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Understanding Cloud ERP Adoption Phenomenon: Large Organizational Perspective

Emergent Research Forum (ERF)

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Abstract

Ushered by the emergence of cloud computing technologies in the late 2000s, cloud enterprise resource planning (ERP) systems are becoming the 'new normal' as organizations have started migrating from their on-premise ERP to the cloud environment. Consensus in the literature indicates the criticality of transition to cloud-based technologies is fraught with benefits and risks alike. Experts have advocated for extensive judgement and insights of IT decision makers, which are more applicable for large organizations. A research model, influenced by the Theory of Reasoned Action (TRA) and ambidexterity construct, has been developed to understand senior managers' decision-making process for cloud ERP adoption. Being exploratory and theory building in nature, a multi-case study method will be applied. This study is expected to contribute to innovation adoption literature as well as help in clients' better understanding for resolution of decisional dilemma for adopting a complex system like cloud ERP.

Keywords

Cloud ERP, cloud computing, large organization, adoption.

Introduction

Organizations these days are looking forward for replacing their existing IT systems with more adaptable enterprise systems operable in digital business environment. Traditional ERP systems have often been considered too clunky, expensive and complex for most organizations (Salleh et al. 2012), which require on-premise deployment implying that ERP resources (data, module applications, and database servers) are hosted internally and maintained by client organizations (Peng and Gala 2014). Traditional on-premise ERP has been revolutionized by the emergence of cloud computing, which introduces an entirely new concept and platform for ERP along with other software, such as customer relationship management (CRM), and supply chain management (SCM) among others (Salleh et al. 2012).

However, since the last decade, most large organizations have already invested millions of dollars into on-premise ERP. Therefore, the likelihood of their being early adopters or practicality of reinvesting is considerably low compared to small and medium enterprises (SMEs); not only the investment but also the criticality of the cloud-based systems have resulted in resistance of cloud ERP adoption among large organizations. "The benefits that cloud ERP bring have yet to convince large enterprises in joining the cloud computing bandwagon" (Salleh et al. 2012, p. 9). Furthermore, managers and IT procurement decision makers have been warned against intuitive decisions to avoid considerable economic and strategic risk

factors related to the adoption decisions (Benlian and Hess 2011). Therefore, in line with the gaps identified in the cloud ERP adoption literature, this research project aims to study cloud ERP adoption phenomenon in large organizations.

Literature

A set of 50 studies spanning for over a decade (2009-2019) was selected using such keywords as, "Cloud ERP", "SaaS ERP", and "SaaS", among others. Along with different IS databases, business journals, conference proceedings and doctoral theses were selected, since there remains scarcity of research in this burgeoning knowledge area (Peng and Gala 2014). Factor based studies represent the most prominent research among the literature identified for cloud ERP adoption. Looking at the theoretical orientation, along with some dispersed theoretical lenses (e.g., status quo bias, protection motivation theory), two prominent theoretical streams are identified: a) typical adoption theories to study factors that can either influence or affect cloud ERP adoption from different angles, such as organizational, environmental, technology related, operational aspects, vendor related, legal issues, and so on(Cheng 2018; Kinuthia 2014; Mangula et al. 2014; Salim et al. 2015), b) traditional IT outsourcing based theories to study adoption factors from angles such as strategic, economic, core competence based, performance and vendor related issues (Benlian and Hess 2011; Benlian et al. 2009; Cho and Chan 2015).

Given the uniqueness of cloud services, the necessity of exploring adoption decisions by using factors other than the traditional IT adoption theories, has been acknowledged (Yu et al. 2018). Furthermore, with some peculiarities cloud computing has been arguably considered as an advanced form of IT outsourcing, therefore, traditional IT outsourcing research methods and theories have been suggested as the roadmap for the cloud researchers (Schneider and Sunyaev 2016). Ogunlolu and Rajanen (2019) have developed a unified model (based on systematic literature review) combining individual, technological, organizational and environmental factors. Due to limited work in the individual level that can influence cloud based technology adoption, further research has been proposed to address the impacts of different individual roles such as hierarchical position in the organization (Ogunlolu and Rajanen 2019). Moreover, the existing literature on cloud ERP adoption is heavily influenced by SMEs' adoption factors. Furthermore, most of the studies are either looking at switching intention from entire organizational perspectives or are primarily quantitative in nature. Chang et al. (2019) have surveyed switching intention of senior managers' in large organizations for the context of private cloud ERP. However, generalizing that result for different culture or other platforms (e.g. public, hybrid) can be risky being specific to Chinese large organizations and based on private cloud ERP context (Chang et al. 2019, p. 29).

Research call has also been made for deeper insight into senior managers' perceptions from the perspectives of *replacement* (of existing system with cloud based system) decision while including factors from economic or strategic theories having better explanatory power (Benlian and Hess 2011, p. 244). Unfortunately, existing theories that have been applied by various scholars for studying cloud ERP adoption are often deficient in describing resolution of decisional dilemma in dynamic environment. Therefore, the research project, re[ported in this paper, is explicitly interested to use multi-theory lenses for exploring how senior managers handle decisional dilemma related to replacement (the word "replacement" and "adoption" have been used synonymously for this study) of on-premise ERP with cloud ERP system. The underlying research question that drives this research project is: *How do the senior managers of large organizations make decisions to replace on-premise ERP systems with cloud ERP systems?*

Research framework and underlying propositions

To address the research question this study has developed a research model by integrating constructs from the TRA as well as "ambidexterity" (Tushman and O'Reilly III 1996), a construct well researched in the organizational design/change literature, however, less explored for IT adoption context. The research framework for this study postulates that senior managers' intention to adopt or replace cloud ERP is determined by their attitude that comprises of perceived risk and perceived opportunities. Adoption intention, in return, is expected to affect the actual adoption of cloud ERP. Ambidexterity of senior IT decision maker has been assumed to act as a moderator influencing the relationship between the adoption intention and actual adoption.

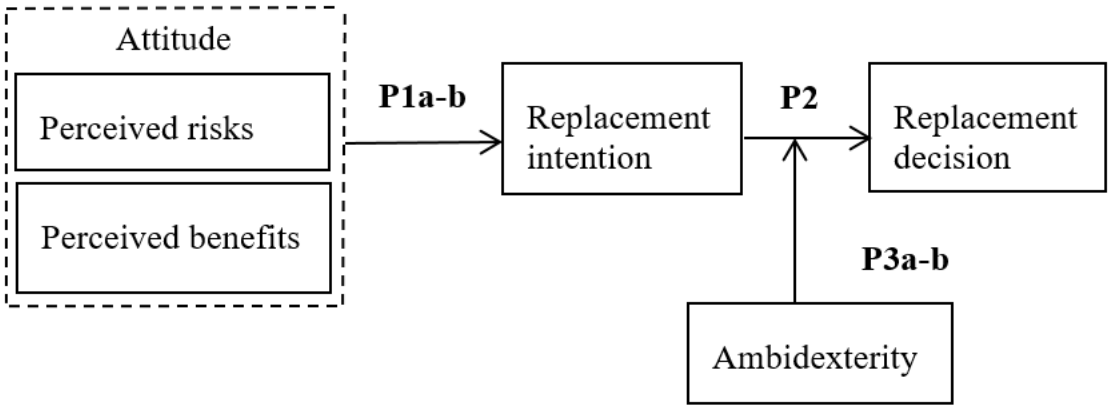

Figure 1: Proposed research framework

Attitude: Attitude (toward a behavior) implies an individual's positive or negative feelings about performing a behavior (Fishbein and Ajzen 1975). Research has established that "attitude" has greater influence in "behavioral intention" that precedes the actual "behavior" (Eagly and Chaiken 1993). Attitude has also been used in cloud ERP adoption literature by few studies, e.g., (Salim et al. 2015). Therefore, for the present study, we propose that senior managers' attitudes in relation to transformation to cloud ERP from on-premise ERP are important indicators to understand their behavioral intention for adoption decision (actual adoption behavior).

Perceived risks: Perceived risk represents the expectation of losses related to purchase that inhibits purchase behavior (Peter & Ryan, 1976). Risk is an important factor in decision-making when in uncertainty, discomfort and/or anxiety or conflict that surrounds the decision maker (Bettman 1973). Different types of risk have been either directly or indirectly used as barrier for cloud ERP adoption by some studies, e.g., (Benlian and Hess 2011). Therefore, for the present study, we use "risk" as one of the underlying factors within "attitude" and propose **P1a:** Senior managers' perception of risks of replacing on-premise ERP with cloud ERP would negatively influence replacement intention.

Perceived benefits: Perceived benefits are defined as "an individual's evaluation of potential gains associated with engaging in a particular behavior" (Brown 2005, p. 107). An important factor in decision-making, benefit, has also been used in cloud computing or SaaS adoption context for studying decision makers' positive beliefs related to adoption decision (Benlian and Hess 2011). Therefore, for the present study, we use "benefit" as one of the underlying factors within "attitude" and propose **P1b:** Senior managers' perception of benefits of replacing on-premise ERP with cloud ERP would positively influence replacement intention.

Usage intention: Intention implies a mental state representing a commitment to carry out any action in future. Mental activities such as planning and forethought are involved in intention (Bratman 1987). According to Fishbein and Ajzen (1975), including intention as mediator has both substantive and pragmatic reasons; substantively, it is important to acknowledging that formation of an intention is a necessary step to carry out the actual behavior ; pragmatically, inclusion of intention gives better predictive power to such models. We propose **P2:** The greater the senior managers' replacement intention, the greater his/her actual replacement of cloud ERP.

Ambidexterity: Exploitation refers to activities that help firms learn from their local search, selection, and reuse of existing knowledge and routines, such as improvements in efficiency and implementation (March 1991). Exploration refers to activities that increase variation by creating new possibilities and opportunities to focus more on the future, such as innovation and discovering new opportunities (March 1991). Mark (1991) proposed that sequential approach of *exploitation* and *exploration* might give a firm short-term success but for the long-term success, a right balance is imperative. Tushman and O'Reilly III (1996) are the proponents of *simultaneous* ambidexterity keeping their argument in line with March's seminal work. Tushman and O'Reilly III (1996) posited that turbulence or revolutionary change in the business environment brings huge managerial challenges. Future survival of the organization is dependent

on managers' ability to constantly readjust their strategies to realign their organizations. Owing to rapid and regular intervention by disruptive innovations in the software industries (Veit et al. 2014), simultaneous ambidexterity is of real relevance in shifting business models (Kranz et al. 2016). For the present study we, therefore, propose that adoption decision in disruptive or rapid changing environment is equally challenging. We propose **P3a:** Senior managers' simultaneous focus on exploitation and exploration would make the relationship, between replacement intention and actual replacement decision, stronger; **P3b:** Senior managers' sequential focus on exploitation and exploration would make the relationship, between replacement intention and actual replacement decision, weaker.

Research design

The aim of this study is to gain an in-depth understanding of decision makers' perceptions on risks and benefits that lead to their intention to replace on-premise ERP with cloud ERP system. Reaching to the actual adoption behavior is, however, moderated by those decision makers' strategic capability of ambidexterity. Theoretical constructs such as perceived risks, perceived benefits, and behavioral intention are well established constructs, therefore, could be designed for quantitative survey. However, "ambidexterity" as a construct though well researched in the organizational design/change literature, is at its infancy for IT adoption context, which will affect designing a comprehensive survey tool. Therefore, given the exploratory nature of this study, a qualitative case study has been deemed appropriate research method for the present study. According to Yin (2004), case study as a research method is most appropriate in the following situations: a) to answer "how" and "why" questions, b) actual behavioral events do not require investigator's control iii) the focus of the study is some contemporary issues rather than historical events. Moreover, Lipset et al. (1956) argue that "particularize, not generalize" is the aim of a case study (pp. 419-420).

A multi-case study approach will be adopted to seek qualitative data for this research project. The interview participants will be the organizational committee members, who play a role in IT procurement decisions, which might include IT supervisor, chief executive officer (CEO), chief information officer (CIO), chief technology officer (CTO), business owner, different business unit managers and so on. In the first phase of data collection, two case organizations (i.e. one public and one private organization) will be selected for conducting an exploratory pilot case study for the purpose of research model refinement. After refining the model and interview protocol, the second phase of data collection will be conducted on another two organizations for model confirmatory validation purpose. Data collected from in-depth interviews with the senior managers would be analysed by using thematic coding analysis following pattern-matching logic (Yin, 2013). Nvivo software will be used as tool for qualitative data analysis.

Conclusion

Drawing on the purpose of research (Neuman and Dickinson 2003), this research project is exploratory and theory building in nature. This is because to the best of our knowledge: a) no theory currently exists to investigate how large organizations make cloud ERP adoption decision, b) the existing theories have not yet systematically considered factors that can help us understand the resolution of decisional dilemma in dynamic situation. Upon completion, this project is expected to contribute knowledge in cloud ERP literature by extending understanding about large organizational cloud adoption phenomenon, which is limited in the extant literature. Theoretical contribution can be expected through the generation of an integrated model, combining constructs from different streams of literature (e.g., social psychology, organizational design). Finally, this project on its completion can provide valuable managerial contributions. Guidelines developed from the research findings can contribute to clients' better understanding of the importance of combination of managerial attitudes and strategic capabilities in making a major IT deployment decision. For the vendors, consultants and service providers, similar guidelines can assist in grasping clients' attitude for effective marketing strategy development.

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