Journal of Theoretical and Applied Information Technology
28th February 2017. Vol.95. No 4


ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

# CONCEPTUAL MODEL FOR CLOUD ERP ADOPTION FOR SMES

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**ABSTRACT**

The Small and Medium Enterprise industry is experiencing a major transformation towards cloud ERP systems. These systems can organize, and maintain data remotely, accept a pay-as-you- use method and enhance related information through a cloud computing platform. Hence, this makes the cloud ERP system crucial for their sustainability and enables them to become competitive in the market. However, the adoption rate of cloud ERP among Small and Medium Enterprises (SMEs) has been recorded as slightly low compared to other enterprise systems like Customer Relationship Management. This could be attributed to unclear adoption factors among SMEs and the lack of a theoretical model that can enhance the predictive power to adopt a cloud ERP system. To address this gap, the objective of this study is to develop a conceptual model by which to investigate the broad factors which influence or inhibit the adoption of cloud ERP, the model based on TOE, DOI and FVM. Thus, this model intends to help SMEs managers understand and increase predictive capacity on cloud ERP adoption. The model has been constructed using four dimensions, namely; task, technology, organization and environmental. Findings from this study are projected to be able to instruct SMEs decision-makers on the factors that will lead to successful adoption. The proposed model will be a critical lens for decision-makers on cloud ERP adoption.

**Keywords:** *Cloud Computing Adoption, Cloud ERP Adoption, TOE framework, DOI, VFM*

## 1. INTRODUCTION

Data and information are the crucial assets for any organization in the current competitive environment; this help to gain an understanding of the customer segment, business issues and its interested users. Due to its importance, many organizations implement sophisticated information systems for data organization and manipulation of these assets. Enterprise Resource Planning (ERP) is one of the more common information systems for business enterprises and has been in existence since the 1990's [1]. ERP refers to as an integrated business solution used to integrate departmental functions throughout the organization and maintain a connection with outsiders [2]. The popularity of this solution is attributed to its functionality for integrated departmental data and sharing of information across operational areas through a common database. These attributes encourage researchers to declare that ERP could be a requirement for the success of organizations in the 21st century [3]. Additionally, the ERP system has been acknowledged as one of the most widely-used enterprise solutions used by organizations for their daily business functions [4].

ERP has contributed significantly and efficiently to organization overall performance since the 1990's [5]. Many studies show the significance of ERP usage in both large organizations and Small and Medium Enterprises (SMEs) [6-9]. Due to saturation of the ERP market in large enterprises, ERP vendors began to focus on SMEs [10]. However, the issue of resource limitations has created some difficulties for SMEs in adopting ERP [10, 11]. Furthermore, apart from these limitations, SMEs have made an essential effort to find a solution in order to facilitate implementation of ERP to enable them to be more sustainable in the market [12]. Therefore, the adoption of information systems (IS) such as ERP, Customer Relationship Management

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

(CRM), and Human Resource Management (HRM) can be viewed as an essential attempt for SMEs to prosper in the business market [13].

The introduction of cloud computing (CC) technology in the market changes the way IT leading industries provide services: similarly, it changes customers' (clients') perspectives in when buying services from vendors or suppliers. Cloud computing refers to the provision of a visualized pool of computing resources (i.e. infrastructure, servers' storage, computer memory, applications, and services) over a web through on-demand basis (NIST, 2009). The emergence of cloud computing has caused enterprise software such as ERP, CRM, HRM and others to be provided on cloud. In recent years, researchers have used cloud computing technology as a platform to encourage SMEs' to adopt cloud applications [14-16]. This cloud technology is suggested to be the future for ERP, CRM and HRM usage in public and private organizations and recognized as a solution for SMEs [17].

Cloud technology as a platform for information systems such as ERP, in particular, has attracted considerable attention among the researchers in the IS field [18-21]. Various conceptual and empirical studies have been conducted [12, 22-24]. Among the studies, Ahmed A. Al-Johan [25], conducted a study that investigated feasible attributes with a cloud-based ERP solution by making a comparison between non-adopters and adopters of ERP on the cloud among SMEs. A study conducted by [26] in South Africa, found that dimensions related to environmental factors are crucial for decision- making on whether to adopt or reject the technology based on the Technology-Organization-Environmental framework. Moreover, they claimed that the adoption rate of Cloud ERP compared to other enterprise solutions is relatively low. A recent study conducted by Johansson and Amar [15], investigated the contribution of cloud ERP adoption by comparing the respective opportunities and concerns through SMEs and large enterprises. Their study observed the bundles of opportunities and concerns gained by SMEs and large enterprises when they counted on cloud ERP. Their study reflected that future works could comprise more study being conducted directly with regard to SMEs. In addition, other studies have been conducted from the point of view of SMEs [13, 27-29]. These have discovered that the topic of ERP on the cloud has been a much more empirically researched area in current years.

There are increasing numbers of significant advantages of ERP on the cloud (cloud ERP) such as cut-off of upfront costs; pay-as-per transaction; eliminate the need to buy hardware and software renewal cost; minimize tasks required from IT staff; and finally, upgrade and maintenance being undertaken by the provider [17, 30, 31]. However, cloud ERP is infancy and a new field; thus literature shows that very little emphasis has been given to cloud ERP adoption [32]. In addition, the adoption rate is low [33] and influential adoption factors are unclear [34]. These motivations have emphasized the need for more study in this domain. Furthermore, the current study was motivated by the lack of studies concerning cloud ERP adoption [32] and it highlighting the influential factors that encourage SMEs to go to cloud ERP system. To undertake the study, study question that should be investigated was formulated: *What factors influence cloud ERP adoption among SMEs?* To answer the study question, the study intends to investigate the potential factors that influence SMEs to adopt cloud ERP and to propose a comprehensive conceptual model that suits this study. This study is also important due to the current literature scarcity as recommended by [15, 26, 32].

This work is structured as: in the next section, the related works are presented and the theoretical background adopted in this study is discussed later. Then the research model and hypothesis development are described. Lastly, study presenting a discussion before highlighting limitations encountered and future research avenues.

## 2. RELATED WORK

Researchers acknowledge that most studies on the cloud ERP domain have been conducted on four perspectives. These perspectives comprised: a review of cloud ERP system studies; cloud ERP driver and barriers; cloud ERP tools development; and finally, in fact, there are few studies that examine the encouraging factors to adopt cloud ERP system, particularly for SMEs [32]. This situation was has been compounded due to the fact that most previous studies consider ERP studies and cloud computing studies to be two separate domains. Ross [35] investigated the determinant that link a firm in a decision as to whether to go cloud

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

platform as a part of their strategic tool. Issues such as cost-effectiveness, need, reliability, and perceived security effectiveness of cloud computing were considered. A strong positive link was found between these four factors and management's intention to adopt cloud computing technology.

Scholtz and Atukwase [36] analyzed the benefits and drawbacks of the cloud ERP system by focusing on the advantages and disadvantages of the cloud ERP system as perceived by both South African SMEs and large enterprises (LEs). By exploring the advantages and disadvantages of the system through literature review, a theoretical model was proposed and a survey strategy was adopted and empirically validated. The results revealed that both SMEs and LEs from South Africa perceived advantages of specifically: flexibility; improved collaboration; improved business efficiency; access to latest developments in ERP systems; scalability'; focus on core activities; reduction in IT costs; decreased data execution time; as well as improved IT security. Meanwhile, the disadvantages comprised, namely: security risks; strategic risks; increased down time; loss of IT competencies; additional implementation costs; limited customization options' as well as the threat of unclear service level agreement (SLA).

Salum and Rozan [37] propose a framework of barriers and drivers of cloud ERP systems among SMEs through literature reviews. The proposed framework can help SME managers and other decision-makers to understand what are the key drivers and barriers that encourage or discourage cloud ERP system adoption among them. This framework of barriers and drivers was categorized into seven dimensions. These dimensions are: technological; organizational; environmental; economics; business model; human and vendors respectively. Another study conducted by [25] proposed a cost-effective framework for growing industry and which could be a trigger for future revenue. Based on their study and the nature of SMEs, the proposed framework would be the best alternative for small and medium size enterprises in the coming future. Their results reveal that SMEs moving to a cloud ERP system will reap benefits in the way of reductions for, specifically 50% for development team cost; 40% for expert cost; 10% for testing effort; 25 % for requirement elicitation; 15% of the burden of daily backup management; and finally, (30 – 40) % for the cost of overall project expenditure.

Albar and Hoque [38] on their study proposed a theoretical model for cloud ERP adoption in private and government organizations in Saudi Arabia. The proposed model can help these organizations to understand what capabilities they need to develop in order to adopt cloud ERP. The factors were identified from the literature based on TOE framework and DOI theory respectively. These factors are mapped into four IS dimensions. The dimensions are comprised, namely: innovation characteristics; technological context; organizational context; and environmental context. Usman et al., [34] investigated the potential factors affecting the successful cloud ERP adoption in SMEs. A literature review was used to investigate the factors. Based on the IS theory of TAM – DTM studies, the taxonomy of factors was proposed. The factors are classified as: external support; organization support; external pressure; technology applicability; and internal pressure. Contrarily with these factors, they suggest that, due to the nature of the cloud ERP system, the issues of security, privacy and cost are vital to be considered.

Recently, a study conducted by Das and Dayal [39] explored the determinants of cloud ERP selection and adoption by conducting a case study on higher learning institutions in India. Based on the diffusion of innovations theory, task-technology fit, and extended technology acceptance model respectively, factors related to technical advantage, organizational fit, and perceived societal pressure were examined. Faasen et al., [13] explored the perceived benefits and reluctance to an adoption of Software as Service (SaaS) ERP within South Africa SMEs by conducting an interpretative research study. The improved IT reliability and perceived cost reduction were seen as the benefits perceived by the SMEs. On the other hand, there were some "reluctance factors" towards the adoption of SaaS ERP system. These included: systems performance and availability risk; sinking costs and satisfaction with existing systems; data security risk; loss of control and lack of vendor trust; and finally, functionality fit and customization limitations. Kinuthia [40] investigated the differences between organizations that had adopted the cloud ERP system and organizations that had not yet adopted the cloud ERP system and proposed a model based on Technological, Organizational, and Environmental (TOE) factors. The developed model was tested to determine the differences

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

existing between these organizations. The results revealed that, an organization that adopted the cloud ERP system had the following features: a higher level of relative advantage; a higher level of compatibility; a higher level of security concern; higher top management support; higher level of organizational readiness; bigger sizes; more centralized; more formalized; higher competitive pressure. In addition, it perceived Cloud ERP system vendors as offering more support. These results showed that factors affecting cloud ERP adoption are often on organizational perspectives.

## 3. THEORETICAL BACKGROUND

The objective of this study was to investigate the influencing factors that encourage SMEs to adopt cloud ERP and to develop a comprehensive conceptual model to persuade SMEs to adopt this system. Theoretically, adoption is a process which involves a certain number of stages that should be taken by the adopter before the adoption of new innovation (services, product or ideas) [41]. Based on those stages of the adoption process, the potential adopters made a decision (to adopt or reject) with respect to the investigated context [42]. To develop a model that led SMEs to adopt cloud ERP system, the related literature on the TOE (Technology Organization Environment) framework, DOI (Diffusion of Innovation) and FVM (Fit Viability Model) were examined. In this study, the encouraging factors that affect the decision to go or reject cloud ERP system made by SMEs have been examined.

### 3.1 Technological Organizational Environment (TOE) framework.

Technology-Organization-Environment (TOE) framework was developed in the early 1990's by Tornatzky and Fleischer [43] grounded on the contingency theory of organization. Adoption of new technology by organizations can be described through technological dimensions, organizational dimensions and environmental dimensions respectively [43]. It was suggested that all three dimensions affect the adoption decision on innovation. The introduction of TOE framework to study the adoption procedures of general technology innovation encompasses three dimensions as follows: (i) Technology dimension *defines the technological aspect in both interior and exterior technologies relevant to the organization*. On the other hand, this dimension focused on existing technology and new innovation rather than a desire to adopt. It describes how this dimension can be attributed to an ultimate adoption decision; (ii) Organizational dimension *explains the firm attributes that drive or constrain adoption intentions such as its scope and size, support from top management, organization readiness, etc.* (iii) Environmental dimension *describes the environment by which a firm conducts its business, its industrial structure, dealings with competitors, regulations and the government* [44].

Several conceptual and empirical studies have been conducted and employ TOE framework to examine firms' adoption of technology innovation [26, 45-50].

Zhu et al. [51] employ TOE framework with the consequence of (e-business value) in their study for the purposes of assessing the drivers of e-business value across multiple countries. Ramdan et al. [52] used TOE framework to propose a model that can predict adoption of enterprise systems within the SMEs context. Previous studies on technology innovation concluded that the TOE framework is a robust framework which can determine and analyze the influencing or constraint factors organized in three dimensions (technological, organizational and environmental).

Although, the TOE framework doesn't provide common causes/factors; rather, it provides a taxonomy that allows researchers and practitioners to re-organize factors according to their study setting [53]. Ven and Verelst [53] added that, the main significance of TOE is to motivate scholars to consider the wider spectrum of the context where the research is carried out.

### 3.2 Diffusion of innovation theory (DOI)

Roger [41] proposed the DOI theory to investigate the extent of factors that affect an individuals' decision to adopt and use an innovation. This theory is used in information system (IS) research to help explain both the willingness and the decision to adopt an innovation in organizations [41]. In the IS research field, this theory has been used mostly to recognize different innovations' adoption. Regarding cloud computing research, this theory was mostly used with integration from other theory/theories [49, 54, 55]

### 3.3 Fit-Viability Model (FVM)

Tjan [56] proposed a fit-viability model. The model has been used specifically to address

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

the adoption of a new technology to evaluate organizational adoption of internet (e-commerce) initiatives. It was derived from the task technology fit (TTF) model proposed by [57]. The FVM integrates task–technology fit with the general belief of organizational viability of information technology [58]. For example, Mohammed et al., [59] used FVM to investigate the major factors that affect the cloud computing adoption model for e-government implementation in Yemen. Based on the TTF model, issues of fit and criteria for measurement are identified from the task technology fit theory; while for viability, financial and managerial criteria are identified. FVM can, therefore, be used as a base for an integrated model for the decision to adopt cloud ERP for SMEs.

However, several researchers made a recommendation that, in order for the researcher to better understand and recognize explicit factors that influence an organization to adopt new and complex innovation, it is important to integrate more than one of the theories/models [44, 60, 61]. Thus, it implies that the combination of more than one theory/model in the technology adoption research, together with TOE framework, will offer a richer understanding so as to determine several factors to be considered in the study. Therefore, the current work combined TOE framework, DOI theory and Fit Viability Model (VFM).

## 4. RESEARCH MODEL AND HYPOTHESES

Literature shows that, research findings in the field of information system and technology innovation adoption studies are underpinned by the majority of theories and models. In this study, the technology organization and environment (TOE) framework integrated with Diffusion of innovation (DOI) and Fit Viability Model (FVM) was used to identify factors and to propose a conceptual model to determine whether cloud ERP is a viable alternative for SMEs sustainability. From these theories, a model was proposed. The model is grouped in four dimensions. These dimensions are task, technology, environment and organization respectively.

### 4.1 Task dimension

To investigate a task that should be matched with the cloud ERP system among SMEs, the Fit Viability Model (FVM) was applied. FVM has main two factors; fit and viability [56]. [57] defined "fit" as the extent to which technology characteristics and functionality matches with task requirements of a particular situation. Fit was measured by selecting related and interconnected tasks with technology requirements. Viability, on the other hand, was measured by market-value potential, time to positive, cash flow, and personnel requirement as identified by [56]. In this context, only task independence and Fit were identified as prominent factors [57, 58].

**Fit**

In this study, fit construct is defined as the extent to which the cloud ERP system can match with the task requirement and needs of the organization. The fitness of the cloud ERP system in the SMEs context is measured by defining the task independence performed by the organization and the technology characteristics of the cloud ERP system. Previous studies used fit from the lens of multiple perspectives. Fit was used as a match construct between task characteristics and technology capability. On the other hand, fit has also been used as a method of mediation and moderation depending on the study content and its context.

In the beginning, fit was introduced to evaluate the impact of technology and task on individual performance. Later, Zigurs and Buckland [62] tested the model to measure the impact of fit on performance at group level. Recently, Larosiliere and Carter [63] extended it to the country level in the study of e-government maturity. In the current study, we extend the construct at the organizational level to the context of cloud ERP adoption among SMEs. Empirically, in the field of information system, cloud computing and cloud ERP studies found, fit to be a critical factor having a positive link with technology adoption [42, 58, 64]. Therefore, the following hypothesis was developed;

**H1**: The fit of cloud ERP system to task independence positively influences an organization's intention to adopt cloud ERP.

**Task independence**

Task independence engages the extent to which the ongoing task involves and is interconnected with organizational tasks or units of others [57]. This task interdependence emerges due to the nature of organization structure and splitting up of task forces. If the entire task is conducted by a

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

single person then there would be no need for dependence. In fact task independence was created when the entire task decomposed to individual tasks, and these interdependencies must be evaluated. On the other hand, when an organizational department or unit is highly dependent upon another unit, this implies integrated software is likely to be adopted due to the benefits gained from sharing and integrating innovation technology in performing their task. Usually, greater amount of task dependence leads to more harmonization and innovative information [64]. Although task independence would be a critical factor to the fit on the technology adoption, this link received less consideration on the cloud ERP system. Therefore in this study we hypothesize as follows:

**H1a**: Task independence is positively influence the perception of fit in an organizational environment.

### 4.2 Technological characteristic

Literature reviews acknowledge the technological factors that influencing IS adoption studies, cloud computing adoption studies and cloud ERP adoption studies [26, 34, 39, 40, 55, 65-67]. In relation to this, relative advantage, compatibility, security concerns, cost and system trust are extracted and proposed to measure technological characteristics of the fitness of the cloud ERP system for SMEs capability. Furthermore, *relative advantage*, *compatibility* and *security* from the literature shows there is a relationship between these factors and fit factors as shown in Table 1. Therefore, this study proposes the following hypotheses:

**[Page 156 Table 1]**

**H1b**: Relative advantage positively influences the fitness of the cloud ERP system to an organization computing needs.

**H1c**: Compatibility has a positive impact on the fitness of the cloud ERP system to an organization computing needs.

**H1d**: Security negatively influences the fitness of the cloud ERP system to an organization computing needs.

**System Trust**

Commonly, trust has been viewed as an interactive process that accumulates at least two parties in a relationship. In a study by Rotter [68], it was claimed that trust is an important variable that can affect human relationships at all aspects (including the trust of the corporate user ranging from the government those in business). Pavlou [69] said that trust is the belief that the other party will behave in a socially responsible manner. The term trust has been explored and defined in different perspectives. Sztompka [70], defines trust as "*the expectations of other people, groups or institutions, with whom we are in contact, interact, cooperate and act in a correct way for our benefit*". Also Mayer et al., stated that "*Willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party*". Lee and See [71] drew the conclusion that "trust is the attitude that an agent will help achieve a customer's goal in a situation characterized by uncertainty and vulnerability". Johnson and Grayson [72] stated that, cognitive trust is a customer's confidence or willingness to depend on a competence and reliability service provider's. Lam et al. [73] refer to cognitive trust as a trust based on the performance of relevant cognitions such as competence, responsibility, trustworthiness and reliability.

Trust in cloud technology is increasingly being recognized as a critical factor since most of transactions and activities are performed via internet facility. SMEs want a system that is reliable, stable and dependable and works in accordance with what the provider promised. In this study, trust can be defined as the belief that the cloud ERP system will consistently operate properly. Empirically, previous studies show the positive link between trust and intentions [74-76]. In addition, other researchers claimed that security will influence trust. Huang and Liu's [77] found that, security and privacy are most likely affect trust. The following hypotheses were therefore developed:

**H1e**: Security will positively influence on Trust.

**H2**: Trust will positively influence the intention to adopt cloud ERP

**Cost**

In the current context, cost is referred as the degree to which decision-makers perceive the total cost of using the cloud ERP system to be lower than other traditional enterprise systems [65]. The higher cost associated with traditional ERP systems and problems on implementation have caused organizations to re-evaluate their

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plans for buying and adopting of enterprise-wide systems accordingly [78]. For a traditional ERP system, the costs break down into the following components: software licensing cost; infrastructure cost; training cost; maintenance and upgraded cost [79]. There is also an Advancement of a new paradigm of cloud computing that can help SMEs to tackle various issues such as cost [65]. Cloud ERP providers pitching their services significantly reduce the total expenditure on IT investment for SMEs. Total cost was considered as fixed costs such as investment cost, variable costs such as systems maintenance and upgrade, as well as training costs. Tornatzky and Klein [80] claim that innovations that can be obtained with low cost but having high benefits are likely to be adopted. Premkumar et al., [81] consider cost- effectiveness to be an important factor in an EDI study. Therefore, we believe that, a low cost of cloud services increases the possibility of adoption. Hence, in the context of cloud ERP system the following hypothesis has been developed.

**H3**. A cost factor has a positive impact on intention to adopt cloud ERP system.

### 4.3 Organizational characteristics

The term organizational characteristics refers to the available resources that support innovation adoption in an organization [82]. It commonly refers to the quality of the organization's resources that drive or hinder the adoption and implementation of the technology. Several factors are determining the relationship between technology innovation and the organization itself. These factors include: availability of slack resources; organization's size; centralization; organizational readiness'; top management support and cloud knowledge [38, 40, 55, 82, 83]. Among these factors, top management support and cloud ERP knowledge are vital factors by which to assess an organization's capability to adopt a cloud ER system [40, 55].

**Top Management support**

It was observed that, technology innovation adoption is likely to be supported by top management. Top management support plays a vital role in technology adoption (e.g, cloud ERP) as it provides guidance to the allocation of resources. It also, minimizes resistance and creates a positive environment and attitude towards innovation technology. Several studies have found that the top management support factor is among a number of organizational factors having positive significance. These include, namely: technology adoption in the form of resources allocation; understanding the impact of new technology; and encouraging an employee to engage in new technology and provide commitment [40, 81, 82]. Based on this discussion, the following hypothesis was developed:

**H4**: Top management support will positively influence cloud ERP adoption.

**Cloud ERP knowledge**

The context of IS adoption studies, it was found that having sufficient knowledge about an innovation is the first step in the adoption process. Most small businesses face difficulties in adopting new technology (e.g. cloud ERP) because they lack adequate IS knowledge and technical skills [84]. In this study, employee cloud ERP knowledge is defined as employee knowledge concerning the cloud ERP system. Thong [84] claimed that, most small businesses reject the adoption of new technology until they gain enough knowledge about it. [65] stated that, organizations whose employees have satisfactory knowledge about innovation face less resistance against the adoption of new technology. Previous scholars found that, there is a link between employee IS knowledge and adoption decisions [84]. In this context of cloud ERP, the following hypothesis' was developed:

**H5**: Employees' knowledge about cloud ERP systems is positively related to the adoption of cloud computing

### 4.4 Environmental context

Environmental context is the natural surrounding whereby a firm conducts its business and is influenced by the industry itself, its competitors, and vendors/suppliers. It also refers to interaction with the regulatory environment [85]. There are a number of commonly encountered factors that determine the environmental factors in the context of cloud ERP adoption. These include: competitive pressure; regulatory environment; and vendor support [40, 46, 86]. The proposed model as shown below;

**[Page 756 Figure 1]**

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

**Competitive pressure**

Competitive pressure has been realized to have given an important contribution to technology literature and technology innovation adoption. It refers to the level of pressure that an organization faces from surrounding competitors or organizations having a similar business [82, 87]. Adopting the cloud ERP system as a strategic tool will influence an organization to become competitive in the market. An organization that uses proper technology can outperform their competitors [40]. Thus, we have developed the following hypothesis for the adoption of cloud ERP.

**H6**: Competitive pressure will be positively related to the adoption of cloud ERP.

**Regulatory Environment**

In an environmental context, regulatory environment has been defined as the support provided by the regulator to facilitate the technology diffusion to an organization [88]. As cited by Zhu et al., [88], firms that conduct a business in an environment in which government policies are restricted tend to have low levels of technology diffusion [87]. Thus, this leads to government regulations always either encouraging or discouraging technology (cloud ERP) adoption. It has been observed that governments tend to encourage firms to adopt technology (e.g cloud ERP) through different aspects. These aspects comprise: developing friendly legislation that supports e-services; regulation of the internet infrastructure so as to be trustworthy; and provision of incentives such as funds initial cost for cloud subscription [88]. Finally, when the government requires a firm to comply with a particular technology adoption standard and protocol, firms will do usually conform to it. Accordingly, this has led to the development of the following hypothesis:

**H7**: Regulatory support will positively influence cloud ERP adoption.

**Vendor Support**

In the context of business environment, business activities executed by a vendor can significantly manipulate the adoption decision of an SME. This may affect the SMEs' decision on a particular innovation. Vendor support refers to the availability of vendor support in the form of training concerning the new technology (e.g cloud ERP). It refers to the provision of technical support before and during implementation and after implementation and in addition to usage of the cloud ERP system. It has been found that, it has a positive link on technology adoption [40, 89]. Therefore, the following hypothesis has been developed;

**H8**: Vendor support will positively influence cloud ERP adoption.

## 5. DISCUSSION

Understanding the factors influencing cloud ERP adoption is vital for SMEs when considering adopting cloud ERP for business functions and rapid development. The ultimate goal of this study was to investigate the influencing factors of cloud ERP adoption by conducting literature review through analysis of IS adoption studies, cloud computing adoption studies and cloud ERP adoption studies. Based on three integrated theoretical models of technology organization environment (TOE) framework, Diffusion of Innovation (DOI) and Fit Viability Model (FVM), a total of twelve factors were extracted from the literature studies. These factors include: task independence; fit; relative advantage; complexity; security; cost; system trust; top management support'; employee cloud ERP knowledge; competitive pressure; regulatory environment and vendor support. These factors are grouped into four dimensions, specifically: task factors; technological factors; organizational factors; and environmental factors. We believe that, the new model can offer a helpful tool to enable a decision maker to recognize the crucial factors for adoption of cloud ERP in order that they could create a friendly environment that will enhance their attitudes to adopt this technology. Currently, the proposed research model has still not yet validated. To validate this model, we suggest structural equation model (SEM) to be used to test the model fit and it quality [90]

## 6. Limitations and Future Directions

The study was not completed without facing some limitations. The current study was conducted in the field of information system adoption studies which include cloud computing adoption studies and cloud ERP adoption studies. This implies that the study reflects only selected studies and omitted some IS studies that did not fall under this criteria. Another limitation is that, the proposed model extracted most of the factors from only four information system theories and models; this led to minimization of the scope of further factors from other information system

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

theories. The third limitation was that the proposed model was targeted for decision makers from the SMEs perspective. The study opens up an opportunity to develop a new model that can target other players. Lastly, instrument development for a quantitative survey and statistical testing for the proposed model is inevitable for future work.

**ACKNOWLEDGEMENT**

The authors wish to thank Mr Kamal Kombo Bakari, Mr Iddi Haji Makame and Mr Abdallah Ally Sendaro all from Zanzibar Institute of Financial Administration for their encouragement and endless support. We also acknowledge CSFP under the Ministry of Higher Education, Malaysia for their financial support in his PhD Program at Universiti Teknologi Malaysia.

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28th February 2017. Vol.95. No 4

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

# Appendixes for Table and Figure

***Table 1: DOI Factors and Fit***

| References | Relative Advantage | Compatibility | Fit | The context |
|---|---|---|---|---|
| Nance and Straub (1996) | √ | | √ | IT Adoption |
| Lam, Cho, and Qu (2007) | √ | √ | √ | IT Adoption |
| Teo and Men (2008) | | √ | √ | Knowledge Portals |
| Mohammed et al., (2016) | √ | √ | √ | Cloud Computing Adoption |

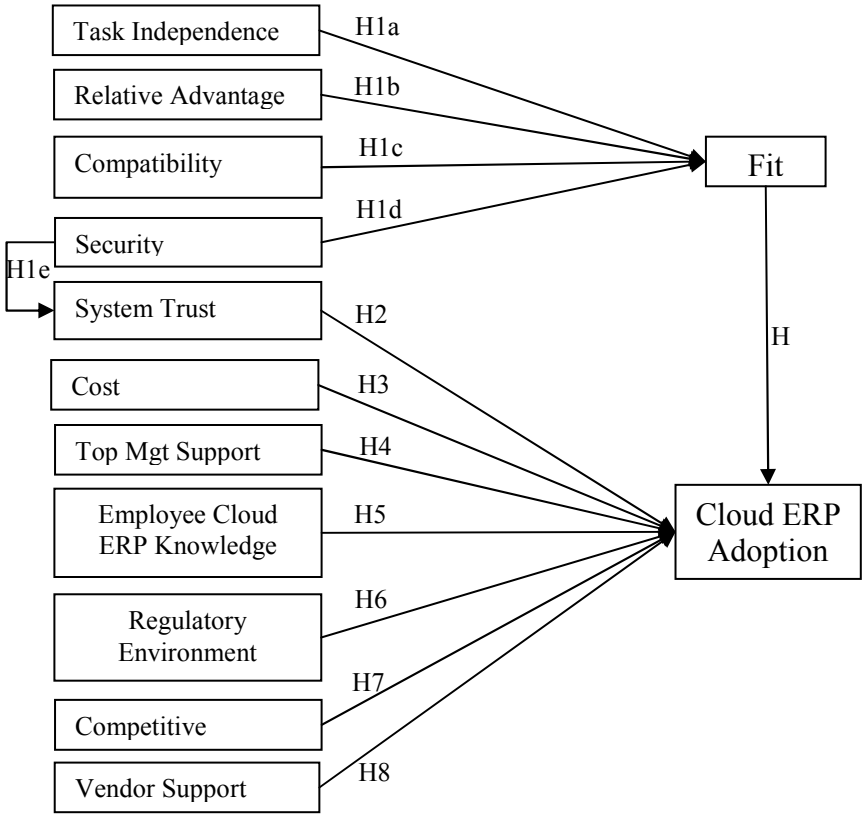


*Figure 1: Conceptual Model for Cloud ERP Adoption among SMEs*