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Assessing the Intention to Adopt Cloud Accounting during COVID-19

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Abstract: The information technology (IT) revolutionization aside with the emergence of COVID-19 have catalyzed cloud-computing services and systems with multiple end-user benefits for online business management, specifically in the accounting discipline. For example, cloud accounting enables the significant reduction of organisational IT investment with flexible access to a large group of scalable resources. The cloud accounting enables small and medium size enterprises (SMEs) to independently engage in fundamental bookkeeping responsibilities rather than hiring external auditors for the same services. As cloud-based accounting adoption remains in the preliminary stage within Jordanian businesses, this study applied the technology, organisation, and environment model to explore cloud accounting among Jordanian SMEs. The study data were gathered from 156 Jordanian SME owners or managers with a structured online survey questionnaire. The recommended study framework encompassed seven determinants that influenced the cloud accounting adoption intention. Resultantly, except Perceived knowledge uncertainty factor, the proposed hypotheses were supported as the aforementioned factors (relative advantages, security concerns, top management support, organizational readiness, competitor's intensity and suppliers computing support) positively and significantly influenced the cloud accounting of Jordanian SMEs. The study outcomes could facilitate IT field decision-makers and practitioners by investigating an actual cloud accounting case based on the essentiality of its application.

Keywords: cloud accounting; adoption; TOE; SME; COVID-19

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1. Introduction

Information and Communications Technology (ICT) has received worldwide recognition across multiple business sizes, specifically small and medium size enterprises (SMEs), following the dynamic shifts and challenges within business settings [1–3]. Given the

perpetual logistical challenges encountered by SMEs compared to large-scale companies following a smaller workforce and lower budget allocation [4,5], computing contexts are less intricate compared to primary enterprises despite similar demand experiences [6,7]. As such, SMEs are required to optimise their service level in regulating, monitoring, and mitigating production costs and purchase materials and controlling inventory levels and resource utilisation-oriented goals. Overall, SMEs should be geared towards activity engagement to fulfil their IT department prerequisites [8].

Evidently, SMEs have begun incorporating accounting systems for a competitive advantage in the market, cost alleviation, optimal management, effective service provision, enhanced management functionalities, and minimal errors [8–10]. Accounting systems denote an innovation instrument that complements accounting and financial data gathering, storage, and processing for the management to engage in decisions-making processes [11,12]. The accounting systems induce high coordination levels among different units of function. Recent SME research has revealed pivotal insights into the essentiality of IT support among businesses processes [13,14]. In other words, SMEs require accounting systems application for optimal competence and efficiency levels. Conventional accounting systems implementation within SMEs reflects specific weaknesses, such as software package installation and high licensing costs [7]. Such accounting package employment is deemed too intricate for SMEs due to the structural makeup characterised by hardware costs and maintenance and inadequate IT infrastructure and experts to optimise accounting systems application and reduce IT costs among enterprises [15]. The cost-effective and timely adoption of a required premise proves more viable and efficient compared to conventional accounting information system (AIS) [16].

However, during the period of COVID-19 pandemic, various SMEs have faced a variety of technologies challenges, including digitalization, new businesses practices and teleworking [17]. The adoption of cloud-based computing services (solutions) decision has leaped as main concerns for SMEs all across the world [18]. COVID-19 pandemic (lockdowns) has significantly the whole parts of the world's economies, altered industries landscape and how SME businesses operate [19]. SMEs have faced severe rapid shifted to digital sales, revenues losses, mandatory online working and reduction in the labour supply [20]. The restrictions imposed by the lockdowns during COVID-19 pandemic have accelerated structural changes in the way of conducting businesses on a novel digital and cloud basis [21]. Additionally, it played a significant role for the SMEs managements by making them more conscious to the need of IT use. Under these unexpected conditions, the challenges for SME businesses to bridge the gaps and problems generated by the COVID-19 crisis through instant embrace to the new economic reality [22]. Thus, SMEs over the globe in general and in developing countries in particular need to focus on digitalization/IT in response to the changes [23]. SMEs could develop their digitalization by outsourcing their back office functions to cloud computing solutions/Software-as-a-Service vendors (SaaS) at an affordable rates, particularly as a mean of COVID-19 recovery [24].

The accounting system discipline has undergone dynamic shifts through cloud accounting (C-ACC) development since its inception [6,7,25], by facilitating businesses to virtually manipulate the third-party hosting of technological resources and applications compared to physical methods [15,26]. It is deemed unnecessary to install software modules in adopter PCs or data storage within local server, which indicates low hardware investments and fees [27]. Essentially, C-ACC utilisation demonstrates an approach that saves considerable power through solid-state discs compared to traditional counterparts [2,28]. The C-ACC is also more optimal than conventional IS in enabling organisations to conveniently access affordable IS with high data-processing capacities, real-time collaboration functionalities, and improved accessibility [6]. In this regard, C-ACC could impact accounting configurations with a platform where client companies and accounting firms could collaborate on processes and data for novel work organisation approaches by outsourcing connections. Rohde [29] implied that the versatility and affordability of cloud based (CB) facilities appeal to SMEs with limited resources and expertise. Based on Sultan's [30] asser-

tion of their importance as part of the businesses productivity and competitive position extension, C-ACC could be an affordable and viable alternative to traditional accounting systems for SME adoption and usage.

In Popivniak [27], C-ACC implementation within SMEs would prove beneficial in terms of precise data-gathering, recording, integration, and management with information collected throughout the whole enterprise function unit and businesses departments for aim, target, and objective attainment. For example, SMEs could leverage C-ACC and computing diffusion system for data transaction performance throughout values chain activities by compartmentalising information for finance, inventory, planning, manufacturing, sales, materials, distribution, human resources, engineering, marketing, and all other business enterprise operations [31,32]. The SMEs could lease the hardware and pay for cloud computing services without an IT infrastructure for low production costs and high (external and internal) operational agility and flexibility [33].

Despite relevant research involving, the C-ACC adoption impacts on SMEs, only a few studies emphasised such adoption within the same context through technological, organisational, and environnmental aspects [14,34]. The key logistical factors influencing C-ACC adoption decisions among SMEs in emerging economies remain underexplored [7]. As a developing market for cloud-computing suppliers and providers, SMEs have garnered much attention as an economic catalyst for emerging economies. Multiple businesses in such nations, such as Jordan are SME-oriented. Despite the high potentiality of cloud-based systems involving C-ACC in SME operation across developing countries (Jordan), studies on the logistical determinants of cloud-based Enterprise Resource Planning (ERP) application remain scarce. Given the significant intricacies within the ICT implementation culture in SMEs, including low awareness of C-ACC to enhance competitive position [14,35,36], it is deemed pivotal to bridge the knowledge gap with SME research in promoting a C-ACC implementation culture within such businesses.

As no empirical work on the factors affecting C-ACC adoption in SMEs is yet to be performed, particularly in Jordan, this study emphasised Jordanian-manufacturing SMEs in line with its industrial role and essentiality towards economic progress in response to the impact of COVID-19. C-ACC use can support SMEs by providing online platforms that contains real-time financial, workflow, inventory, and expenditure and sales/revenues data at affordable costs [37,38]. However, knowledge about the adoption of C-ACC in Jordan is still limited. Likewise, there is a gap in the current awareness regarding evidence-based research, on the C-ACC adoption in response to disruptive circumstances, such as COVID-19 pandemic [37].

Therefore, the current study also broadened the literary scope on cloud computing by exploring C-ACC adoption among Jordanian manufacturing SMEs and determining its key catalysts to provide a sound understanding of substantial cloud-based system adoption roles for SME owners or managers for high industrial productivity, competitiveness, and performance. Furthermore, this research provides useful insights into the essentiality of C-ACC adoption among manufacturing SMEs in response to COVID-19 destructive challenges. Lastly, the current research adds to the body of research by exploring perceived knowledge uncertainty (PKU) in the context of C-ACC. IS researchers recognize that SMEs whereas small firms lack resources are not scaled-down forms in comparison with larger businesses. Thus, the resources allocation to innovations is based on the certainty level of that they could pay off.

The remaining study sections are organised as follows; Section 2 outlines the theoretical research framework and hypothesis formulation; Section 3 elaborates on the study methodology; Section 4 displays the data evaluation outcomes and interpretations; Section 5 presents the research discussion. Notably, the final section concludes the study and highlights specific limitations and recommendations for future works.

2. Theoretical Background

2.1. Traditional Accounting and Cloud Accounting

The cloud accounting systems (on premises) have similar functionality to traditional accounting systems in that they are both accounting system. Nevertheless, each of this software's differs significantly in some characteristics [14]. For the traditional accounting software, the businesses need a dedicated solid drive for the software installations and financial data store. Programs users are unable to apply any other devices or network other than a desktop application to access the data from a specific location which restricts schedule and mobility [17]. Conversely, the cloud accounting software, there will be a remote server that connected to the system by the used internet. Additionally, the end users are able to reach financial information while working through the web-based interface using any compatible device (without any need to install desktop applications). Moreover, C-ACC offers real-time data redundancy and updates via backups while the traditional system needs the business itself to updates the information manually.

On the other hand, traditional accounting system, the businesses are responsible for server's maintenance, updates servers for capacity escalation, and bearing any expenses or costs related to the system updates [14]. Though, with C-ACC, all information is warehoused on remote servers, and therefore, the businesses do not incur overheads. C-ACC, however, is not influenced by the storage capacity, or devices that the company can afford the purchase and maintain. The method supports business growth needs as it includes multi-user and multi-role management platform to meet the increasing business needs as required. Unlike cloud accounting, scalability is an issue with traditional software. For every new user in the traditional system, software installation and granting access is a necessity [17].

Unlike C-ACC, traditional system influenced by the devices or storage capacity. C-ACC, however, scalability is not an issue as the case in traditional systems (as for every new user, granting access is an essential). The difference between cloud accounting and traditional accounting software (on premises) is shown in Table 1.

Table 1. Comparison between Traditional accounting and cloud accounting Solutions.

	Traditional Accounting	Cloud Accounting
Number of users	limited License	Unlimited
Technical support	Provided by a third party	Provided by a third party
System location	Chosen by the company	In the cloud
Information Technology resources	Provided by the business itself or outsourced	No necessary
Maintenance costs	Separated	Included
Hardware	Provided by the business itself	Included
Accounting software license	Business own it	Business is the renter (tenant)
System operating	Manage by business	Manage by vendors

2.2. Cloud Accounting Adoption

C-ACC is considered in business model as a service. C-ACC is the transformation of accounting applications and modernized-business environment solution. Cloud-based computing or cloud-based systems are on the demand delivery of computing-based services and solutions that do not require the active controlling by the service users. It delivers service involving of software and hardware's via the internet network [14]. In addition, service such as software or data can be retrieved from anytime and anywhere through the internet by the cloud application provider. However, C-ACC is an integration of cloud-based computing with accounting by employing web server to construct virtual AIS (A-ACC).

A-ACC known also as web accounting, virtual accounting information system, online accounting, or Service-as-a-Service (SaaS) accounting solutions, presents the entire process as desktop-based accounting but the same functionalities are relocated to cloud-based. On the C-ACC, there is no applications used and the Users log in directly to the online

solutions that always the data is constant, up-to-date and safely warehoused on the cloud servers. C-ACC is a form of cloud-based computing applications (services) with the precise purpose that related to the financial data processing. It offers a perfect depiction of the expenditures, in the long term requiring monthly payments. C-ACC transfers the processing, installation and data storage activities of the accounting system from traditional (on premise) to the online (remote) server that owned and managed by cloud computing suppliers and providers.

C-ACC plays an essential role in the successful or failure of all kind of companies irrespective of their nature, size and purpose. Therefore, C-ACC was developed in orde to support organizations to stay organized and financially wide-ranging. In recent times, all business environment and accounting processes are subjected to the digital and technologies transformation (cloud-based computing, big data analytics (BDA), and artificial intelligence (AI), and blockchain technologies) [36]. Therefore, it very important for businesses to adopt the cloud-based computing solutions (C-ACC) in the financial reporting processes. Additionally, by adopting C-ACC, the inventory management processes can be more visible, and flexible.

2.3. Technology-Organization-Environment (TOE) Framework

The underpinning models of this study are the Technological-Organizational-Environmental (TOE) model and the Diffusion of Innovation Theory (DOI). In fact, studies have suggested the TOE-DOI theories integration for the provision of best-fit factors in examining SMEs adoption of technology [39]. Specifically, DOI places tress on technological attributes as having a hand in diffusing technology and its adoption within the organizations, whereas the TOE framework explains the factors (internal and external) that may affect technology adoption of firms [39]. In other words, integrating the DOI theory's technological factors into the TOE model can generate an extensive study framework, making Rogers' DOI theory capable of highlighting the intra-firm innovation diffusion [39].

Accordingly, this study builds on the prior studies concerning cloud computing and TOE factors for technology adoption and proposes a conceptual model. There are several TOE factors that have been proven to influence technology adoption, but in this study, the authors focus on technological factors of (relative advantage, and security), organizational factors of (top management support and organizational readiness), and environmental factors of competitive intensity, supplier computing support and percieved knowledge uncertainty. The next sub-sections are dedicated to providing the rationale for the anticipated hypotheses.

3. Research Model and Hypothesis

As the underpinning study model, TOE empirically outlines technological, organisational, and environmental elements as the three key determinants catalysing decision-makers' innovation adoption or rejection [40,41] with a robust theoretical basis and thorough examination of innovation implementation and adoption [42]. This research categorised the TOE model constructs by reviewing relevant literature on IT or IS adoption and implementation within SMEs. The elements underlying all three primary contexts (see Figure 1) and hypothesis development are meticulously described in the following sub-sections given the plethora of classified factors that could impact the SME C-ACC adoption [14].

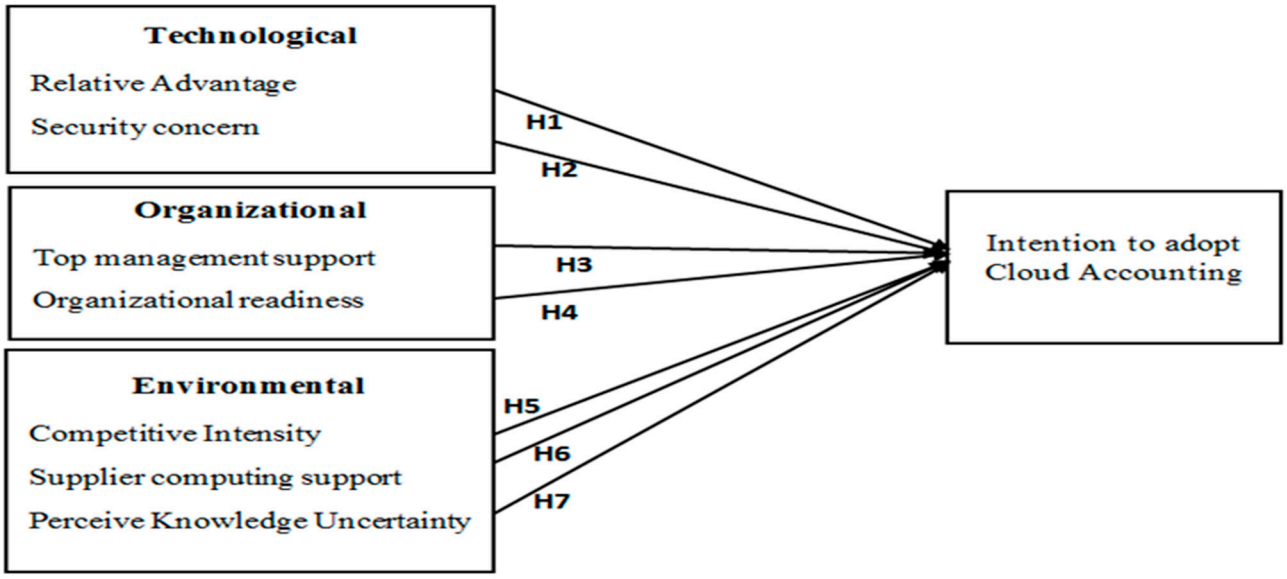

Figure 1. Proposed study model.

3.1. Technological Constructs

In line with past research on IT and IS adoption [2,8,43] that incorporated the TOE framework to explore this situation in SMEs, organisational technological characteristics could justify IT or IS innovation attributes that affect adoption-oriented decisions [42,44]. According to the several research conducted in the area of cloud computing adoption, the most relevant, and significant characteristics from the technological attributes are relative advantage and security concerns; thus, this study derived them from technological constructs and included in the current study's examination [2,42,43,45].

3.1.1. Relative Advantage (RA)

Relative advantage can be defined as the extent to which decision-makers believe that specific technology adoption could improve organisational performance. Businesses tend to implement innovations that have unequivocal and significant benefits of generating their operational and strategic success [8,46]. Relative advantage of adopting C-ACC is that it saves business' time, reduces cost, and enhances productivity. C-ACC provides SMEs various benefits that were not probable before, such as enhanced flexibility and scalability, pay-per-use option, as well as easy installations and upgradation processes [14,47]. Alshira'h et al. [14] stated that when SME perceive C-ACC providing a Relative advantage, it is more likely that it implement C-ACC in their processes and operations. It was claimed further that cloud mobility and scalability provide SMEs more control over their IT expenditure and operations.

Several studies hypothesised Relative advantage to have an explicit impact on behavioural intention towards specific IT or IS adoption [39,44] following past literature [48–50]. Specifically, extensive examination on RA based on varying IT and IS adoption, including the implementation of social medias [51], mobile services provider (MSP) [52], and big data proved positive and significant in line with Lutfi et al. [53]. As such, the following hypothesis is developed:

Hypothesis 1 (H1). *The RA significantly influences the intention to adopt cloud accounting.*

3.1.2. Security Concerns (SC)

Essentially, Security concerns implies the degree to which an online platform could be concerning for data exchanges and digital interactions. A notable increase in Security concerns is identified following computer network intricacies [54–56]. Security risks have been highlighted as a primary empirical concern during online business performance in terms

of data interception, viruses, and hacking [45,56–58]. Much research has been conducted on Security concerns examination through cloud computing among SMEs [42,58–61]. For example, a survey study encompassing 1415 companies in six European nations to explore the innovation attributes that could be associated with e-business enterprise adoption disclosed a negative SC-EB adoption relationship. Fillis, Johannson and Wagner's [62] research involving 21 United Kingdom SMEs summarized that Security concerns could hamper and delay e-commerce adoption in business. The following hypothesis is duly developed, as the construct requires examination in the cloud computing adoption context among SMEs:

Hypothesis 2 (H2). *The SC significantly and negatively influences the intention to adopt cloud accounting.*

3.2. Organisational Constructs

Novel company innovation adoption could be impacted by organisational constructs under the TOE framework, thus implying that company attributes potentially affect technology adoption-related decisions [2,39]. Two organisational elements, top management support (TMS) and organisational readiness (OR), were regarded in C-ACC adoption within SMEs.

3.2.1. Top Management Support (TMS)

Alsyouf and Ishak [63] defined TMS as higher-level management support for business innovation technology acceptance and adoption. Notably, TMS is associated with one of the top organisational-level IT or IS adoption [2,44,64,65]. Businesses with high TMS would be inclined to adopt CB-AIS following innovation adoption studies using TOE which complemented the positive and significant effect of TMS on organisational decisions towards innovation adoption or acceptance [41,43,44]. In this vein, the following hypothesis is developed:

Hypothesis 3 (H3). *The TMS significantly influences the intention to adopt cloud accounting.*

3.2.2. Organisational Readiness (OR)

Essentially, OR implies the degree of obtainable organisational (financial and technical) resources for technology acceptance or adoption [44]. Empirically, OR positively and significantly influenced company decisions towards innovation adoption [8,66]. Fathiaan et al.'s [67] e-readiness model assessment review, which outlined the vital factors for SME e-readiness evaluation, revealed that OR significantly forecasted IT and IS adoption by SMEs. Meanwhile, Lutfi et al. [53] examination on the big data analytics (BDA) of Jordanian retailers highlighted OR as a substantial BDA adoption indicator in this setting. Hence, the following hypothesis is developed:

Hypothesis 4 (H4). *The OR significantly influences the intention to adopt cloud accounting.*

3.3. Environmental Construct

The environmental construct constitutes the industrial structure, obtainability of technology provider, and competitive business setting [42,68] under the TOE model. Scupola [69] stated that novel innovation could be affected through supported technology infrastructure while Alshira'h et al. [14] and Lutfi et al. [39] disclosed that the availability of competent employees or consultants and technology services supplier stimulates innovation. The environmental construct under the TOE model offers useful insights into the impact of external environment pressures on organisational technology adoption [70,71]. Two technology attributes under the environmental domain justified the changes in C-ACC adoption intention among SMEs, such as competition Intensity (CI), supplier-computing support (SCS) and Perceived Knowledge Uncertainty (PKU).

3.3.1. Competition Intensity (CI)

This pressure type denotes the pressure level encountered by businesses from their rivals to catalyse business innovation adoption and competition [39,72]. Specifically, businesses could reflect optimal market perspectives, productivity, operational competence, and competitiveness with C-ACC adoption [14,73]. Organisations with medium-level competitiveness would be inclined towards cloud-based system adoption. Novel technology is adopted and employed by organisations to be at par with their competitors for improved SME technology adoption applications [5]. Recent research on the Competition Intensity impact on novel technology adoption has empirically revealed its significance [44,74] in boosting positive SME adoption intention regarding C-ACC. In this vein, the following study is hypothesised:

Hypothesis 5 (H5). *The CI significantly influences the intention to adopt cloud accounting.*

3.3.2. Suppliers Computing Support (SCS)

Successful cloud-based technology application requires supplier support [2] given the essentiality of partnerships for inter-organisational system acceptance or adoption (Gangwar [75]. Additionally, powerful suppliers could employ IT or IS approaches to motivate trading partners towards novel innovation acceptance and adoption [2,76]. In this regard, businesses tend to engage in technology acceptance with expert suppliers [77,78]. Parallelly, Frambach et al. [79], Hsu, Ray and Li-Hsieh [34], and Woodsid and Biemans [80] claimed the Suppliers computing support composition by cloud provider to encompass training, marketing, support, technical customer's services, and troubleshooting. Potential customers' predicted risks could be mitigated by revealing the significance of supplier's activity (communication and targeting). Services provider could offer support agreement and consistent system testing and maintenance for data integrity and loss prevention by establishing 24-h assistance Centre's. The aforementioned outcomes lead to the following hypothesis development:

Hypothesis 6 (H6). *The Suppliers computing support significantly influences the intention to adopt cloud accounting.*

3.3.3. Perceived Knowledge Uncertainty (PKU)

PKU refers to unpredictable changes in several potential sources such as uncertainty about results, technical complexity, distrust of changes, and lack of information available in executing businesses decision-making [44,81]. Perceived Knowledge Uncertainty indicate the lack of knowledge about a particular technology that could leads to unexpected results. Subsequently, the associated changes and the usage decision may imply unpredictable risks. With this regards, several researcher consider uncertain knowledge as a significant barrier of innovations adoption [72,81]. Previous studies on technologies has consistently acknowledged Perceived Knowledge Uncertainty to be as a key result of an uncertain environment. In fact, in more uncertain environments, the responsibilities are more critical as pressing businesses strategy modifications are demanded. Lutfi [82] pointed out that an environment that is more uncertain increases the need for innovations, and, therefore, businesses will be more likely to be innovative. Thus, the businesses need to seek advice and information will become more persistent.

The Uncertainty may indicate that of shortage of knowledge concerning a specific technology might cause lack in predictable results. Therefore, the associated changes and/or the decision to adopt may involve some threats. The new technologies adoption means getting implied in new something and, thus, the extent of uncertainty related to it is higher as well. This is because the emergence of new innovations might increase Knowledge Uncertainty as something cheaper, better, or more appropriate might appear. Based on that, managers or decision makers could delay their adoption decision for a period or they might wait until one of their vital peers adopt and use the technology before decide

whether to adopt or not. In the case of SMEs, with their well-known context of limited resources, any mistake can be costly, and such firms may not have enough time or resources to acquire knowledge, which could assist in sorting out various technologies selections. Therefore, facing many innovation choices under Perceived Knowledge Uncertainty, SMEs will be more likely to wait and delay innovation adoption to see what happens. Hence, the argument can be made that SME operating in an environment with highly uncertain knowledge tend to focus more on existing technology to enhance its efficiency rather than take the risk and decide to adopt innovations as formulated in the following prediction:

Hypothesis 7 (H7). *The Perceived Knowledge Uncertainty has negative influence on the intention to adopt cloud accounting.*

4. Materials and Methods

4.1. Measurement and Data Collection

The theoretical study constructs were evaluated with a questionnaire survey consisting of items from past literature, which was disseminated to Jordanian manufacturing SMEs. Specifically, Relative advantage, security concerns, TMS, OR, Competition Intensity, Suppliers computing support, and Perceived Knowledge Uncertainty were assessed on a five-point Likert scale ranging between 1 ('strongly disagree') and 5 ('strongly agree') for consistency with the study construct sources (Appendix A). A digital survey was employed following its easy accessibility and maximum probability of optimal data collection. The survey could be accessed with a link regardless of time and space within three months. A pilot study was performed on the instrument pre-actual survey by disseminating it to 40 voluntary SMEs who addressed the request. Notably, the pilot study respondents were omitted from the actual research. The pilot study outcomes subsequently developed the scale validity and reliability and translation consistency [83].

The survey was carried out over three-months period (12 July 2021–14 October 2021). The survey questionnaire was distributed to SME owners or managers with significant influence on the decision-making process. The respondents were selected based on their expertise and voluntariness. A total of 173 questionnaires were returned from the initial 500 distributed counterparts with a response rate of 35%. The derived datasets were subsequently analyzed with the SPSS software package to omit invalid or inaccurate content, such as duplicate or irrelevant observation, structural error, incomplete record, and missing data. The derived data were scrutinized and cleaned. The structural errors were then rectified through the omission of duplicates and irrelevant and missing records. Summarily, 156 out of the 173 records were evaluated post-data screening.

The results summary of the participant's profile is presented in Table 2.

Table 2. Demographic characteristics.

Characteristic		Frequency	Percent
Position	CEOs	78	50.0%
	Senior managers	41	26.3%
	Managers	37	24.7%
Experience	3 years or less	41	26.3%
	4–7 years	32	20.5%
	8–11 years	44	28.2%
	More than 11	39	25.0%
Gender	Male	94	60.3%
	Female	62	39.7%

Table 2. *Cont.*

Characteristic		Frequency	Percent
Age	20–29 years	33	21.2%
	30–39 years	39	25.0%
	40–49 years	59	37.8%
	50 years and above	25	16.0%
Education	Diploma or below	18	11.5%
	Bachelor degree	75	48.1%
	Master's degree	51	32.7%
	PhD	12	7.7%

4.2. Data Analysis

The data assessment was performed with Smart Partial Least Square–Structural Equation Modelling (PLS-SEM) in considering the model intricacy and number of predictors [84,85]. The evaluation outcomes are duly tabulated and extensively discussed. This study corresponded to theory exploration or development as opposed to theory confirmation [86–88]. The PLS-SEM was preferred over covariance-based SEM (CB-SEM) as the current study strived to enhance the data-driven variance explained compared to model fit estimation following Hair et al. [87].

5. Results and Interpretation

5.1. Measurement Model

The measurement model was assessed with the following criteria: internal reliability (IR), convergent validity (CV), and discriminant validity (DV) [87]. Construct reliability is typically measured through Cronbach's Alpha. In the study context, the reliability values exceeded the 0.70 threshold [87] (see Table 1). The CV was affirmed by exploring item loadings: composite reliability (CR) and average variance extracted (AVE). Based on the outcomes tabulated in Table 1, item loadings and AVE values exceeded the proposed threshold value of 0.50 [89]. The CR values also ranged within the required values (over 0.70) [87]. Meanwhile, DV was assessed through the correlations of potential overlying latent construct. Notably, the square root of AVEs for every construct exceeded its correlation and that of similar entities (see Table 3), hence indicating the presence of DV in the study variables [90].

Table 3. Reliability of constructs.

Latent Construct	Cronbach Alpha	CR	AVE
	>0.700	>0.700	>0.500
IA C-ACC	0.864	0.917	0.787
RA	0.842	0.893	0.678
SC	0.827	0.885	0.657
TMS	0.817	0.891	0.731
OR	0.859	0.904	0.703
CI	0.849	0.899	0.688
SCS	0.758	0.860	0.673
PKU	0.792	0.878	0.709

Note: Intention to adopt cloud accounting (IA A-ACC), Relative advantage (RA), security concerns (SC), top management support (TMS), organizational readiness (OR), Competition Intensity (CI), Suppliers computing support (SCS), and Perceived Knowledge Uncertainty (PKU).

The AVE square roots on the diagonal line proved higher compared to the inter-construct correlations in Table 4 values, thus implying optimal DV. The measurement model attained construct and item-level prerequisites in regarding all the indicators. The structural model and hypotheses were subsequently tested.

Table 4. The AVE square root (Fornell-Larcker criterion).

	IA C-ACC	OR	TMS	SC	PU	CP	SCS	PKU
IA C-ACC	0.888							
OR	0.751	0.839						
TMS	0.623	0.651	0.773					
SC	0.535	0.710	0.523	0.810				
PU	0.692	0.677	0.549	0.649	0.824			
CP	0.441	0.528	0.481	0.545	0.445	0.824		
SCS	0.661	0.577	0.492	0.476	0.601	0.350	0.888	
PKU	0.286	0.377	0.265	0.413	0.479	0.162	0.272	0.632

5.2. Structural Model

This study also investigated the endogenous-exogenous variable links with path coefficient (β) and t-statistics. Table 5 presents a summarized version of the hypotheses outcomes where hypotheses H1 to H6 proved statistically significant (RA–IA C-ACC, β = 0.164, t = 3.839, SC–IA C-ACC, β = −0.163, t = 3.748, TMS–IA C-ACC, β = 0.155, t = 3.878, OR–IA C-ACC, β = 0.262, t = 5.077, CI–IA C-ACC, β = 0.279, t = 5.110, SCS–IA C-ACC, β = 0.091, t = 2.282 and PKU–IA C-ACC, β = 0.170, t = 3.286). The findings empirically proved the significance of hypothesised relationships between RA, SC, TMS, OR, CI, SCS, and IA C-ACC in the Jordanian SMEs setting. Whereas the hypothesised relationship between PKU and IA C-ACC was rejected in the final model. Table 3 below summarizes empirical results of hypotheses testing. Figure 2 sheds more light also on results of path coefficient.

Table 5. Direct relationships model hypothesis testing result.

Hypothesis No.	Paths	β	S. E	T-Values	*p*-Values	Decision
H1	RA–IA C-ACC	0.164	0.042	3.839 **	0.000	Accepted
H2	SC–IA C-ACC	−0.163	0.043	3.748 **	0.000	Accepted
H3	TMS–IA C-ACC	0.155	0.040	3.878 **	0.000	Accepted
H4	OR–IA C-ACC	0.262	0.051	5.077 **	0.000	Accepted
H5	CI–IA C-ACC	0.279	0.054	5.110 **	0.000	Accepted
H6	SCS–IA C-ACC	0.091	0.040	2.282 *	0.025	Accepted
H7	PKU–IA C-ACC	0.170	0.052	3.286 **	0.000	Rejected

Note: ** Significant at $p < 0.01$ and * Significant at $p < 0.05$.

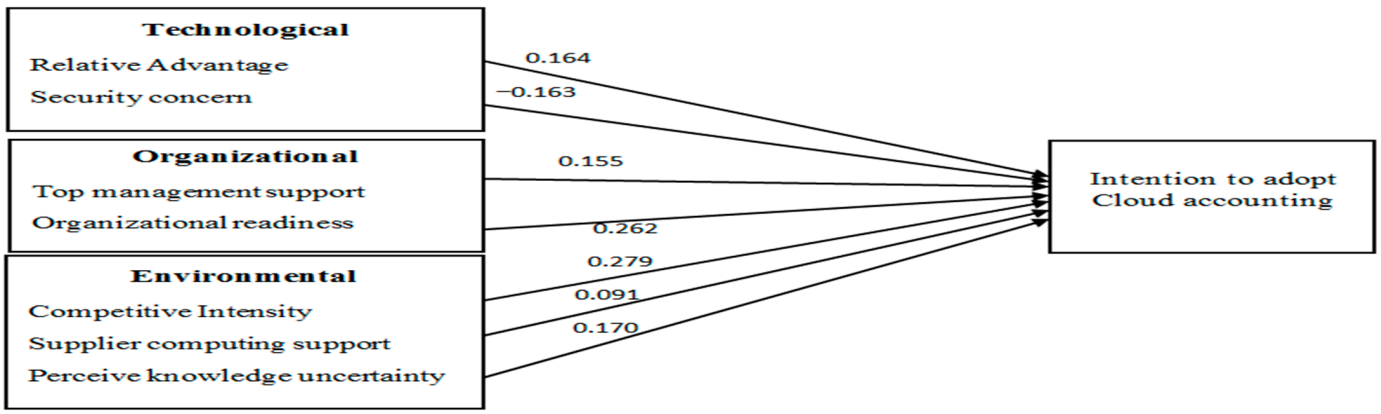

Figure 2. Results of path coefficient.

6. Discussion

6.1. Technology Context

Based on the study findings, relative advantage implied a significant catalyst of IA C-ACC among Jordanian SMEs as opposed to Alkhater, Walters and Wills [91] and Low, Chen and Wu [41]. Specifically, organisations were generally unaware of cloud-based system usefulness and benefits. Contrarily, Khayer, Talukder, Bao and Hossain [2], Oliveira, Thomas and Espadanal [42], and Makena [92] asserted that firms are aware and acknowledge cloud-based systems adoption, usage, and usefulness. The study supports the primary SME emphasis on potential system benefits, such as the generation of novel business possibilities, alleviation of IT or IS costs, and optimization of productivity and operations. Notably, such advantages are deemed impossible through conventional systems and technologies. Meanwhile, security concern hampered the IA C-ACC adoption among Jordanian SMEs following past literature on technology-oriented service acceptance [5]. As security concern could obstruct adoption intentions among SMEs, C-ACC adoption should be duly prioritised in this context. Potential adopters should be concerned about SC rather than source and service quality in the initial adoption-decision process. Overall, C-ACC providers should be conscious of the presence of SC as a barrier towards C-ACC adoption.

6.2. Organisational Context

This study provides actual proof involving the essentiality of management support through resources allocation and work processes engagement for optimal technology or system adoption decisions, including C-ACC. Similarly, Lutfi et al. [39] disclosed TMS to be one of the top organisational factors boosting novel innovations or technologies adoption and utilisation. The dynamic market environment is currently urging business to ascertain TMS in every pivotal decisions [2,93] and prevent technology or system (C-ACC) failure [94]. The study also highlighted a positive and strong impact of OR on IA C-ACC adoption among Jordanian SMEs in line with past research [8,14]. Moreover, PU and financial and technical OR induced optimal C-ACC adoption.

6.3. Environmental Context

The Suppliers computing support positively and explicitly affected IA C-ACC within the Jordanian SME setting. Predictably, Suppliers computing support could support SMEs due to inadequate technological, human, and financial resources for infrastructural sustenance and development, which gradually leads to cloud-based system acceptance adoption. The SME decision for cloud-based system adoption is greatly subjective to cloud-computing providers' trust and assurances in offering and maintaining distinct services. From SME managers' perspective, service supplier support implies one of the most influential aspects, which ensures that SMEs would not encounter future complexities (data loss or availability) and continue to receive service testing and maintenance. Essentially, competitor's intensity denoted the most substantial IA C-ACC determinant by Jordanian SMEs. The significant and positive competitor's intensity influence on innovations adoption or acceptance also corresponded to past research [8,41]. In other words, SMEs that encounter competitor's intensity are compelled towards innovation adoption or acceptance. The C-ACC adoption in SMEs occurs when such implementations catalyse competitiveness and business performance.

The environmental context with indicator Perceived Knowledge Uncertainty also positively affects awareness of C-ACC. The pandemic of COVID-19 has caused many changes regarding SMEs. Several SMEs faced a fall in conducting daily tasks. Such conditions of uncertainty have made SMEs owners/managers more aware and conscious of the significant and existence of C-ACC. SMEs feel a high necessity to adopt and use C-ACC, which eventually will increase their competitiveness. In this regard, it has been reported by a number of studies that businesses that that operate in a dynamical environment to depend more heavily on innovations as an effective alternative tools of decisions-making [95–97]. Furthermore, businesses are operating in high Perceived Knowledge Uncertainty regard

investments in innovation as their priorities, and, hence, they tend allocate more investment for innovations [8]. Aside from that, environment with high level of Perceived Knowledge Uncertainty appears to impart a positive impact on the association between organization structure and organization innovations. Additionally, the firm incentives for adopting and implementing new innovation/technology are catalyzed by demand uncertainties [61].

7. Conclusions

7.1. Theoretical Implications

This study aimed to determine factors affecting C-ACC adoption intention. Resultantly, RA, SC, TMS, OR, CI, and SCS revealed positive and significant effects on the C-ACC adoption intention within Jordanian SMEs. The present work contributes to theory by proposing a validated model containing the drivers of C-ACC adoption. The study supports TOE model in the organizations perception and for studies focusing on the antecedents of C-AA adoption. It also supports the applicability of TOE as a theoretical base for studies focusing on the antecedents of C-AA adoption. It extends cloud computing in general and C-ACC in particular literature by extending use of TOE model in explaining the association between selected technological, organizational and environmental factors and C-ACC. Despite extensive works on the use of cloud computing services, very little has been related specifically to C-ACC field.

7.2. Practical Implications

The organizational managers may get benefited by the results of this study, as this study has provided valuable information about the determinants of cloud computing adoption. This study may help the organizational managers and policy-makers in formulating strategies for effective cloud computing adoption. In addition, the time required for efficient usage of the same may be analyzed. Although CI and TMS had, a substantial affect A-ACC in SMEs, OR had a highest influence such relationship. SMEs exhibit early resistance to readiness, which works as a barrier to C-ACC adoption. Hence, to adopt C-ACC, the willingness and interest of the SME's decision-makers are required, and the management support can be attained only if the willingness and desire are there. To ensure that such process runs in effective way, the C-ACC readiness in SMEs must be suited. Most importantly, SMEs need to confirm that readiness is continuously sustained, as it is the most vital factor for adoption of C-ACC.

The study outcomes also provide valid information for Jordanian C-ACC computing providers to make business-oriented decisions. Cloud-based services imply an emerging albeit disruptive technology. Businesses are not highly aware of cloud-based system usage potentials, specifically in emerging countries resembling Jordan. As such, computing providers and suppliers should implement multiple procedure to elevate target users' awareness of technological benefits with several promotional seminars and workshops. User-friendly interfaces and functional utilities should also be prioritised during cloud-based system designing for SME so that adopter with partial technologies knowledge and expertise could conveniently implement or adopt systems. It is deemed necessary to offer clear navigations or instructions in facilitating SME users towards effective system operations and adopting and increasing SME adopters' confidence for cloud-based system employment resembling C-ACC.

7.3. Limitations and Recommendations for Future Studies

Although this study empirically expands the current body of knowledge on the behavioural intention of cloud-computing adoption or utilisation under TOE, specific research limitations were encountered for future scholarly examination. Firstly, the sample population of this study was SMEs, which has distinct structural flexibility and resources when compared to the large kind of firms, thus, future works are suggested to retest the conceptual framework on larger enterprises. Secondly, as the current study data were gathered from one sample country (Jordan), and therefore, the results cannot be generalized to other

geographical region. In order to simplify such limitation, future research could be performed by including study samples from similar nations or by considering a cross-country comparative research for framework validation. Thirdly, future research could extend the proposed model by including other appropriate constructs under the three primary contexts given that this study structured the current framework with vital constructs from three dimensions. Fourthly, a longitudinal research design could be implemented for a specified duration as the current study model was assessed with a one-time cross-sectional data. Fifthly, individual (employee) and cloud technology providers' perspectives should also be empirically regarded in the future for a holistic comprehension of cloud computing adoption or acceptance processes as this study strived to explore C-ACC adoption intention in SMEs from organisational viewpoints. Further examination on large-scale sample application proves necessary to ensure study representativeness given the novelty of cloud-computing-oriented technologies in Jordan, specifically within the accounting systems discipline. Sixthly, as the current model examined some of potential factors, influences of other factors such as organization culture, government support and firm size should be explored further in order to increase robustness of the findings. Lastly, technology evaluation post-adoption (optimal adoption or implementation) could be pivotal for future studies as this research solely examined the organisational C-ACC adoption intention among SMEs.

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Appendix A

Table A1. Variables with measurement items factors.

Variable	Measurements	Source
C-ACC adoption	Our business intends to adopt C-ACC. Our business intends to start using C-ACC in regular bases in the future. Our business would highly recommend C-ACC for others to adopt.	[4]
Relative advantage	C-ACC enables our business to appropriately manage supply chain risks. C-ACC enables our business to minimize all types of waste throughout the warehousing operations. C-ACC would enable our business to respond faster than competitors would to changing environments. C-ACC would enable our business to minimize total product cost to final customers. C-ACC would enable our business to deliver product precisely on-time delivery to final customers.	[39]
Security Concern	The need to outsource BD creates concerns on data security and privacy. The need to outsource BD creates vulnerability in access control of the business's information asset. The need to outsource BD creates risks through excessive dependency towards vendor. The need to outsource BD complicates the process of implementing corporate policy in protecting individual privacy and data security.	[55,60]

Table A1. *Cont.*

Variable	Measurements	Source
Top Management Support	Our top management determines the need for C-ACC solutions. Our top management involve in selection of appropriate hardware and software. Our top management promotes adoption of C-ACC. Our top management involve in planning for developments in C-ACC adoption.	[39]
Organizational Readiness	We are financially ready to use C-ACC. We have enough technological resources to use C-ACC. Our employees have adequate knowledge to use C-ACC. Our business values and norms would prevent us from using C-ACC in our operations. We have in-house expertise to use C-ACC.	[8]
Competitive Intensity	We feel pressure when competitors have adopted C-ACC. We feel the fear of losing a competitive advantage if they do not adopt C-ACC. We see competitors benefiting from adopting C-ACC.	[72]
Knowledge uncertainty	Cloud computing services might not perform well and create problems with our IT operations. Cloud computing services servers may not perform well and may not support our IT operations effectively. We think C-ACC has not reached its maturity. We think C-ACC still requires changes to become more efficient compared with existing technologies.	[72,98]
Supplier Computing support	Our cloud Supplier provides adequate technical support. Our cloud supplier is credible and trustworthy. Our cloud supplier has good relations with my organization. Our cloud supplier is experienced and provides quality training and services. Our cloud supplier communicates well with my organization.	[75]

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