

The Effect of Cloud Computing Adoption on Organizational Performance of SMEs in Saudi Arabia

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<p>Article history Submitted: 11 December, 2020 Revised: 18 December, 2020 Accepted: 21 December, 2020</p>	<p>Abstract The use of technology is important for achieving a competitive advantage. Few of the prior literature focuses on the predictor and consequence of the adoption of cloud computing in Small and Medium Enterprises (SMEs). The purpose of this study is to develop a conceptual framework for the predictors and consequences of adopting cloud computing among SMEs in Saudi Arabia. Based on the technology-organization-environmental framework and the resource-based view, this study proposed that the adoption of CC by SMEs in Saudi Arabia will be affected by organizational, technological, and environmental factors. In turn, the adoption of CC will have a positive effect on the organizational performance of SMEs. The population of this study is the SMEs in Saudi Arabia and structural equation modeling is proposed as an analytical tool.</p>
<p>Keywords: <i>Cloud Computing</i> <i>SMEs</i> <i>Organizational Performance</i> <i>Saudi Arabia</i></p>	

1. Introduction

Cloud computing (CC) is a new emerging technology that represents a paradigm shift in the utilization of technology. It is currently used by most of companies to achieve better performance. This is because the usage of CC can reduce the operational cost and create competitive advantages for these organizations that implement the technology [1]. The scalability, flexibility, on time usage are important characteristic of the CC that contributes to the organizational efficiency, effectiveness and trustworthiness [2].

Several studies in business organizations have examined the predictors of CC to understand the factors that lead organization to adopt and use the technology [3], [4] [5]–[7]. CC is defined as a dynamic innovation platform that addresses a wide variety of requirements by giving a digital framework to broaden information storage abilities” [8]. Previous studies pertaining to the adoption and usage of CC and its impact on the organizational performance of companies are limited [9], [10]. Previous studies focused more on the predictors of adopting cloud computing while the effect of such adoption is not well established in the literature [11]–[14].

Previous studies also focused on developed countries while studies in developing countries such as Saudi Arabia are limited [15]. In Saudi Arabia, the government launched the vision 2030 to reduce the dependency on oil and promote other sectors. The contribution of Small and Medium Enterprise (SMEs) in the country, in term of employment and gross domestic product (GDP), is low compared with other countries. Thus, this study aims to understand if the usage of the technology can improve the contribution and the performance of SMEs in Saudi Arabia [16].

To understand the predictors of adopting a new technology, there are several well-established frameworks. One of these frameworks that has been utilized by few of previous studies is the Technology-Organization-Environment (TOE). TOE framework is a comprehensive framework that can help in understanding the predictors of adoption new technology such as cloud computing [17]–[23]. TOE consists of technological factors, organizational factors, and environmental factors [6] [7]. This study deploys the TOE framework to understand the predictors of CC among SMEs in Saudi Arabia.

The theory of resource based view suggested that company can improve its performance and create competitive advantage by utilizing the resource and capability of the company [24]–[26][22] [23]. Further, several researchers indicate that companies when using the technologies, they can improve their organizational performance [29]–[31].

In Saudi Arabia, the performance and contributions of SMEs are less than other regional countries and developed countries [32]. The use of technology has been associated with several competitive advantage and operation excellence [33], [34]. However, among SMEs and other organizations in Saudi Arabia, the use of cloud application is low [15], [35], [36].

The TOE framework suggested that the use of technology is dependent on technological, organizational, and environmental factors. However, this framework has been used by few studies. Resource based view theories indicated that when organizations deploy their resource and capabilities, they can enhance their performance [37]–[39]. Nevertheless, few of the previous studies linked the use of cloud computing to organizational performance [9], [10].

Therefore, the study aims to develop a framework that can be used by the decision makers in Saudi Arabia to enhance the adoption of technology such as cloud and to understand the impact of such technology on organizational performance.

2. Literature Review

2.1 Theoretical Framework

The use of theoretical framework such as TAM and UTAUT as well as the TOE in the context of technology adoption is widely established and recognized. However, when it comes to the organizational adoption, TAM and UTAUT are limited to the individual level of adoption while TOE as the name denoted, it is an organizational based framework [14]. TOE consists of organizational, technological and environmental factors. The organizational includes the variables such as top management support, organizational readiness, and size of the organization. For the technological variable, they include the IT infrastructure, security, privacy, and availability [40][41]–[43]. Environmental factors include, the external pressure and the government regulation[37], [44]. In this study, the TOE is used because it can take the adoption from comprehensive approach.

2.2 Existing Models

The literature is reviewed to examine the findings of previous studies and identify the gaps in the literature. More importantly, to develop the conceptual framework, the theories and existing framework are reviewed. The importance of adopting CC for economic level and organizational level were highlighted in several previous studies. In a study conducted by [45], the findings indicate that CC has significant effect on the economic and environmental performance. Collaboration affected the economic performance and mediated its effect on economic performance. Previous studies indicates that cloud computing can enhance the organizational performance from several perspectives [46] [47]. CC affect the organizational efficiency, flexibility, scalability, organizational trustworthiness [2]. It can affect the organizational measures such as return on assets (ROA), quality and customer welfare [48]. Researchers also found that CC ERP affect the supply chain performance, financial and marketing performance. Complexity moderated the effect of cloud ERP on marketing and financial performance [49]. CC also has important effect on the organizational agility [9].

The use of technology and digitalization is critical for the performance of companies. In Malaysia, the digital orientation and capability affect the digital innovation which in turn affected the financial and non-financial performance [50]–[54] [55]. In addition, there is a link between the usage of CC and the competitive advantage. For instance, the cloud absorptive capacity and cloud usage affect the competitive advantage [1].

In term of the factors that affect the adoption of CC in business organization, previous studies found that there are several factors that affect the adoption of CC such as human, technological, and organizational factors and the usage of CC affect the performance with size as a moderator [27]. In Table 1, a summary of reviewed studies that has been deployed for the development of proposed model is given.

Table 1: Summary of Reviewed Studies

Author/ year	Country	I.V	D.V	Method	Findings
[46]	Review	The effect of cloud computing on organizational performance	Organizational performance	Review	Cloud computing can enhance the organizational performance from several perspectives.
[47]	Review	Cloud computing and organizational performance	Organizational performance	Review	Cloud computing can improve the performance of organizations.
[45]	US	Cloud computing Collaboration	Economic performance Environmental performance	247 IT professional working in US companies	CC has significant effect on the economic and environmental performance. Collaboration affected the economic performance and mediated its effect on economic performance.

Author/ year	Country	I.V	D.V	Method	Findings
[2]	Nigeria	Cloud computing	Organizational performance	310 respondents	CC affect the organizational efficiency, flexibility, scalability, organizational trustworthiness
[48]	Iraq	Cloud computing	Organizational performance	Review	CC can affect the organizational measures such as ROA, quality and customer welfare.
[27]	India	Cloud computing	Organizational performance	403 respondents	There are several factors that affect the adoption of CC such as human, technological, and organizational factors and the usage of CC affect the performance with size as a moderator.
[56]	Taiwan	Perceived risk Trust Usefulness Ease of use	Use of CC Organizational performance	122 respondents	Risk negatively affects usefulness and ease of use. Trust has a positive effect. Ease of use and usefulness affect the intention to use CC and intention to use CC has positive effect on performance.
[49]	USA	Cloud enterprise resource planning Complexity	Performance	154 respondents	CC ERP affect the supply chain performance, financial and marketing performance. Complexity moderated the effect of cloud ERP on marketing and financial performance.
[9]	China	Cloud computing Flexibility Integration IT spending	Organizational Agility	184 responses	Flexibility and integration affect the performance agility. IT spending moderated the effect.
[55]	Malaysia	Digital innovation Digital orientation Digital capability	Financial performance Non-financial performance	105 companies	Digital orientation and capability affect the digital innovation. The digital innovation affects the financial and non-financial performance.
[1]	China	Flexibility IT modularity Process formalization Inter-organizational management Absorptive capability Cloud usage	Competitive advantage	165 responses	Flexibility and control affect the cloud absorptive capability. Cloud absorptive capacity and control affect the cloud usage. Cloud absorptive capacity and cloud usage affect the competitive advantage.

3. Proposed Model

The proposed model of this study focuses on the predictors and the consequences of using CC among SMEs in Saudi Arabia. The study proposes that the adoption of CC by SMEs in the kingdom will be affected by organizational, technological, and environmental factors. These factors will predict the CC adoption which in turn will determine the organizational performance. Several studies indicates that the adoption of technology is important for the organizational performance of companies [57]–[59]. Accordingly, Figure 1 presents the general conceptual model of this study.

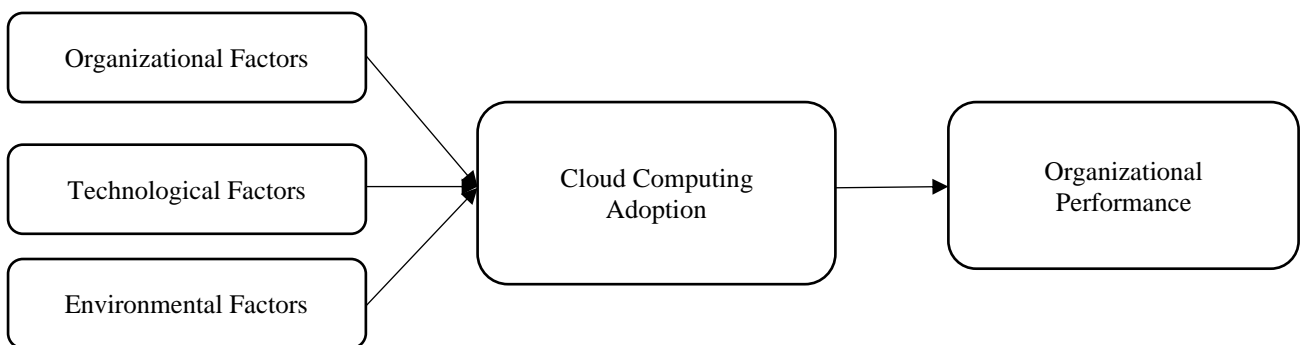


Figure 1: Proposed Model

4. Research Methodology

This study is a quantitative in nature and uses survey design. The population are the SMEs in Saudi Arabia. However, due to time and cost consideration, the area of Riyadh the capital of Saudi Arabia will be chosen because it has the highest number of SMEs. Sample technique will be random sampling technique. This is because the sample is homogeneous [60] and there is no significant differences between SMEs in Saudi Arabia in term of size or number of employees. The data will be collected using a questionnaire. The measurement of the questionnaire will be adopted from previous studies. A validation and reliability procedures will be conducted prior to field data collection. The study will collect the data from managers of SMEs. The data will be analyzed using two software. The Statistical Package for social science will be used to examine the preliminary data. This will include the missing value, outliers, normality, multicollinearity, and no response bias. The second software is the Smart Partial Least Square (Smart PLS). This software will be used to examine the measurement model and the structural model.

5. Discussion

This study a conceptual study that aims to develop a conceptual model for the adoption of CC by SMEs and the effect of this adoption on the organizational performance of these companies. Gaps in the literature were identified and this study is important because it bridges the gaps in the literature by investigating the factors that affect the adoption of CC by SMEs in developing countries. The study contributes to the literature by investigating the CC predictors and outcome in SMEs. This study also contributes to the literature by examining the TOE as a theoretical adoption model for CC. Few studies used TOE in the context of SMEs and cloud computing, this study contributes to the literature in this regard. The study also is importance because it examines the predictors of CC usage as well as the organizational benefits from adopting CC.

This study will provide practical recommendations regarding the factors that could affect the adoption of CC by SMEs. Decision makers can utilize the findings of this study to enhance the adoption of CC among SMEs and to enhance the performance of theses SMEs so that their contribution to employment and GDP of the country can improve. This study is significant because it is in line with the government agenda to reduce the dependency on oil. The study deploys the TOE framework. Further, the study deploys the RBV as an underpinning theory to explain the link between adoption of CC and organizational performance.

6. Conclusion

This study aimed to develop a conceptual framework that links the predictors and the consequence of adopting CC for SMEs in Saudi Arabia. Based on the RBV and TOE, this study proposed that the adoption will be affected by organizational, technological, and environmental factors which in turn will affect the organizational performance of SMEs. As a way forward, further studies will be conducted to test the proposed model among SMEs in Saudi Arabia.

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