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Examining the determinants of cloud computing adoption among the Kuwaiti SMEs

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Abstract: Cloud computing (CC) has emerged as a promising technology for supporting business operations, particularly for small and medium enterprises (SMEs) that face financial and technical resource constraints. Despite its potential benefits, the level of cloud computing adoption (CCA) among SMEs in Kuwait remains relatively low. This study aims to investigate the factors influencing the intention to adopt cloud computing (IACC) among Kuwaiti SMEs by employing a research model grounded in the Technology–Organization–Environment (TOE) framework. A quantitative methodology was adopted, and data were collected through a survey of SME owners and managers in Kuwait. The proposed model examines the effects of relative advantage, security concerns, top management support, competitive pressure, trading partners' pressure, and entrepreneurial orientation on IACC, with social influence tested as a moderating variable. The findings reveal that technological, organizational, and environmental factors significantly affect SMEs' intentions to adopt cloud computing, while social influence strengthens several of these relationships. The study concludes that enhancing managerial awareness and addressing security concerns can accelerate CCA. These findings offer valuable theoretical contributions and provide practical insights for policymakers and SME decision-makers in Kuwait and similar emerging economies.

Keywords: *Cloud computing, IT services, Kuwait, Small and medium enterprises, Technology-organization-environment framework.*

1. Introduction

Small and medium enterprises (SMEs) are the backbone of economies around the world, especially in developing countries, and are considered a key driver of economic growth for any country [1, 2]. According to the World Bank, formal SMEs account for up to 40% of the total national GDP in emerging economies [3]. Crucially, SMEs contribute significantly to job creation worldwide, accounting for more than 50% of employment opportunities [3, 4]. Moreover, SMEs play a key role in regional development by providing essential goods and services, creating job opportunities for locals, and reinvesting in their communities [5].

Nevertheless, SMEs face various challenges that jeopardize their stability and viability [3, 6]. Among those challenges are: keeping up with the highly competitive market [7], insufficiency of technological skills [8], and lack of financial resources, which is one of the most cited challenges [9-11].

Therefore, the advent of Cloud Computing (CC) appeared as an opportunity for the SMEs sector to overcome many of the technological and financial challenges, given that SMEs spend around 25% of their IT budget on planning data recovery, a burden that will be eliminated with Cloud Computing Adoption (CCA) [11].

However, despite the benefits that CC brings to SMEs, especially in developing countries, the adoption level remains low in this context [11, 12]

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Different studies have identified various challenges that hinder CCA by SMEs, among them are: shortage of competencies and resources [9, 13], concerns about privacy and security [12, 14], and trust [12, 15]. However, this research area is still lacking, with many gaps that need to be bridged [9, 11, 16].

For example, Jayeola et al. [16] contend that studies focusing on specific CC services are lacking, with most existing studies discussing CCA in general, thereby ignoring differences across services. They also called for more studies on this topic across different contexts, as contextual differences significantly affect CCA.

Moreover, due to differences in knowledge resources and information quality between developed and developing economies, further research is needed to investigate how SMEs in developing countries adopt digital technologies to acquire knowledge and gain a competitive advantage [9]. In fact, Sharma et al. [11] called for further research to investigate CCA in emerging economies.

Another topic that needs further research is the barriers to adopting digital technologies, including CC, by SMEs in developing markets, and the relationship between technology adoption and competitive pressure in this context, which is one of the objectives of the current research [9].

Kuwait is an emerging economy in which SMEs are considered the core of the national economy, contributing around 3% to GDP and employing approximately 23% of the total workforce [1, 2]. Despite their importance to the Kuwaiti economy, literature on SMEs and relevant issues remains limited, especially regarding the determinants of ICT adoption in general and CC specifically, as mentioned by Alzougool [1] and Alzougool [2], confirmed by a preliminary study conducted by the authors of the current paper [17].

For instance, the level of CCA among Kuwaiti SMEs is still as low as 22.7% [17, 18], which signifies the need for more research to understand the reasons behind that low figure, given that Kuwait is among the few countries in the region that have developed 5G infrastructure [19].

Replying to the above-mentioned calls, and as an attempt to contribute to bridging the existing gaps in this growing research area, the current study investigated the determinants of CCA among Kuwaiti SMEs; by doing so, the authors aim to achieve the following objectives:

1) To investigate the level of intention to adopt cloud computing (IACC) among Kuwaiti SMEs.
2) To identify the factors that influence IACC among Kuwaiti SMEs
3) To propose a model that incorporates the ICAA influential factors.

The current paper is structured as follows: after this introduction, the next section is the literature review, which summarizes the ICAA factors discussed in previous studies. The model proposed in this study will then be presented, defining the included factors and providing justification for their inclusion. Next, the relationships between the independent variables and the dependent variable have been hypothesized, along with the justification for including the moderating variable (MV). The paper concludes by emphasizing its key findings, summarizing its contribution to practice and academia, and highlighting future research directions.

2. Literature Review

This section provides the theoretical foundation for this research paper, beginning with defining the key relevant concepts, proceeding to review the relevant studies and the most commonly used theories in the area, and ending with identifying the key factors that influence IACC among SMEs.

2.1. Cloud Computing Concept and Characteristics

The term CC has been defined in numerous ways, each of which depends on the scientific or technical field in which it was proposed [20].

This study adopts the definition provided by the National Institute of Standards and Technology (NIST), as cited in Zhang et al. [14]: "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., network, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort

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or service provider interaction. The reason for choosing the NIST definition over others is that it describes CC in a formal, comprehensive, and typical manner [21]. This definition describes the characteristics of CC that distinguish it from other computing models, including on-demand service, broad network access, resource pooling, rapid elasticity, and measured service [12, 21].

2.2. B. SaaS

Virtualized CC primarily offers three service delivery models: platform-as-a-service (PaaS), software-as-a-service (SaaS), and infrastructure-as-a-service (IaaS) [22]. SaaS (Software as a Service) is a type of cloud computing model that provides applications and services hosted in the cloud, allowing users to access their applications and databases over the Internet [21]. This model can be obtained based on a software-on-demand or pay-per-use basis [21, 23], so, the user can get access to applications with configuration settings depending on the contracting agreement, while the service provider is responsible for managing cloud infrastructure, including networks, servers, operating systems, and storage, as well as for maintenance issues and required updates [21].

SaaS-CC provides SMEs with services for business processes, such as customer relationship management and business resource planning, as well as office tools, such as Microsoft Office 365 (cloud-based). The SaaS model is well-suited to SMEs, as it aligns with affordability, allowing them to access their applications and software needs over the internet without the need for expensive on-premises infrastructure or dedicated IT staff.

Moreover, SaaS-based cloud solutions do not require a significant upfront investment, which allows SMEs to stay up to date with the latest software updates, as well as receive instant technical support, making them cost-effective for SMEs and enabling them to focus more on core business operations rather than worrying about maintaining IT components.

2.3. The Adoption of Cloud Computing in SMEs

The literature on CCA in SMEs clearly shows why these enterprises need to embrace and use CC services [8]. Compared to large organizations, SMEs have the advantage of faster communication between employees and the ability to conduct business more quickly. On the other hand, SMEs face challenges due to limited financial and human resources [9, 24].

Given the limited resources of SMEs, CC technology appears to be a solution to keep the costs of IT resources under control due to the characteristics of CC, such as flexibility, scalability, business agility, and a pay-per-use option that perfectly controls costs [14, 25-27]. CC is beneficial to all types of enterprises, but it is crucial for SMEs, as they need to embrace this technology to address the financial and human limitations referred to earlier [12, 14, 16, 28].

CC is particularly beneficial for SMEs in many ways, in terms of cost reduction. For instance, CC reduces the amount of money spent on buying software licenses, as CC allows SMEs to use software that may be expensive to purchase [12, 28, 29]. It also cuts the cost of hardware maintenance [25-27, 30]. In addition, the characteristics of CC, such as elasticity and short-term contracts, can provide SMEs with greater flexibility [26, 31]. The CCA leads to the creation of new business models, increased production, and higher business performance and revenue [9, 16, 26, 31].

2.4. Variables Affecting Intention to Adopt Cloud Computing

This section discusses the variables related to the research problem and provides answers to the research questions. In the current study, identifying significant variables began with a preliminary study to obtain valuable insights into the topic. The search was then extended to include relevant literature on CCA among SMEs. In the current study, the proposed research variables are identified based on the research problem, the findings of the preliminary study, and key findings from the previous studies reviewed in the relevant literature.

Accordingly, the following variables have been identified:

- Relative Advantage (RA)

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- Security Concerns (SC)
- Top Management Support (TMS)
- Social Influence (SI)
- Competitive Pressure (CP)
- Trading Partners' Pressure (TPP)
- Entrepreneurial Orientation (EO)

Based on the research problem, the dependent variable has been identified as the IACC. The independent variables are explained in the following subsections.

2.4.1. Relative Advantage (RA)

The term RA refers to the degree to which the current innovation is perceived as providing greater benefits in comparison with previous versions [32], and perceived benefits (PB) in the context of technology adoption can be defined as the level of perceived advantages that a technology can provide to the organization [33]. Following the same concept, the terms RA and perceived benefits have been used interchangeably in research on technology adoption, and both refer to the same thing [34].

The current study adapts the RA definition provided by Rogers [32] as follows: the degree to which the CC is perceived as providing greater benefits than traditional IT systems for Kuwaiti SMEs.

2.4.2. Security Concerns (SC)

The term SC is related to information systems security. The foundation of information systems security is based on data confidentiality, integrity, and availability [35]. Confidentiality requires that information be kept secret and protected against unauthorized access. The integrity of information resources refers to the protection of data from unauthorized changes that could compromise its accuracy and reliability. System resource availability refers to the fact that resources such as data, software, and hardware must be accessible to authorized persons at the right time, Zissis and Lekkas [36]. Armbrust et al. [28], Buyya et al. [25] have emphasized that the main SC in the field of using CC are as follows:

- Data confidentiality
- Data lock-in
- The availability of adequate quality services.

In the current study, SC is defined as the concerns of Kuwaiti SMEs regarding the CC system's ability to protect data confidentiality, prevent data lock-in, and provide adequate service quality.

2.4.3. Top Management Support (TMS)

The willingness of top management is crucial when it comes to adopting new technology, since their willingness is the key to approving sufficient financial investment, human resources, and technological competencies, which are necessary for adopting new technology [6, 37], while the absence of such support can lead to the failure of the technology adoption process [38]. TMS has been defined differently in literature, for instance, Oliveira et al. [37] defined it as "the extent of support provided by top management to embrace and implement CC, while taking on the financial and organizational risks involved in the adoption process"; while Jianwen and Wakil [39] explained it as the obligation of top management to the process of CCA. According to Premkumar and Roberts [40], TMS is the extent to which SMEs' top management is committed to providing the required resources to implement CCA.

In the current study, the definition of TMS is adapted from the above paragraph to refer to the extent of support provided by top management in Kuwaiti SMEs in embracing and implementing CC while taking on the financial and organizational requirements of the adoption process.

2.4.4. Entrepreneurial Orientation (EO)

EO of business owners or managers has been cited most often as one of the factors influencing enterprise performance [41-43].

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Previous studies indicate that, in the context of globalization and growing competition, SMEs with greater EO are more likely to achieve better performance [44]. In addition, the results of the preliminary study [17] clearly indicated that EO affects SMEs' IACC in Kuwait.

EO is defined as the extent to which an organization is ready to make a decision and initiate an action that encourages the acquisition and exploitation of organizational resources to obtain a sustainable competitive advantage [43, 45]. The current study adopts the unidimensional view of EO measurement. In this view, EO comprises three components: innovativeness, risk-taking, and proactiveness [45, 46]. In the current study, EO is defined as the extent to which a Kuwaiti SME enterprise is ready to make decisions and initiate actions that encourage the acquisition and exploitation of organizational resources to obtain a sustainable competitive advantage.

2.4.5. Social Influence (SI)

SI is one of the external variables that has been associated with the innovation diffusion process [32] and which has been shown to influence technology adoption profoundly [47-51].

SI is defined as the extent to which an individual believes it is better to use a particular technology because of the influence and interaction with other important persons [49, 50]. Moreover, based on several earlier studies, SI has also been considered one of the most influential determinants of CCA among SMEs [11, 30, 52].

The massive and accelerating spread of ICT in society today, including various forms of social media, creates a dynamic environment that supports SI and enables it to play a greater role in determining whether a particular technology is used and adopted [23, 53]. This is because SI occurs through trends disseminated on social media [54]. For example, consumers' comments on their buying experience may influence others to purchase the same item, depending on the realism of the feedback [55]. That is why researchers need to understand the role of SI in technology adoption.

The definition of SI for the current study is adapted from previous definitions as the extent to which a manager or owner of a Kuwaiti SME believes it is better to use CC technology, based on influence and interaction with other individuals.

2.4.6. Competitive Pressure (CP)

The literature has pointed to CP as a well-recognized factor in the environmental context that can influence firms' adoption of particular technologies, for example, in the field of IT [56, 57]. The literature shows that competition between SMEs drives these organizations to find and adopt technologies that improve their business performance by increasing productivity, reducing costs, and thus enhancing competitiveness [34, 56-58]. For example, when an organization encounters a technology already adopted by most competitors, it feels intangible pressure to adopt it [58, 59]. This is because new technologies are important for organizations in competitive markets to access the advantages they offer and support their competitiveness [37].

CP is significant in many studies, such as by Satar and Alarifi [60] in a study related to the adoption of e-business in SMEs in the Kingdom of Saudi Arabia, KWABENA et al. [61] in a study to investigate the determinants of mobile payment system adoption among SMEs in Ghana, and Asiaei and Ab. Rahim [62] conducted a study regarding CCA in Malaysian SMEs. In the current study, the definition of CP is adopted from Hsu et al. [63] as the perceived pressure from business competitors forces Kuwaiti SMEs to adopt CC technology to maintain competitiveness.

2.4.7. Trading Partner Pressure (TPP)

TPP is one of the reasons organizations adopt and implement technologies, and it has been discussed from an innovation diffusion perspective by Rogers and Williams [59]. For example, a study by Abed [64] found that TPP significantly influenced SMEs' intention to adopt e-commerce applications. The term trading partner refers to a business relationship between two organizations or between an organization and its customers [65]. According to Wamba et al. [65], the relationship

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between two organizations was the type of trading partner most often addressed in the context of technology adoption in organizations. However, some studies, such as that by Abed [64], have addressed TPP involving both organization and organization as well as organization-customer relationships, in a study related to technology adoption in SMEs.

In the current study, TPP is defined, as adapted from the above-mentioned paragraphs, as the extent to which a Kuwaiti SME enterprise faces pressure from a trading partner due to the trading partner's desire for CC technology services.

2.5. Theories of Cloud Computing Adoption in SMEs

The main issue the current study seeks to address is the low levels of CCA among Kuwaiti SMEs. Therefore, an appropriate theory is needed to explain the relationships between identified potential influencing factors and IACC among Kuwaiti SMEs. The use of theories is important for providing a systematic framework for understanding events by identifying and analyzing the relationships between influencing factors, thereby facilitating the explanation and prediction of these events [66].

Technology adoption is commonly examined from two perspectives: the individual and organizational levels [67]. Given that the current study focuses on SMEs, it is pertinent to consider theories of organizational-level technology adoption.

The literature on technology adoption models in the field of information systems at the organizational level identified two prominent models: the diffusion of innovation (DOI) theory and the technology, organization, and environment (TOE) framework [68]. Details on both are provided below.

2.5.1. Diffusion of Innovation Theory

DOI theory was developed to explain why and how organizations adopt new ideas and technologies [69]. It states that the technology adoption rate is directly impacted by five technological attributes, which are: (1) RA: "the degree to which an innovation is perceived to be better than the idea it supersedes," (2) compatibility: "the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters," (3) complexity: "the degree to which an innovation is perceived as relatively difficult to understand and use," (4) trialability: "the degree to which an innovation may be experimented with on a limited basis," and (5) observability: "the degree to which the results of an innovation are visible to others" [69]. In the context of SMEs, DOI has been used to explain the determinants of the adoption of certain technologies across various contexts. For example, Mamun [70] used it to examine the determinants of innovation adoption among manufacturing SMEs in Malaysia, while Faisal and Idris [71] applied DOI to examine the variables influencing supply chain technology among Malaysian SMEs.

2.5.2. Technology-Organisation-Environment Framework (TOE)

The TOE framework was proposed by Tornatzky et al. [72] to analyze the adoption of new technologies in organizations. It is essential to consider influential factors from technological, organizational, and environmental contexts. The technological context describes how the organization's internal technologies, used within the organization, and external technologies, available in the marketplace but not currently in use by the organization, affect the adoption of new technology [73]. Among the factors classified under this dimension are RA and complexity [51, 74, 75]. The organizational context defines the characteristics or resources of the organization that impact the process of adopting new technology [76]. Organization size and employees' skills are examples from the organizational context. The environmental context relates to the field in which the organization conducts its business. CP and TPP are examples from the environmental context. The TOE framework has been used extensively in the area of technology adoption by SMEs for instance, Chuen and Topimin [77] used it to study the determinants of technology adoption among Malaysian SMEs that operate in rural areas, meanwhile, [78] used it to study e-business adoption among Indonesian SMEs, which is

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similar to the study by Satar and Alarifi [60] who investigated e-business adoption factors between Saudi SMEs.

3. Research Model Development

This section addresses the development of the proposed research model for the IACC among SMEs in Kuwait. Firstly, it focuses on the theoretical underpinnings of the suggested research model, justifying the selection of the TOE framework as its theoretical foundation. Then, it presents the formulation of the hypotheses that explain the relationships between different variables of the research model, laying the groundwork for the forthcoming empirical investigation.

3.1. The Application of the TOE Framework in the Current Study

As mentioned before, the DOI theory and TOE framework are prominent models used in the field of information technology adoption in organizations. Both have been successfully implemented in technology adoption. This indicates that each can be utilized in a study regarding technology adoption at the organizational level. However, this study adopts the TOE framework to develop the research model, based on the following. First, since the independent variables in the current study are classified into technological, organizational, and environmental contexts, it is important to use a theory that accounts for the presence of variables across these contexts. This applies fully to the TOE framework, since it was initially developed to examine variables from these three contexts as influencers of technology adoption in organizations.

On the other hand, the environmental context in the DOI theory is not clearly addressed. Thus, the TOE framework provides a better understanding of the external factors that may influence the technology adoption process in organizations. Second, compared to the DOI theory, the TOE framework is seen to have greater explanatory power in examining technology adoption and related variables, particularly in the organizational context [79]. Third, the recent literature indicates that the TOE framework was more frequently used than the DOI theory [62, 80] in studies addressing CC adoption in SMEs. Consequently, the current research model is formulated based on the TOE framework, as illustrated in Figure 1.

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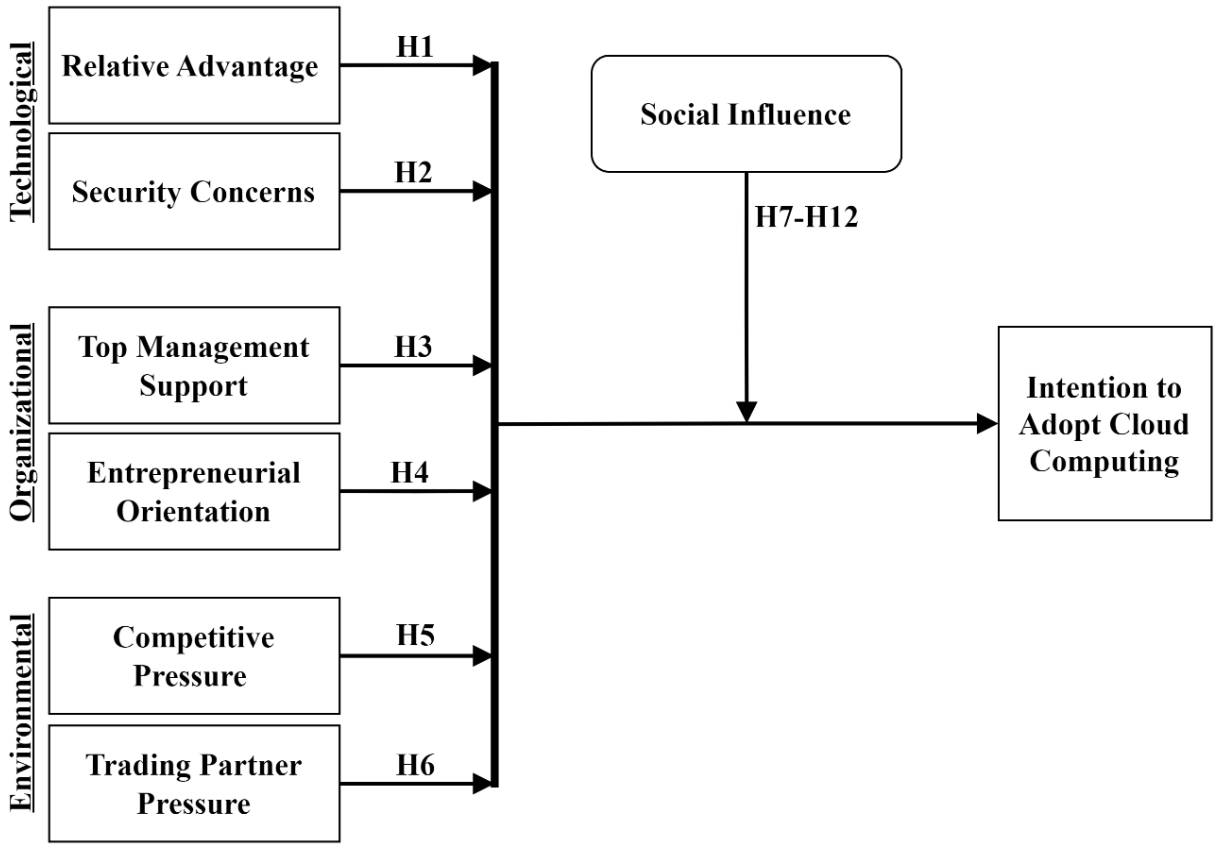

Figure 1.
The Proposed Research Model.

3.2. Hypotheses Formulation

To understand the relationships between RA, SC, TMS, EO, CP, TPP, and IACC, a set of research hypotheses has been developed. The hypotheses include six for direct effects and the same number for moderating effects. The following subsections present the proposed hypotheses.

3.2.1. The Relationship between RA and IACC

The DOI theory [69] explains that the adoption of innovation depends on potential adopters' evaluation of the innovation's RA. When a general manager in a firm believes that a particular technology (i.e., CC) will be beneficial to the business, that manager will be positive about embracing CC. The positive perception of the characteristics of new technology, as RA, creates an incentive to use it [37, 69].

The literature indicates several empirical studies that emphasize the positive relationship between RA and the IACC, such as those by Alshenaifi and El Sayad [80], Iranmanesh et al. [81], Shetty and Panda [30], and Khayer et al. [8].

This study proposes that whenever Kuwaiti SME owners and managers have a positive perception of CC in terms of RA, they are motivated to adopt this technology. Therefore, it is reasonable to propose the following hypothesis:

H_1: RA positively influences the IACC of Kuwaiti SMEs.

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3.2.2. The Relationship between SC and IACC

The success of the technology adoption process depends on how organizations address the accompanying SC. When considering adopting new information technology, organizations usually examine issues such as SC related to information security, Chu and So [82]. Semantic-Corp [83] stressed that despite advanced cloud-based security solutions, the supply chain (SC) remains an obstacle to cloud computing adoption (CCA) by enterprises, in terms of protecting against data loss, leakage, and breach of confidentiality; thus, SC harms IACC in organizations. This is emphasized by many empirical studies, such as Alshenaifi and El Sayad [80], Asiaei and Ab. Rahim [62] and Alkhater et al. [84].
It is proposed in this study that SC is an obstacle that negatively impacts the IACC in Kuwaiti SMEs, which leads to the following hypothesis:

H_2. SC negatively influences the IACC of Kuwaiti SMEs.

3.2.3. The Relationship between TMS and IACC

The theoretical basis for TMS is the TOE framework, which assumes that TMS is an organizational factor and has a positive impact on technology adoption [72]. When top management understands the new technology and its importance, it will guide the organization and its employees to use the new technology. On the other hand, if top management does not have a positive perception of the new technology, there is a greater possibility that the organization will not consider adopting this technology [8, 37]. Several studies have emphasized the positive impact of TMS on the CCA process, including those by Shetty and Panda [30], Khayer et al. [8], and Asiaei and Ab. Rahim [62].

Accordingly, this study proposed that the presence of TMS in SMEs positively influences their IACC adoption through the following hypothesis.

H_3. TMS positively influences the IACC of Kuwaiti SMEs

3.2.4. The Relationship between EO and IACC

The EO, through its dimensions, can influence the intention to adopt technologies in SMEs as follows. The innovativeness dimension fosters a mindset that encourages the use of state-of-the-art technologies and the adoption of new technologies [43]. The willingness to take calculated risks (risk-taking) leads organizations with a high level of EO to adopt new technologies to increase business performance and gain greater competitiveness [85]. The proactive approach leads to identifying and capitalizing on business opportunities, which makes enterprises with higher EO more likely to adopt new technologies, thereby positively affecting their intention toward technology adoption [86].

Therefore, it can be suggested that enterprises with higher EO are more likely to seek out and adopt innovative technological solutions. The positive impact of EO on the organization's technology adoption decisions is supported by several studies, including those by Bosma and Levie [41], Foba and De Villiers [42], and Lee and Wong [87]. In this study, the following hypothesis is proposed.

H_4. EO positively influences the IACC of Kuwaiti SMEs.

3.2.5. The Relationship between CP and IACC

Competition among firms creates pressures to adopt technologies to sustain their competitive edge in the market [63, 88, 89]. SMEs feel an intangible pressure to adopt innovation when most other SMEs have already adopted it, realizing that the other SMEs, as competitors who have adopted the technology, enjoy innovation advantages. Thus, these organizations attempt to adopt the new technology used by their competitors to gain the same advantages that support competitiveness [58]. Hence, CP can serve as a factor with the potential to impact the process of innovation adoption by SMEs. The positive impact of CP on the process of technology adoption has been supported by many studies addressing the CCA in organizations, including SMEs [34, 60-62, 88]. Accordingly, the following hypothesis is proposed.

H_5. CP positively influences the IACC of Kuwaiti SMEs.

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3.2.6. The Relationship between TPP and IACC

Just as Rogers and Williams [59] noted that the TPP is a potential determining factor in the innovation diffusion process, Salimon et al. [90] stated that several studies emphasized the TPP's importance as an influencing factor in technology adoption in organizations. Hence, meeting trading partners' requirements was also identified as a significant factor influencing the adoption of technology in SMEs [64, 91].

Many previous studies indicated a significant and positive effect of the TPP on technology adoption intention in SMEs, in the context of developing countries, among the examples are: Abed [64] from KSA, Trawnih et al. [92] from Jordan, Salimon et al. [90] from Malaysia, and Wamba et al. [65] from India. Moreover, the preliminary study reported that the TPP could be a potential influence on the CCA process among Kuwaiti SMEs.

Thus, the following hypothesis was proposed:

H_8. TPP positively influences the IACC of Kuwaiti SMEs.

3.3. Justification for Using SI as a Moderator

The MV is an independent variable that affects the strength or nature of the relationship between two other variables: one is independent, and the other is dependent [93]. The MV can be considered when the relationship between an independent and a dependent variable is strong in a given study, but appears weak or inconsistent in another study [94].

However, the literature indicates that, in studies on IACC in organizations, there are fluctuations or inconsistent relationships between independent and dependent variables. For example, the literature on the process of CCA indicates that a significant effect was reported for RA in a study conducted by Alshenaifi and El Sayad [80], while in another study conducted by Tawfik et al. [95] in the same area, RA was not supported by the results as a significant factor.

Regarding TPP, it was found to be a significant influence in studies by Abed [64] and Trawnih et al. [92], but not significant in Hsu et al. [63]. CP was also found to be non-significant in a study by Tawfik et al. [95] while it was significant in other studies, such as those by Satar and Alarifi [60] and KWABENA et al. [61]. An additional example is on TMS, which had a significant effect on IACC in studies conducted by Khayer et al. [8] and Asiaei and Ab. Rahim [62] found it non-significant in studies by Alkhater et al. [84] and Hassan et al. [34]. The mentioned mixed results regarding the relationships between IVs and DVs indicate the presence of a potential MV, as explained by Baron and Kenny [96].

Therefore, it is useful to include MV in a study when examining whether a relationship between an independent and a dependent variable is moderated by a third variable [97]. In this current study, SI was proposed as an MV. Initially, the selection of SI in this study as an MV was based on two factors. First, the preliminary study indicated the presence of SI in the CCA process among Kuwait SMEs.

Second, because of the culture and society in Kuwait. Society in Kuwait is known for the strong bonds between its members, with families, acquaintances, and friends maintaining close relationships. Just as everyone is willing to share and celebrate special social occasions with others, they also share general life information, including what can be beneficial in different areas such as business, the use of new ideas, and technologies [98]. From this perspective, Alhaimer [99] emphasized, in a study on the adoption of online advertising technologies in Kuwaiti SMEs, that SI was one of the significant factors.

Similarly, Alkhater et al. [84] found that SI has a significant impact on CCA in organizations, including SMEs, in Saudi Arabia, one of the developing GCC countries, similar to Kuwait and sharing a similar societal culture.

For that, SI was proposed as a moderator for the relationships between the independent variables and the dependent variable, and the following subsections hypothesize these relationships:

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3.3.1. SI as a Moderator on the Relationship between RA and IACC

SME owners' or managers' perceptions of the RA of CC can be influenced by knowledge sharing through SI. Accordingly, their evaluation of RA in CC is affected by SI. SI can influence how much an owner or manager prioritizes RA when considering cloud usage. Therefore, the relationship between RA and IACC may be influenced by SI's role as an MV. Thus, the following hypothesis is proposed.

H_{7}: SI moderates the relationship between RA and the IACC of Kuwaiti SMEs.

3.3.2. SI as a Moderator on the Relationship between SC and IACC

SME owners' or managers' perceptions regarding the supply chain (SC) of using cloud computing (CC) can also be affected by social influence (SI) outcomes. The extent to which the owner or manager perceives the significance of the supply chain is strongly influenced by social influence, thereby impacting their decision to adopt the technology. Therefore, the relationship between supply chain and IACC is arguably influenced by social influence's role as a MV. Thus, the following hypothesis is formulated.

H_{8}: SI has a moderating effect on the relationship between SC and the IACC of Kuwaiti SMEs.

3.3.3. SI as a Moderator on the Relationship between TMS and IACC

SME owners' or managers' perceptions of business can be influenced by knowledge sharing through SI. These owners or managers usually constitute the top management in SMEs. Their support (TMS) is important in the process of CCA in their enterprises. Accordingly, their perceptions of and approaches to considering and financing CCA can be affected by SI. Hence, SI appears to have a potential role as a moderator in the relationship between TMS and IACC. In other words, the relationship between TMS and IACC can be affected by the role of SI as an MV, putting forward the following hypothesis:

H_{9}: SI moderates the relationship between TMS and the IACC of Kuwaiti SMEs.

3.3.4. SI as a Moderator on the Relationship between EO and IACC

SI can facilitate the sharing of information about CC best practices and success stories among SME representatives. This can affect the owners' understanding of how CC can align with their EO goals. SI can shape SME owners' normative beliefs regarding CCA. When they perceive that adopting CC is expected or valued by their peers, it may affect their proactivity as an EO characteristic and increase their IACC in alignment with their EO. Therefore, the possibility of SI serving as a moderator in the relationship between EO and IACC is highly likely. Thus, it is hypothesized that:

H_{10}: SI has a moderating effect on the relationship between EO and the IACC of Kuwaiti SMEs.

3.3.5. SI as a Moderator on the Relationship between CP and IACC

The business environment for SMEs is challenging due to intense competition. Therefore, SMEs should consider their competitors' performance to keep pace by seeking solutions that drive change and create a competitive advantage. However, SMEs' perceptions of CP influence, which push them to consider solutions such as CCA, can be shaped by knowledge sharing through SI. This suggests a potential role for SI as a moderator in the relationship between CP and IACC. Therefore, the following hypothesis is suggested.

H_{11}: SI has a moderating effect on the relationship between CP and the IACC of Kuwaiti SMEs.

3.3.6. SI as a Moderator on the Relationship between TPP and IACC

Some knowledge may lead to determining how important it is to consider pressure when adopting a particular technology, such as CC. Based on this, the possibility of SI moderating the relationship between TPP and IACC is conceivable. Thus, it is postulated that:

H_{12}: SI moderates the relationship between TPP and the IACC of Kuwaiti SMEs.

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4. Conclusion and Future Research Directions

This paper describes the conceptualization of a research model to explain the relationships among the factors that influence IACC among Kuwaiti SMEs. The model was developed based on insights from a literature review and the findings of a preliminary study conducted at the early stage of this research.

This continuous research project will proceed with the validation of the proposed model; hence, a quantitative approach will be followed, as it is the most suitable for hypothesis testing [100]. Data will be collected using a survey distributed to SMEs operating in the service sector in Kuwait, and partial least squares structural equation modeling (PLS-SEM) will be applied to explore the nature of the relationships.

This study contributes to the body of knowledge in different ways: theoretically to the academic field and practically to the SME sector in Kuwait and similar emerging economies. Primarily, the study responds to calls from multiple previous studies to investigate the determinants of CCA among SMEs in developing and emerging economies, a gap that remains unfilled in the literature.

Furthermore, the proposed model presents new insights into the theoretical relationships between the factors related to the CCA in SMEs by investigating the role of EO characteristics of managers in SMEs regarding CCA, in addition to the role of SI as an MV, which are relationships that were overlooked by previous studies in this research area. In practice, the study provides guidelines for Kuwait government institutions, such as KNF, the Kuwait Chamber of Commerce & Industry, and the Kuwait Institute for Scientific Research, to evaluate their policies, strategic frameworks, and regulatory frameworks for promoting CC technology among SMEs.

Also, the initial findings of this research can serve as a basis for developing and evaluating a plan for Kuwaiti SMEs to become more aware of the advantages, challenges, and organizational characteristics influencing the IACC of Kuwaiti SMEs, and to utilize CC technology successfully. Finally, the current research may provide Cloud Service Providers (CSPs) with the knowledge to better address the issues affecting IACC in Kuwaiti SMEs, thereby enabling them to find suitable solutions to encourage SMEs to subscribe to and adopt CC technology.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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