Chapter 66
Challenges of Cloud Computing Adoption From the TOE Framework Perspective

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ABSTRACT

Cloud computing can be classified as a third-generation computing platform which refers to on-demand delivery of computing infrastructure and services via a network, usually the Internet. Cloud computing promises to provide several advantages to its adopters such as: cost advantage, availability, scalability, flexibility, reduced time to market and dynamic access to computational resources. Notwithstanding the numerous advantages of cloud computing, its implementation and adoption in developing countries is still limited and surrounded by variety of issues. Hence, the main objective of this article is to identify the main challenges facing the utilization of these services in developing countries, particularly Jordan. To achieve the above-mentioned objective, six in-depth interviews with ICT officials and experts in the domain of cloud computing were used as the main data collection method. The challenges of cloud computing adoption emerged in this study are classified into technological, organizational and environmental factors.

1. INTRODUCTION

The highly dynamic business environment and the increasingly competition pressures urge organizations to adopt various state-of-the-art information systems/information technologies (IS/IT) in order to improve their business operations and performance (Sultan, 2010; Pan and Jang, 2008), to advance there IS/IT innovativeness and to sustain themselves in the competitive marketplace (Wu et al., 2013). One of the recent and advanced innovative technologies is cloud computing, which is increasingly being considered as a technology that has the potential of changing how business can be conducted and how information systems are presently operated and used within organizations. According to the National Institute of Standards and Technology (NIST), cloud computing is defined as "…a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction…" (Mell and Grance, 2011). Cloud computing service models are classified based on the computing requirements of the end-users into three different layers including: software as a service (SaaS), infrastructure as a service (IaaS), and platform as a service (PaaS) (Alshamaila et al., 2013). However, the deployment models of cloud computing are usually classified as: public cloud, private cloud, hybrid cloud, and community cloud.

The emergence of the cloud computing as a disruptive technology has the potential of changing how business operations can be conducted and how computing services are developed, deployed, operated, maintained, and paid for (Gangwar et al., 2015). Recently, we are witnessing a big movement toward adopting innovative technologies, such as cloud computing, so as to gain competitive advantages that would help organizations in vanquishing the high levels of competition in many industries. Indeed, each organization has its own unique drivers to adopt cloud computing, but they generally fall into some general categories: cost savings, availability, scalability, flexibility, time-to-market, and others (EMC, 2011). Moreover, cloud computing has the potential to bring substantial benefits to organizations especially for small and medium-sized enterprises (SMEs) which usually cannot afford high investment in ICT infrastructure.

Without a doubt, the rapid emergence, prevalence and potential impact of cloud computing has sparkled a significant amount of interest amongst Information Systems/Information Technology (IS/IT) industry and research. However, and despite the rapid emergence of cloud computing, empirical research on cloud computing adoption is still quite limited (Alharbi, et al., 2016; Gupta et al., 2013; Morgan and Conboy, 2013). In addition, there has been less focus on adoption at the organizational level compared to the excessive one at the individual level (Marston et al., 2011). Further, despite the numerous advantages of cloud computing, its implementation and adoption in developing economies is still limited and surrounded by a variety of risks and challenges. These include: security, reliability, performance and integration issues (Gangwar et al., 2015). Moreover, the cultural differences between developed and developing countries are acknowledged. Many organizations in developing countries have deeply entrenched cultural diversities and norms compared to those in developed countries. These societal culture-based differences influence the diffusion of innovation and transfer of technology across nations (Sabi et al., 2017). Therefore, the main objective of this research is to explore the technological, organizational, and environmental factors that hinder the adoption of cloud computing technology by organizations in a culturally different part of the world, particularly Jordan.

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