets, which are e-accounting users in the position of decision makers, were surveyed over a span of three months (17 September 2021–25 November 2021). The designed survey questionnaires were distributed online to 186 listed Jordanian firms in the financial, industrial, and service sectors. Out of the total copies distributed, 104 were retrieved—in this regard, the number of samples was determined on the basis of Hwang et al.’s (2016) recommendations that the least size of the sample needs to be 10 times the greatest number of paths that lead to the endogenous construct, which was (N = 70). Similarly, Hair et al. (2019) recommended that the number of respondents should be 8 times the study constructs number (Almaiah et al. 2022j; Alshira’h 2019; Alrawad et al. 2022; Alshira’h and Abdul-Jabbar 2020a), and based on this, the least sample size needed was (N = 56). Statistical power analysis was run to estimate the sample size based on Cohen (1992) and calculated with the help of a priori power analysis (G* Power software). It was found that for an alpha of 0.05 value, a moderate effect size of 0.15, and a power of 0.80, the sample size should be 96 respondents. The sample size of 104 was thus considered suitable for partial least squares structural equation modeling (PLS-SEM) analysis (Alsmadi and Alzoubi 2022; Alshira’h et al. 2020b; Bani-Khalid et al. 2022). This work applied the PLS method for hypothesis testing, as it is a multivariate statistical technique that permits the synchronized estimate of various relations between multiple or single exogenous variables and multiple or single endogenous variables in the same model. In addition, this approach works professionally and permits analyzing any complex model that contains mediating or even moderating associations constructs with relatively small sample sizes and can be applied in some situations in which the equivalent techniques such as CB-SEM cannot (Hair et al. 2019).

5. Analysis

5.1. Internal Consistency Reliability

Internal consistency reliability refers to the degree to which the whole subscale indicators are focused on evaluating the same concept (Hair et al. 2019). Along this line of definition, composite reliability score values need to be at least 0.70 and average variance extracted (AVE) values need to be 0.50 (refer to Table 1). In this study, the AVE and composite reliability values recommended were met and exceeded 0.50, which means that the measurement model has reliability. Cronbach’s alpha values were additionally calculated to establish the internal consistency of the data. According to the rule of thumb established by Sekaran and Bougie (2010), alpha value > 0.9 is excellent, those > 0.80 are good, and those > 0.70 are acceptable. In Table 1, the Cronbach’s alpha values obtained met the threshold along with the AVE and composite reliability values.

Table 1. Convergent validity results.

Variables	Cronbach Alpha	Composite Reliability	AVEs
Information Quality	0.909	0.929	0.738
System Quality	0.819	0.878	0.649
Service Quality	0.906	0.927	0.731
COVID-19	0.773	0.854	0.549
E-accounting Use	0.910	0.941	0.838
User Satisfaction	0.939	0.957	0.850
Business Performance	0.780	0.858	0.616

From the above table, the entire variables of the Cronbach’s alpha values were more than 0.70, and thus their consistency was established. High reliabilities and AVE values also contributed to the establishment of the reliability of the measurement model.

5.2. Discriminant Validity

This type of validity refers to the degree to which a variable is distinct from other variables (Hair et al. 2019), and it is a condition for assessment. Duarte and Raposo (2010) described it as the level to which a certain element is different from other elements, and the higher the discriminant validity level, the higher the difference of the variable in explaining the phenomenon in comparison to its counterpart variables will be. The study thus obtained the discriminant validity through the AVEs' square roots, which according to Hair et al. (2019), need to be higher than the value of latent constructs' correlations.

Therefore, this study obtained discriminant validity to establish the external consistency of the model. Table 2 tabulates the comparison of the latent constructs, with squared AVE values being Business Performance (0.788), Information Quality (0.861), Service Quality (0.854), System Quality (0.809), e-accounting Use (0.900), User Satisfaction (0.923), and COVID-19 (0.832).

Table 2. Fornell–Larcker Scale (Discriminant Validity Matrix).

Constructs	1	2	3	4	5	6	7
1 Business Performance	0.788						
2 Information Quality	0.456	0.861					
3 Service Quality	0.278	0.530	0.854				
4 System Quality	0.444	0.659	0.558	0.809			
5 E-accounting Use	0.450	0.495	0.431	0.519	0.900		
6 User Satisfaction	0.549	0.615	0.548	0.579	0.554	0.923	
7 COVID-19	0.372	0.306	0.247	0.659	0.280	0.088	0.832

As reflected by the squared AVE values, values higher than the correlation between latent variables established discriminant validity. Prior sections explained the framework and explained the relationships among the variables on the basis of relevant past literature, which needed to be altered based on the confirmatory factor analysis (CFA). The analysis findings required no variable to be dropped, albeit some of the items were deleted and in line with the recommendation set out by Hair et al. (2019); each variable had at least two items remaining.

The results in Table 3 further substantiate those in Table 2, where some of the hypothesized relationships were found to be rejected as they had p-values higher than 0.05 while those lower than 0.05 were supported. The testing of the hypotheses entailed six direct relationships of suggested hypotheses, where all except one were found to be not supported.

Table 3. Hypothesis testing of study model.

Hyp.	Relationships of Factors	Sta. Beta	t-Values	p-Values	Results
H1	Information Quality–E-accounting	0.233	1.961	0.050	Supported
H2	System Quality–E-accounting	0.285	2.089	0.037	Supported
H3	Service Quality–E-accounting	0.142	1.281	0.201	Not supported
H4	E-accounting–User Satisfaction	0.251	2.648	0.007	Supported
H5	E-accounting Use–Business Performance	0.215	2.112	0.036	Supported
H6	User Satisfaction–Business Performance	0.441	5.056	0.000	Supported
H7	COVID-19–E-accounting–Business Performance	0.204	4.991	0.000	Supported

6. Discussion and Implications

This research and its findings contribute to the literature dedicated to evaluating the quality constructs in the DM model and their significant effects on the use of e-counting

with the exception of SerQ. Prior study's findings were confirmed regarding IQ and SyQ's significant influence on use and user satisfaction (e.g., [Yakubu and Dasuki 2018](#); [Jaafreh 2017](#); [Tajuddin 2015](#)) but did not confirm the significant effect of SerQ on e-accounting use (rejected hypothesis). Consequently, the findings were in line with those of some prior studies, such as [Ghobakhloo and Tang \(2015\)](#), and [Marble \(2003\)](#), but were not in line with DM contentions when it came to service quality as a significant dimension in assessing system use and system effectiveness. This unexpected result can be related to the number of respondents that fell short of being satisfied with the provided e-accounting services due to some issues in communication, broken promises, and delays in technical support. In addition, that may be because of the specific context of the study (developing nation), where company employees lack technical IS training, which precludes their efficient and complete usage of the features and utilities. This calls for the provision of more technical training sessions that surpass computer skills.

Contrary to the expectations, the current work findings did not support the presumed influence of service quality on the usage of e-accounting. This finding is not in accordance with the prediction of DMIS, which predicts that greater service quality would improve the business's intention to e-accounting usage. However, this prediction has received considerable support from previous innovative studies. Although the finding of the present study is in contrast with the aforementioned prediction, it is aligned with several works that reported an insignificant role of service quality in facilitating innovation use ([Ghobakhloo and Tang 2015](#); [Lutfi et al. 2022f](#)). One possible explanation is that, as this study found, businesses intended to use e-accounting because of pressures exerted by the COVID-19 pandemic. Therefore, businesses tend to use e-accounting simply because uncertainty and lockdown situations and forces drive them to do so. In other words, businesses embrace e-accounting to raise their reputations and images within their industry, be able to pursue their workflow, or avoid being left behind in the industry, regardless of any benefit consideration. Hence, they might have not considered the quality of services in e-accounting usage.

As expected, the findings supported the positive relationship between e-accounting use and user satisfaction and those between InfQ and SysQ and e-accounting use and, eventually, improved USat. The findings indicated the highest e-accounting use predictor to be SysQ, and this may be attributed to the different levels of importance of the IS success model's constructs on the basis of the organization's attributes ([Heo and Han 2003](#)). Notably, firms with centralized computing lay more emphasis on SysQ as opposed to InfQ ([Petter et al. 2008](#)). This finding is in line with those reported by [Hsu et al. \(2015\)](#), [Lin et al. \(2006\)](#), and [Lin \(2010\)](#), and this includes the flexibility of e-accounting and features of system reliability. This motivates the user to use e-accounting and establish their major involvement, which would lead to their use satisfaction (USat).

Along the same line, [Alalwan et al. \(2014\)](#) and [Hou \(2013\)](#) found that using e-accounting often can enhance the performance of businesses, which shows that USat has a significant role in improving the decision making of users and information quality, facilitating a reliable and accurate decision-making outcome supported by the assumption that the department of e-accounting satisfies its user's needs ([Ramli 2013](#)). Additionally, empirical findings found by [Ouiddad et al. \(2018\)](#) revealed that IS adoption contributes to the improved performance of businesses.

This research empirically examined the factors and found evidence of their contribution to improving the performance of the business, which is why e-accounting-based decision makers are encouraging the use of e-accounting data evaluation and processing. Firms need to make use of the sophisticated process to explain the context as well as to make effective and meaningful e-accounting for business users. This calls for the potential data sources to be used and combined, and thus e-accounting has to collaborate among stakeholders and experts of domain systems to understand the processing and implications of e-accounting (this is crucial for businesses using e-accounting and ISs). Another area that needs to be more examined is the e-accounting sources and resources quality evaluation.

Moreover, the results showed the usefulness of the theoretical framework in evaluating the ability of e-accounting in enhancing business performance and in direct, additional research activity on the topic. Associations among the constructs based on DM ISM highlighted the capabilities of e-accounting to facilitate decision-making quality even with complex problems via efficient system usage. To conclude, e-accounting improves the performance and competitiveness of businesses.

The results shed light on the factors that boost business performance through the use of e-accounting, enabling management control and observation of different issues and transactions based on varying perspectives, and in turn, reaching accurate, informed, and fact-based decisions. DeLone and McLean's (2003) extension through the addition of quality of decision-making variables contributes to the literature on technologies and innovations that can be tested in different contexts and countries with similar economic and social backgrounds to those of this study. Because of the sample size, caution should be taken in generalizing and applying the results to other developing countries.

Lastly, COVID-19 plays a positive moderator role in the relationship between e-accounting use and business performance. This finding reveals that the causal relationship between e-accounting use and business performance is significant. The pandemic broke out during a period of technological improvement when all activities were agreed upon via the internet, and technological applications had the opportunity to promote extremely optimal efficiency (Almaiah et al. 2022k), including businesses performance; this is consistent with the results of other research on the positive influence of COVID-19 on technological impacts, such as (Almaiah et al. 2022l; Lutfi et al. 2022c, 2022g, 2022i). The use of electronic technologies, such as e-accounting, is one of the most important success factors (Lutfi et al. 2022h; Scherer et al. 2019). Above all, due to the nature of the pandemic, timely decisions are needed, and so critical decisions need to be made in a timely manner, as any delay could mean the loss of lives and damage to economic development (Lutfi et al. 2022i). It is important for decision makers to maintain their focus on identifying and assessing tipping points and triggers of escalation for steps to be taken. Timely decisions are quite impossible when uncertainties because of high risks and pressure abound.

In an environment characterized by high uncertainty, additional information and data are needed for decision making, and this can be met through the information processing capability of a firm. E-accounting deployment is a mechanism that extends the processing capabilities of firms, and firms with high e-accounting use are more adept at gathering, analyzing, and relaying information, leading to their higher likelihood of reporting a high level of business performance.

7. Conclusions, Limitations, and Recommendations for Future Studies

E-accounting's value is generated through the enhancement of business performance, but despite its importance, it has not been thoroughly studied and is often thought of to enhance decisions, which is a more general assumption—several factors and their interconnections may also have a hand in performance outcomes. The main objective of this study was to develop and empirically examine the proposed model of the influence of e-accounting InfQ, SysQ, and SerQ on system usage and user satisfaction, which, in turn, affect the performance of the business. One hundred and four (104) users employed in the firms of Jordan who have had experience in using e-accounting were the respondents of the study.

This research makes numerous important theoretical contributions to the literature on innovations and e-accounting use. It contributes to the e-accounting literature in relationship to e-accounting adoption and use as well as its impact (benefits) in a developing country, such as Jordan. To the best of our knowledge, this is the first study to either empirically or theoretically test the factors influencing e-accounting use and its impact on business performance. As stated earlier, the literature review shows that although a great deal of attention is being focused on several technologies used, very little has been related specifically to the e-accounting context. Therefore, this research enhances the existing

knowledge by providing a comprehensive conceptual model stranded in strong models (DM ISSM) that can be applied to explain how several quality factors influence e-accounting use and user satisfaction as well as its impact and benefits. By doing so, the predictive and explanatory power of the DM ISSM model increases and produces results that serve both academicians and practitioners.

The results also provide several important implications to government agencies, decision makers, e-accounting vendors or consultants, and the firms themselves. With respect to e-accounting use benefits, this work has established a significant association between e-accounting use and business performance. This indicates that businesses with superior e-accounting use would realize greater effects in all aspects of operation, improve businesses' competitiveness and productivity as well as generate accurate information and timely decision making to enhance performance. Hence, this research has complemented earlier studies by supporting this association. Thus, decision makers must recognize that e-accounting use is vital for their businesses' growth and sustainability.

In dealing with the COVID-19 issues, it is rational to suggest that pandemic pressure influences electronic technologies usage, including e-accounting, when businesses perceive that e-accounting use could reinforce their stability position and support them in achieving superior firm performance. In order to increase e-accounting use, the current work suggests that the involved agencies should facilitate businesses in becoming more conscious and aware of disruptive circumstances, such as the COVID-19 pandemic effect. Once businesses perceive the pressure of such circumstances and realize the necessity of having e-accounting, the use rate could escalate.

The uniqueness of the study stems from its emphasis on the operational and transaction capabilities of e-accounting along with its capacity to enhance the performance of businesses. The results of the study generally support the assumptions of the underpinning model (DM ISSM 2003) and its insight and extension concerning the factors influencing business performance.

However, this study is not without its limitations, as no single work can accurately and completely answer the entirety of questions related to the examined phenomenon. One of the limitations is the small sample size, and, in this regard, future studies may increase the size of the sample and cover other groups of respondents. The second limitation is the study context, namely, Jordanian firms; this could limit the generalization of results to other contexts and countries, but future studies may apply samples from other developing countries, such as African and Asian nations. Another limitation pertains to the cross-sectional study design excluding responses from different time intervals. Notably, some constructs, such as use, call for an extended time period for their accurate measurement. Past studies based on DM have mentioned this limitation, and, as such, further research may conduct comparative research or examine preadoption and postadoption level development of the use of e-accounting. Still, another limitation concerns the new impact factors that were included in the model, which is business performance representation as an e-accounting use net benefit. Future studies may examine the system's net benefit through new factors, such as e-accounting effectiveness or decision making and their effects. In addition, this study's results revealed it is important to note that e-accounting use is critical for businesses to sustain their competitive positions. Further research may replicate this study to improve and enhance the external validity of the results. One more limitation relates to the response rate of this research; irrespective of the diverse follow-up efforts, this work's results were based on 104 responses, which were satisfactory to test the model fit and conduct statistical inferences using PLS-SEM regardless of the low response rate. Incidentally, future research can verify the results for a larger-sized sample to allow the usage of the covariance-based (CB) CB-SEM tool and pave the way for more rigorous and robust results.

Finally, other variables may also play a key role, such as training, user experience, e-accounting maturity, and internal control quality, among others, which could contribute to e-accounting strategic benefits and its enhancement of business performance; examining such factors may shed light on the next direction to take for a clearer understanding of the

phenomenon. Lastly, further studies may carry out longitudinal e-accounting studies to reach solid conclusions.

Author Contributions: Conceptualization, A.L.; methodology, A.A.; software, M.A.A.; validation, M.H.A.; formal analysis, A.A.; investigation, M.A.A., M.H.A. and S.N.A.; resources, A.F.A. and H.A.; data curation, A.L.; writing—original draft preparation, A.L.; writing—review and editing, S.N.A. and M.A.; visualization, H.A. and O.A.; supervision, A.M. and O.A.; project administration, A.M. and O.A.; funding acquisition, A.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Deanship of Scientific Research at King Faisal University, grant no. [CHAIR118].

Data Availability Statement: The datasets used during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Information Quality (InfQ)	Items	Reference
InfQ1	Information from the E-accounting is always timely	Lin et al. (2006)
InfQ2	data provided by the E-accounting is useful	
InfQ3	information provided by the E-accounting is accurate	
InfQ4	Information from the E-accounting is easy to understand and related to decision-making	
System Quality (SysQ)	Items	Reference
SysQ1	E-accounting user interface can be easily adapted to one’s personal approach.	Lin et al. (2006)
SysQ2	E-accounting is easy to use.	
SysQ3	E-accounting responds quickly enough.	
SysQ4	E-accounting is always up and running as necessary.	
Service Quality (SerQ)	Items	Reference
SerQ1	The information I receive from the IS department is accurate.	(Petter et al. 2008; Alzoubi 2011)
SerQ2	Training provided by the IS department improves my quality of work.	
SerQ3	The IS department solves my problems and provide me prompt service.	
E-accounting Use	Items	Reference
Use1	E-accounting is used frequently.	(Rajan and Baral 2015)
Use2	I spend most of time per day using E-accounting for job-related work.	
Use3	I depend highly on E-accounting use.	
E-accounting USat	Items	Reference
USat1	I am satisfied with the SysQ.	(Hsu et al. 2015)
USat1	I am satisfied with the InfQ.	
USat1	I am satisfied with the SerQ.	
Business Performance	Items	Reference
BP1	I believe that E-accounting can increase my hotels operational performance.	Laitinen (2014)
BP 2	I believe that E-accounting can increase the profitability of my hotel.	
BP3	I believe that E-accounting can increase our financial performance.	
BP4	I believe that E-accounting can provide us with more accurate data.	
COVID-19	Items	Reference
COVID1	COVID-19 has had an adverse impact on our business.	(Song et al. 2022)
COVID2	COVID-19 has made daily work even more challenging.	
COVID3	COVID-19 has added to concerns about their future development.	
COVID4	COVID-19 has inspired our business to take the initiative to expand businesses.	
COVID5	COVID-19 has caused me to work longer hours.	
COVID6	COVID-19 has made work more demanding.	

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