Borneo International Journal eISSN 2636-9826; Vol. 6 (3); 2023; 31-38
Published by *Majmuah Enterprise*
www.majmuah.com

The Moderating Role of Organizational Support and Government Initiatives for CC-SaaS Adoption: A Conceptual Model for SMEs in Pakistan

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Received: August 04, 2023
Accepted: August 13, 2023
Online Published: Sept 01, 2023

Abstract

The emergence and proliferation of cloud computing have caused a paradigm shift for organizations, moving them away from traditional servers towards data centers. Developed nations have extensively leveraged cloud computing to improve SMEs' operations, collaboration, and research, all while overcoming financial constraints. As such, the adoption of cloud-based services could prove to be highly significant for businesses of all sizes, including SMEs in developing countries. Despite the numerous benefits, SMEs in developing countries, particularly Pakistan, have hesitated to adopt cloud computing. In this study, a quantitative method will be employed, utilizing the Organizational Support Theory and the Technology-Organization-Environment theory, and moderator contribution variables relevant to the study, to investigate the factors influencing the intention to adopt a Cloud Computing Software-as-a-Service (CC-SaaS) model.

Keywords: Cloud computing, Software as-a-Service, SMEs, TOE, OST

1.0 Introduction

Technology has made life easier for consumers, companies, and manufacturers by improving management and organizational flexibility, leading to more efficient processes, cost savings and increased productivity (Mitra et al., 2022). The rising demand for advanced ICT practices from technologists, individuals, and governments has led to a new era of research that aims to serve the needs of users better, enhance the efficiency and output of businesses and governments, and increase bottom lines for all parties involved (Molinillo & Japutra, 2017). This is driven by recognition of the potential benefits of these technologies like improved communication, increased automation, and access to extensive data and information (Wong et al., 2022). Cloud Computing (CC) emerged as a solution to address the demands and challenges of businesses by providing faster innovation, flexible resources, and economies of scale (Khan et al., 2022). It refers to delivering computing services over the internet, allowing virtualization of computing resources that can be accessed on-demand, enabling businesses to scale their operations and reducing their dependence on expensive, inflexible hardware (Zulifqar et al., 2021). Additionally, CC offers significant cost savings by eliminating the need for adequate IT infrastructure and personnel investments, resulting in widespread adoption across various industries (Srivastava, 2019).

In CC, the term "Cloud" refers to a carrier or service provider that delivers services through the Internet (Surbiryala & Rong, 2019). "Computing" refers to the processing, computations, calculations, and other resources a computer provides (Priyadarshinee, 2018). CC is a form of computing that relies on the Internet to provide on-demand access to shared resources such as servers, storage, and software applications (Surbiryala & Rong, 2019). The use of CC enables scalability and flexibility, as users can access necessary services on-demand without investing in and maintaining their infrastructure. (Ali et al., 2022). CC is a future-oriented concept in information communication technology, based on the traditional hosting model for online internet use and used to store software applications, data, or both (Khan et al., 2022). According to Attaran and Woods (2019), CC is an ICT service paradigm in which computing services (including hardware and software) are made available to clients on-demand, across a network in a self-service manner, independent of device and location. Also, CC allows for greater flexibility and scalability in providing computing resources and improved accessibility and cost-effectiveness (Bhuiyan et al., 2019).

Moreover, the National Institute of Standards and Technology (NIST) in the United States has presented a widely accepted definition of CC (Mell & Grance, 2011). By these authors, NIST has defined cloud computing (CC) as a network-based access model for shared, configurable computing resource pools comprising networks, storage, servers, services, and applications. These resources can be rapidly provisioned and released with minimal administrative effort and interaction with the service provider. (Mell & Grance, 2011). This definition highlights the critical characteristics of CC, including its ability to provide on-demand access to shared resources, scalability, and ease of use (Majdalawi et al., 2016; Yang et al., 2015). Barbarossa et al. (2014) also support this definition, emphasizing that CC has the robust characteristic of service virtualization of resources for software applications. Based on IS adoption literature, most previous studies have focused on CC adoptions in public and private organizations to understand emerging trends (Sallehudin et al., 2015; Xu et al., 2018; Atzori et al., 2019; Zhang & Gong, 2021). Surbiryala and Rong (2019) suggested that organizations of all sizes and shapes have adopted CC due to its development and excessive expansion.

Therefore, experts Mell and Grance (2012), Field (2009), Marston et al. (2011), and Kratzke (2018) predicted that the trend of CC would continue to expand in the coming years. According to Ramzan et al. (2018), CC provides users with internet access to hardware and software resources, including processing power, operating systems, development platforms, and user apps. The studies by Almarabeh and Majdalawi (2016), Siddiqui et al. (2019) and Gallardo et al. (2018) found that CC is a collection of IT services that can be accessed and utilized as needed over the internet and has become increasingly popular in academia and businesses. Some researchers argue that CC offers a promising alternative to clusters, grids, and supercomputers (Loukis, Janssen, & Mintchev, 2019; Tarmidi et al., 2014; Aldahwan & Ramzan, 2022). Loukis et al. (2019) found that service quality is scaled dynamically and provisioned quickly under CC. Furthermore, the field of CC is characterized by two primary classifications: service and deployment models. According to the National Institute of Standards and Technology of the United States, CC encompasses three types of service models: SaaS (Software as a Service), PaaS (Platform as a Service), and IaaS (Infrastructure as a Service) (Mell & Grace, 2012). Mell and Grace (2012) also posit that the CC architecture encompasses four deployment models: public, private, community, and hybrid.

2.0 Literature Review

Recently, the most critical challenges of CC have been extensively discussed in Information Systems (IS) literature (Raghavan et al., 2020; Ivanov & Dolgui, 2021; Maqueira et al., 2019; Jayeola et al., 2022; Shilpashree et al., 2018). Consequently, academia and businesses have been strongly motivated to research related technologies (Asadi et al., 2017). The growing demand for cost-effective and adaptable IT solutions has prompted a keen interest in CC, necessitating research into efficient implementation and management of CC services (Bhuiyan et al., 2019). The literature review shows that the challenges of CC adoption have been studied from different perspectives, including technical, organizational, and economic views (Molinillo & Japutra, 2017; Ming et al., 2018; Nadda et al., 2019). CC is considered a robust computing standard as it reduces the barriers between IT and business (Tsaramirsis et al., 2022). Despite its ability to reduce computing costs, speed up corporate operations, and minimize time to market, the emergence of CC can increase the competitiveness of businesses (Abolfazli et al., 2015). For SMEs with limited resources, CC offers a hopeful future by distributing free or inexpensive software everywhere on the Internet (Alraja et al., 2020). According to Ageron et al. (2020), the CC market is anticipated to reach over USD 200 billion. Additionally, the Research Institute for the International Data Corporation (IDC) predicts that in 2025, cloud-based apps, services, and technology will account for between 60 and 70% of IT infrastructure spending Oke et al. (2021). Studies by Khadijeh et al. (2015) and Eze et al. (2021) also support that cloud storage has a higher data capacity than traditional operating systems. If cloud networking is correctly managed, it will positively affect business efficiency due to its many benefits. Many SMEs and government organizations worldwide embrace this technology (Qalati et al., 2021).

The literature review shows that the majority of previous studies have examined CC adoption in the context of SMEs in various developing countries (Kim et al., 2017; Khayer et al., 2020; Oliveira et al., 2019; Skafi et al., 2020; Oliveira, Thomas, & Espadanal, 2014; Gui et al., 2020). For example, Oliveira studied SMEs in Portugal using the Technology-Organization-Environment (TOE) and Diffusion of Innovations (DOI) frameworks. The study results indicate that relative advantage, security concerns, cost savings, complexity, compatibility, technology readiness, top management support, firm size, competitive pressure, and regulatory support are pivotal factors for adoption (Oliveira et al., 2019). Furthermore, Senyo et al. (2016) examined CC adoption in Ghana. They found that relative advantage, security concerns, top management support, technology readiness, competitive pressure, and trading partners' pressure are determinants for CC adoption. On the other hand, CC adoption studies have also been conducted using different theoretical frameworks. For example, Sharma conducted a survey using the Technology Acceptance Model (TAM) framework and found that computer self-efficacy, trust, job opportunities, perceived usefulness, and ease of use are significant factors in the CC adoption process (Kumar et al., 2016). Khayer's research revealed that relative advantage, service quality, perceived risks, top management support, facilitating conditions, cloud provider's influence, server

location, computer self-efficacy, and resistance to change are fundamental variables for CC adoption (Khayer et al., 2020).

Recently, Gui et al. (2021) performed an empirical study on CC measuring the impacts of various TOE factors such as Cloud Flexibility, Perceived Concern, Privacy, Relative Advantage, Perceived Cost-Benefit, Quality of Service, and Top Management Support. They found that adopting CC in Indonesian SMEs has a significant positive effect on innovation, while innovation positively affects organizations (Gui et al., 2021). According to Skafi et al. (2020) study, the results of a survey of Lebanese SMEs indicate that factors such as relative advantage, cost, security and privacy, compatibility, complexity, trialability, top management support, innovativeness, and prior specialized experience are all significant indicators that have a very positive impact on the context of SMEs. Based on a robust theoretical framework, the lack of studies on the adoption of CC by SMEs, notably in Pakistan, demonstrated that CC acceptance is in its early stages, as is technology adoption generally, especially in manufacturing SMEs (Pathan et al., 2017). According to their research analysis, relative advantage, compatibility, complexity, and cost reduction are strongly related to CC adoption (Pathan et al., 2017). In addition, the analysis indicates that prior research has explored CC adoption in various dependent variables. From the analysis, seven studies used the CC adoption dependent variable, and two found results for intentions to adopt CC in SMEs. Further, two studies focus on small enterprises similar to SMEs and three on small micro-level enterprises. The literature review shows that most previous studies tried to determine what factors generally affect cc adoption. Various authors have attempted to assess organizations' acceptance and usage of CC. Many studies employed different theoretical models, factors, and data analysis techniques to understand better CC adoption at the organizations, and limited studies have been found on CC adoption by SMEs (Taufiq-Hail et al., 2017; Goode et al., 2015; Lee et al., 2022).

In summary, the literature review suggests that previous research has explored various factors that impact the adoption of CC by SMEs (Shukur et al., 2018). These factors include relative advantage, security concerns, cost savings, complexity, compatibility, technology readiness, top management support, firm size, competitive pressure, and regulatory support (Shukur et al., 2018; Skafi et al., 2020; Gui et al., 2021; Khayer et al., 2020 ; (Pathan et al., 2017; Kumar et al., 2017). Additionally, various theoretical models, such as TOE and DOI, have been employed to understand CC adoption in SMEs (Gui et al., 2020; Nguyen & Liaw, 2022). However, a limited number of studies have been conducted specifically on CC adoption by SMEs in Pakistan (Oliveira et al., 2019; Kim et al., 2017). Therefore, this study aims to fill this gap in the literature by investigating the determinants of CC adoption by SMEs in Pakistan.

Table 1. Studies on Cloud Computing Adoption in Developing Countries

No.	Authors	Type of Organization	Adopted Theories	Sample taken	Dependent variables	Exogenous Factors
1	Gui et al. (2021)	SMEs	TOE	Indonesia	CC Adoption	Cloud Flexibility, Perceived Concern, Privacy, Relative Advantage, Perceived Cost-Benefit, Quality of Service, And Top Management Support
2	Gui et al. (2020)	Micro SMEs	TOE	Indonesia	CC Adoption	Cloud Security, Cloud Privacy, Cloud Flexibility Quality of service, Relative advantage, Complexity Compatibility, Perceived cost-benefit, Top management support, Reliability, Perceived concern

3	Skafi et al. (2019)	SMEs	TOE & Contextual Theory	Lebanon	CC adoption	Relative advantage, Cost, Security and privacy, Compatibility, Complexity, Trialability, Top management support, Innovativeness, Prior technological experience
4	Oliveria et al. (2019)	SMEs	TOE	Portugal	SaaS Adoption	Top management support, Technology competence, Environment context (normative, mimetic, and coercive pressures), Control variables (Firm size and industries sectors)
5	Kim et al. (2019)	Small Companies	TOE	Korea	Intention to Adopt SaaS	Performance risk, security risk and economic risk, quality improvements, cost advantage and business process improvements, Competition, government support, and vendor support.IT capacity, Slack Resources and top management support.
6	Khayer et al. (2019)	SMEs	TOE	Bangladesh	CC adoption	Relative Advantage, Service Quality, Perceived Risks, Top Management Supports, Facilitating Conditions, Cloud Provider's Influence, Server Location, Computer Self-Efficacy, And Resistance to Change
7	Shukur et al. (2018)	e-Government	TOE+ TAM	Iraq	CC Adoption	The Creation of ICT Infrastructure, Privacy, Security, Top Management Support, Ack of Qualified Staff, Lack of Collaboration, Resistance to Change Electronic Ways, Digital Divide, Culture, Cost, Laws and Legal Subjects.
8	Kumar et al. (2017)	SMEs	TOE+ TAM+ DOI	India	CC Adoption intention	Relative Advantage, Security Concerns, Top Management Support, External Pressure and service providers' support

9	Pathan et al. (2017)	SMEs	DIT	Pakistan	CC Adoption	Relative Advantage, Compatibility, Complexity and Cost Reduction
10	Senyo and Effah (2016)	Organizations	TOE	Ghana	Cloud Computing Adoption	Relative Advantage, Security Concern, Top Management Support, Technology Readiness, Competitive Pressure and Trading Partners' Pressure
11	Sharma et al. (2016)	Organizations	TAM	Oman	CC Adoption	Computer Self-Efficacy, Trust, And Job Opportunity, Perceived Usefulness and Perceived Ease of Use
12	Oliveria et al. (2014)	SMEs	TOE+ DOI	Portugal	CC Adoption	Relative Advantage, Security Concerns, Cost Savings, Complexity, Compatibility, Technology Readiness, Top Management Support, Firm Size, Competitive Pressure, Regulatory Support

Table 1, summarises studies in developing countries, the theories used, the research design utilized, and the research Determinants used to examine the dependent variable. It can be noted that there is limited research on the adoption of CC as a software service adoption in developing countries and specifically in Pakistan context. Nonetheless, this research only considers empirical papers. Similarly, most of the documents focused on only cc adoption, not from the perspective of the moderator perspective (Büyüközkan & Göçer, 2018). The study focuses on the CC-SaaS model for operation and will use survey-based techniques to fill this gap. The data will shed light on the research and provide strong evidence of the factors influencing the intention to adopt CC-SaaS in Pakistan SMEs.

CC can transform businesses' operations by providing cost-effective and scalable IT services (Loukis et al., 2019). However, the adoption of CC, especially SaaS, among SMEs in Pakistan is relatively low (Butt et al., 2019). One of the main reasons for this is the lack of organizational support and government initiatives. This critical literature analysis will examine the role of organizational support and government initiatives as a moderation variable for adopting SaaS in Pakistani SMEs (Muthia et al., 2021). Organizational support is crucial for adopting cloud computing services, including SaaS (Jawad et al., 2017). Several studies have investigated the role of organizational support in cloud computing adoption in different contexts. For example, a Taufiq-hail et al. (2021) survey found that organizational support positively influences cloud computing adoption. Similarly, a study by Skafi et al. (2020) found that organizational support positively affects cloud computing adoption in Lebanon SMEs.

2.1 SMEs Challenges Developing Countries

CC is considered a robust computing standard as it reduces the barriers between IT and business (Tsaramirsis et al., 2022). Despite its ability to reduce computing costs, speed up corporate operations, and minimize time to market, the emergence of CC can increase the competitiveness of businesses (Abolfazli et al., 2015). For SMEs with limited resources, CC offers a hopeful future by distributing free or inexpensive software everywhere on the Internet (Alraja et al., 2020). According to Ageron et al. (2020), the CC market is anticipated to reach over USD 200 billion. Additionally, the Research Institute for the International Data Corporation (IDC) predicts that in 2025, cloud-based apps, services, and technology will account for between 60 and 70% of IT infrastructure spending Oke et al. (2021). Studies by Khadijeh et al. (2015) and Eze et al. (2021) also support that cloud storage has a higher data capacity than

traditional operating systems. If cloud networking is correctly managed, it will positively affect business efficiency due to its many benefits. Many SMEs and government organizations worldwide embrace this technology (Qalati et al., 2021).

Additionally, Hassan and Omar (2018) argued that CC offers consistency in both mobility and accessibility, as employees can access their supply chain partners from anywhere. Annette and Banuw (2015) also noted that companies are free from application upgrades, bugs, or security issues as the service provider automatically handles these tasks. Many academics have emphasized CC as the most recent advancement in the IT field in recent years (Bajaj et al., 2020; Zdravković et al., 2022; Shilpashree et al., 2018; Erisman, 2013). According to the findings of Jayeola et al. (2022), most studies examined generic CC services (72.4%), whereas CC-focused research accounted for 17.1%. SaaS-based studies constitute 6.6%, while mobile-retail applications, SaaS, Big data analytics (Waibel et al., 2017), and CRM represent 1.3% of each CC service examined. The focus on generic CC services in SMEs indicates that distinctions between various CC services are frequently overlooked. In SMEs, the factors affecting each type of CC service will undoubtedly be unique (Bassiliades et al., 2018). Scholars such as Prasanna et al.(2019), Eggers (2020), Gamage et al. (2020), and Juergensen, Guimón, and Narula (2020) have noted that in many developing countries, small and medium-sized enterprises (SMEs) play a significant role in employment creation, industrial output, and exports. According to Putra (2019), the role of SMEs is crucial in boosting the economy of any nation. Pathan et al. (2017) conducted research that found that approximately 95% of all businesses worldwide depend on SMEs, accounting for 50% of value addition and providing 65% of employment.

A study by Dar et al. (2017) found that SMEs in Pakistan play a critical role in economic growth, technological innovation, sourcing for large and cottage industries, and promoting economic renewal and social development. The authors noted that, like many developing countries, Pakistan's economy is closely tied to its SME sector. Shah and Ahmad (2019) suggested that SMEs represent more than 90% of all private businesses and employ nearly 78% of the nonagricultural labour force in Pakistan. Other research has shown that in Pakistan, approximately 53% of all SME activity is in the retail trade, wholesale, restaurants, and hotel sectors, with 20% in industrial establishments and 22% in service provision. Pathan et al. (2017) surveyed that SMEs' contribution to Pakistan's gross domestic product is more than 30%. Additionally, literature by these authors explored the sector, which represents 25% of exports of manufactured goods and 35% of manufacturing value-added. In the context of Pakistan, some scholars have explored the intention of SMEs to adopt CC (Shah & Ahmad, '2019; Dar, Ahmed,& Raziq, 2017; Javed, 2020). For example, Razak et al. (2018) argued that SMEs in Pakistan are adopting modern technologies to participate in the global market and ensure their continued growth and viability. In another study, the number of internet users in Pakistan is expanding, and internet penetration and coverage have increased rapidly. However, the adoption of advanced ICTs technologies such as CC-SaaS for business purposes has not grown (Javed, 2020). According to Qalati et al. (2021) study, the contribution of Pakistan's approximately 3.3 million small and medium-sized enterprises (SMEs) to economic development cannot be overlooked. Pathan et al. (2017) research indicates that Pakistan's internet penetration and coverage have increased.

However, CC-SaaS for corporate purposes is still low in Pakistan. Due to the lack of financial and IT resources, Pakistani SMEs are slow adopters of emerging technologies (Pathan et al., 2017). Scholars Pathan et al. (2017) state that ICT advancements provide numerous opportunities to overcome these challenges. For example, CC-SaaS offers ubiquitous access to IT resources, including business applications, vast storage, and powerful computing at a reasonable cost through a convenient payment mode (Khan et al., 2022). Thus, the benefits of CC-SaaS in the context of SMEs can no longer be ignored. In Pakistan, the rapid penetration of 3G and 4G connections has recently encouraged organizations to rethink their IT requirements and adopt more sophisticated ICT solutions to grow and support their business activities.

3.0 Theoretical Framework

Different theories have been applied in Information Technology (IT) research to explain the adoption of innovation and technology (Hands, 2009). These theories have been employed in technology adoption contexts due to their specific strengths and weaknesses (Wambugu, 2018). Studies on innovation diffusion have applied different approaches based on the context and aim of the research (Williams, 2009). According to the literature, several foundational theories and models are commonly used for technology adoption (Wambugu, 2018), the Diffusion of Innovation (DOI) (Rogers, 2010), the Technology-Organization-Environment (TOE) framework (Damanpour & Wischnevsky, 2006), and the Human-Organization-Technology (HOT) (Yusof et al., 2008). Precisely, in this study, the intention to adopt CC-SaaS among Pakistani Smes will be conducted by amalgamating the TOE and OST theories. The Organizational Support Theory (OST) emphasizes that employees worldwide perceive the organization's concern for them and appreciation for their contributions (Eisenberger et al., 1986; Rhoades & Eisenberger, 2002; Wayne, Shore, & Liden, 1997). Perceived organizational support (POS) is based on the organization's favourable treatment of employees (Eisenberger et al., 1986). According to OST, following the principle of reciprocity, employees will attempt to reciprocate the

organization's support by increasing their efforts to help it achieve its objectives (Eisenberger, Fasolo, & Davis-LaMastro, 1990). The Technology Organization Environment (TOE) theory recognizes three aspects of enterprise context that influence the process by which it adopts and implements a technological innovation; The TOE context (Oliveira & Martins, 2011). The TOE framework represents how the organizational context affects the adoption and implementation of innovations (Baker, 2012). Hence, The TOE elements influence the firm's level of technological innovation, and, all three elements are posited to influence technological innovation (Baker, 2012). Furthermore, The TOE framework is defined as a general theory (Zhu & Kraemer, 2005). The assessment appears to be appropriate seeing that it is a theory in which numerous factors can be placed. Hence, the TOE framework is compatible with the OST theory(Alnasrallah, 2022). The factors are classified into Technological factors, Cloud Relative Advantage, Cloud Security, Technology Readiness. The Organizational factor includes; organization support. The Environmental factor includes Government Initiative.

4.0 Conceptual Model and Research Hypotheses

This study aims to develop a model for the intention to adopt Cloud Computing Software-as-a-Service (CC-SaaS) in Pakistani SMEs focusing on the technological, organizational, and environmental Perspectives. The proposed model is attempting to detect the factors that will influence the intention to adopt CC-SaaS in Pakistani SMEs. The proposed model is designed using the TOE and OST(Eisenberger et al., 1986; Tornatzky & Fleischer, 1990). As depicted in Figure 1. The research model illustrates the formation of the TOE and OST factors. The proposed model is grouped into three dimensions, Technology, Organization, and Environment.

4.1 Technological Factors

The Technology perspective embodies the Inner and External technologies associated with the organization; both existing technologies in use and the technology readily accessible in the market (Gupta et al., 2018).
Cloud Relative Advantage is “the degree to which an innovation is perceived as being better than its predecessors ”(Tom et al., 2019). Thus, the bigger the perceived Cloud Relative Advantage is, the faster the level of adoption will be by the organization(Safari et al., 2015). Thus, Cloud Relative Advantage is one of the central indicators of the new IS innovation adoption (Bhuiyan et al., 2019). Thus, the influence of Cloud computing promises a variety of gains to startup organizations, like small enterprises, and SMEs for easy adoption decisions (Jawad et al., 2017). Similarly, Cloud computing can offer SMEs ample benefits such as cost savings and improved efficiency (Gui et al., 2020). Therefore, the Cloud Relative Advantage of Cloud computing from the perspective of emerging countries is tremendous even though the adoption rate is still small (Ayoobkhan et al., 2018). Therefore, we propose:

Hypothesis H1(a): There is a positive relationship between Cloud Relative Advantage and CC-SaaS intention to adopt.

The concept of cloud security and accessibility has been widely studied in information technology (Kim et al., 2017). Cloud security encompasses the protection of data and systems involved and refers to a combination of information security, software security, network security, identity security, and infrastructure security (Sheng et al., 2019; Chong et al., 2021; Zulifqar et al., 2021). On the other hand, accessibility refers to the ease of reaching the data and systems and is an essential factor in the adoption of CC by SMEs (Zhang et al., 2018; Nguyen & Liaw, 2022). Users expect their data to be secure and private yet easily accessible when needed. Additionally, the limited internet capacity and weaker devices used to access cloud services may also impact the adoption of these services, highlighting the significance of accessibility (Oliveira et al., 2019; Rastogi et al., 2018). Prior research has established that security concerns, including the risk of data breaches, outages, and loss, are significant barriers to SMEs' adoption of cloud-based services. The literature has consistently shown that security concerns are a significant challenge in CC adoption studies in the context of SMEs (Farooque et al., 2021). Hence, it is hypothesized that:

Hypothesis 2(a): There is a positive relationship between Cloud Security and CC-SaaS intention to adopt.

The concept of technology readiness refers to the preparedness of information technology (IT) infrastructure and professionals to embrace new technologies (Karim & Rampersad, 2017). This factor plays a crucial role in organisations' adoption of CC (Ming et al., 2018). Oyemike (2017) argues that implementing CC will bring numerous benefits if businesses are technologically prepared. Previous research in information systems (IS) highlights that the technology readiness construct significantly impacts organisations' intention to adopt CC behaviours. For example, the study analysis conducted by scholars Kadhum and Hasan (2017) revealed that technology readiness has a substantial impact on enhancing the operational structure of organizations. Amini (2016) also concurred that the structural aspects encompass the technological platform or infrastructure, such as installed network technologies and enterprise systems. Within a firm, CC services can complement or substitute for these technologies (e.g., by implementing a cloud-based storage solution for collaborative document sharing) (Muthia et al., 2021). Kumar et al. (2017) conducted a study that

demonstrated that a higher level of knowledge about technological innovations positively influences the likelihood of their adoption by organizations. Adequate basic ICT infrastructure and technical proficiency are crucial for organizations to adopt CC successfully (Awiagah et al., 2016). As a result, firms with sufficient technology readiness are better prepared for CC adoption SMEs. Based on these observations, the following hypothesis is proposed:

Hypothesis 3(a): There is a positive relationship between Technology Readiness and IT and CC-SaaS intention to adopt.

4.2 Organizational Support Factors as a moderator

The Organizational perspective is associated with the resources and the features (characteristics) of the SMEs such as the Size, Managerial and operational Structure, etc. Hence, Organization's current technologies are crucial in the procedure of adoption because, they set an extensive (broad) boundary on the scope and the speed of technological change the enterprises can undertake (Collins et al., 1988). Organizational support refers to the extent to which management is willing to provide resources or assist employees in achieving organizational goals and objectives (Eisenberger & Stinglhamber, 2011). Previous studies have established a correlation between organizational support and the use of computer systems as it relates to attitudes and behaviours (Neves et al., 2014). On the other hand, a lack of organizational support can have negative consequences (Kurtessis et al., 2015). Upper-level management support is crucial for fostering the utilization of advanced computer technology by employees at work (Eisenberger & Stinglhamber, 2011). Previous research has indicated that the availability of organizational support can lead to employees feeling more supported by the organization, improving their perceptions of the usefulness of computer technology and increasing their intention to use it (Kurtessis et al., 2015). Furthermore, it can cultivate employee commitment, work efficiency, and productivity within the organization. Tripathi and Nasina (2015) also conducted a study which analyzed the impact of organizational support on the adoption of CC, and the results indicated its significance. As a result, it is suggested that the relationship between organizational support (OS) and intentions to adopt CC-SaaS will be strengthened when organizational support is examined as a moderator. Based on the preceding literature, the following hypothesis is proposed:

Hypothesis (H4). Organizational support will moderate the intentions to adopt the CC-SaaS relationship.

Previous research suggests that deploying cloud services raises security concerns for organizations as sensitive data is stored, processed, and handled by an external provider in a multi-user environment (Kim et al., 2017). Security factor impedes CC, as companies are kept at a third-party data centre (Shirvani et al., 2022). The literature also supports this notion; Khalil and Shaout (2018) and Korpela et al. (2017) found that security concerns and trust are critical factors that influence the adoption of CC-SaaS. The cloud adoption literature reviews also indicate that security concerns are frequently cited as significant barriers to CC adoption (Raghavan et al., 2020). Based on these findings, the following hypothesis is proposed: Security concerns will positively impact organizational support for CC-SaaS intention to adopt.

Hypothesis H1(b): There is a positive moderating relationship of Organizational support between Cloud Relative Advantage and CC-SaaS intention to adoption.

Previous research suggests that the deployment of cloud services raises security concerns for organizations as sensitive data is stored, processed, and handled by an external provider in a multi-user environment (Abolfazli et al., 2015). The adoption process constitutes a potential obstacle to adopting CC, as the data may be retained at a third-party data centre (Siddiqui et al., 2019). The literature also supports this notion, with Premarathne et al. (2021), Dincă et al. (2019), and Bello et al. (2021) finding that security concerns and trust are critical factors that influence the adoption of CC-SaaS. Reviews of the cloud adoption literature also indicate that security concerns are frequently cited as one of the significant barriers to CC adoption (Lee & Kim, 2018). Based on these findings, the following hypothesis is proposed: Security concerns will positively impact organizational support for CC-SaaS adoption.

Hypothesis 2(b): There is a positive moderating relationship of Organizational support between Cloud Security and CC-SaaS intention to adoption.

4.3 Government initiative as a moderator

Implementing government initiatives is crucial in supporting small and medium-sized enterprises (SMEs) and new startups in investing in technologies that can improve their performance and reduce costs (Julian, Ahmed,& Sefnedi, 2013). It is also crucial for governments to enforce laws that ensure the security, privacy, and confidentiality of data (Awiagah, Kang, & Lim, 2016; Abaidoo & Blankenberge, 2022). Previous research in Denmark and Australia has emphasized the crucial role that government initiatives play in facilitating SMEs' adoption of CC in developed countries (Amron et al., 2017). However, in developing countries, the lack of adequate IT infrastructure can hinder the

adoption of technology, particularly internet-based technologies like CC (Abaidoo & Blankenberger, 2022). This study examined the experiences of companies in the country that have faced these challenges for an extended period.

Companies operate within a particular environment that influences their decisions. Although prior research has demonstrated a direct impact of the environment on the adoption of Software as a Service (SaaS) (Hiran & Henten, 2020), there is limited evidence of the potential moderating effects that this environment may have on the technological and organizational contexts in the adoption process (Hassan et al., 2022). Given that enterprises are part of a unique surrounding environment that impacts their behaviour, it is reasonable to examine whether the environmental context affects the other components of the Technology-Organization-Environment (TOE) framework. Therefore, this study hypothesizes that the environmental context may favour moderating the SaaS adoption process. Following is the proposed hypothesis.

Hypothesis (H5). Government Initiative will have a moderating effect on intentions to adopt the CC-SaaS relationship.

Earlier researchers suggested that Government Initiative (GI) is an essential demographic variable that has direct and moderating effects on the intention to adopt technology (Raza et al., 2018). Mohammed et al. (2016) considered that including GI as a moderator would increase the explanatory power of a CC-SaaS. (Skafi et al., 2020)also reported that GI was an essential moderator within their CC adoption model from an SME perspective. Skafi et al. (2020) also said that GI was an important moderator within their CC adoption model from an SME perspective. Skafi et al. (2020) found that the relationship between GI and intention to adopt CC was more robust for employees as they give more significant weightage to extrinsic rewards (i.e., perceived usefulness), motivating them to use the new and advanced system. Therefore, it is hypothesised that there is a moderating effect of GI on the relationship between Cloud Relative Advantage and CC-SaaS intention to adopt.

Hypothesis H1(c): There is a positive moderating relationship of Government Initiative between Cloud Relative Advantage and CC-SaaS intention to adoption.

Security is widely acknowledged as a critical factor influencing trust in technology adoption (Nabil et al., 2018). It refers to the extent to which a user's and an organization's information is protected and kept safe by the cloud storage provider (Zuzarte, 2019). Previous studies have suggested that including technical measures based on government initiatives and regulations can enhance security and prevent unauthorized access to data (Nguyen et al., 2021). Almarabeh et al. (2016) emphasized the need for government to enforce penalties for illegal data access to increase trust in CC-SaaS adoption. Cloud security remains crucial in adopting CC in SMEs (Hadi et al., 2020). Users continue to express concerns about protecting personal information and the risk of theft and loss of trust, which can hinder the adoption of CC-SaaS (George & Rajakumari, 2020). The security issues in CC-SaaS adoption in developing countries have also contributed to citizens' lack of trust in online services. Based on these findings, the following hypothesis is proposed:

Hypothesis 2(c): There is a positive moderating relationship of Government Initiative between Cloud Security and CC-SaaS intention to adoption.

Previous studies have acknowledged the direct impact of the Government Initiative as an environmental context factor on CC-SaaS adoption (Yang et al., 2015). However, there is a lack of research examining the potential moderating effects of this context on the technological and organizational contexts that influence the adoption process (Oliveira et al., 2019). Given that companies are part of a unique environmental setting and their actions are influenced by it, it is reasonable to question whether the Government Initiative has any effect on the remaining contexts of the Technology-Organization-Environment (TOE) framework (Gui et al., 2021). Therefore, in this study, we posit that the environmental context may positively affect adopting SaaS solutions. Consequently, we propose that:

Hypothesis 3(c): There is a positive moderating relationship between Government Initiatives between Technology Readiness and CC-SaaS intention to adopt.

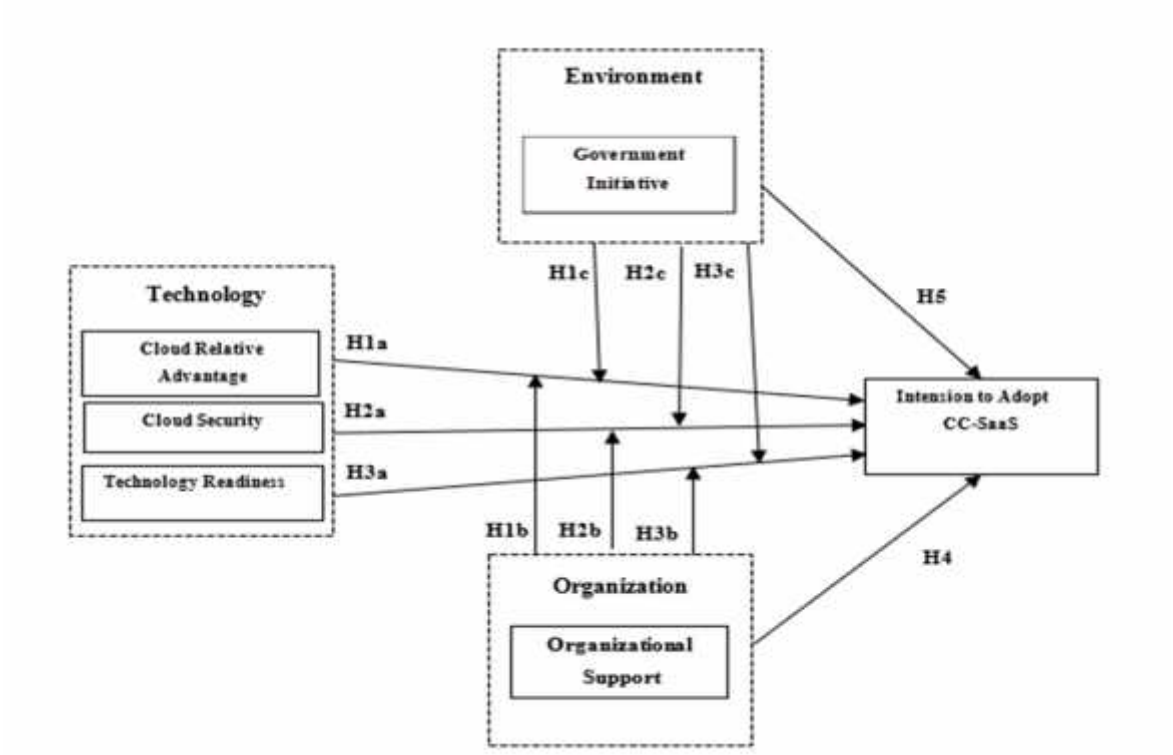

Figure 1. Proposed Conceptual Research

5.0 Methodology

The research methodology chosen for this study is a quantitative approach, specifically a correlation study, which is appropriate for examining the relationships between the independent and dependent variables in the context of CC-SaaS adoption in Pakistani SMEs (Mason & Augustyn, 2021). This approach will involve using a survey questionnaire as a data collection tool and a large sample size to ensure the generalizability of the findings (Kumar, 2018). This study will also employ hypothesis testing to examine the relationships between the independent variables, including technological, organizational, environmental, and human factors, and the dependent variable, the intention to adopt CC-SaaS. Overall, the quantitative approach and correlation study design will enable the researcher to gather reliable and valid data to answer the research questions and achieve the research objectives (Kumar, 2018). Moreover, the literature has identified four categories of probability sampling: simple random, systematic, stratified, and clustered (Mullen & Ramírez, 2006; Creswell & Poth, 2016). Although probability sampling is more time-consuming than non-probability sampling, it has the advantage that eligible individuals within the population have an equal chance of being selected. Therefore, this study will employ the probability sampling method to increase the chances of generalizing the results and reducing sample selection biases. Systematic Simple random sampling will be utilized to select the SMEs. In contrast, stratified sampling will be employed for allocating some SMEs Executive, officers and Managers within the selected SMEs in Pakistan.

6.0 Conclusion and Future Work

In this study, a conceptual model is proposed for the intention to adopt Cloud Computing Software as a Service (CC-SaaS) among small and medium enterprises (SMEs) in Pakistan. The theoretical underpinnings of the model are drawn from the Technology-Organization-Environment (TOE) and Organizational Support Theory (OST), with the addition of moderator variables. The study will test eleven hypotheses to determine the factors that influence the intention to adopt CC-SaaS in Pakistan SMEs. The factors are derived from OST and TOE theories, such as Cloud Relative Advantage, Cloud Security, Technology Readiness, Organization Support, and Government Initiative. All variables will be evaluated and validated by experts in SMEs' executives, managers, and officers to ascertain their usefulness in this research. Thus, the constructs proposed in this model will be empirically validated. The next step for this research is to collect data from the executives, managers, and officers of SMEs in Pakistan. Subsequently, the results of the model will be further explored to determine if they correspond with other developing countries.

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