

Chapter 82

Examining the Contributing Factors for Cloud Computing Adoption in a Developing Country

Winfred Yaokumah

Pentecost University College, Ghana

Rebecca Adwoa Amponsah

Hightel Consults Ltd, Accra, Ghana

ABSTRACT

The growth in cloud computing adoption is phenomenal in organizations worldwide due mainly to its potential to increase productivity and enhance efficiency in business operations. However, cloud adoption is very low in many organizations in the developing countries. To gain insights into organizations' behavioral intention and usage behavior of cloud computing, based on the Extended Unified Technology Acceptance and Use Theory, the current study investigated the effects of technological, organizational, and environmental factors on cloud adoption in organizations. Using samples from five industry sectors and by employing the Structural Equation Model, the study found that facilitating conditions, habit, performance expectancy, and price value had positive and significant effect on behavioral intention to use cloud computing. But, effort expectancy, social influence, lack of motivation, and inadequate security were found to be barriers to cloud adoption. These findings could contribute toward better formulation of planning guidelines for successful adoption of cloud computing.

INTRODUCTION

The growth in cloud computing adoption and implementation is phenomenal in small, medium and large sized organizations worldwide. Cloud computing is an on-demand self-service technology platform that enables users to access computational resources anytime and anywhere (Bamiah et al., 2012). It offers businesses increased productivity and efficiency in data management. In particular, cloud computing

DOI: 10.4018/978-1-5225-8176-5.ch082

provides computing resources (including hardware, software, infrastructure, and platform) to various organizations; relieving them from owning such resources, but rather use the resources to achieve business objectives (Masrom & Rahimli, 2015). A recent organisational study reveals that 85.80% of the participants support cloud computing technology; 97.63% mention its usefulness; whereas 95.26% recognize service quality and security as the key factors in the adoption of cloud computing (Alsanea & Barth, 2014). According to Cloud Security Alliance (CSA), adoption of cloud computing is increasing rapidly because it enhances efficiency in business operations (CSA, 2011) and many organizations find cloud services flexible to use, affordable, and scalable (Aharony, 2015). Thus, it requires minimal capital expenditure (Masrom & Rahimli, 2015) and can be implemented gradually (Bildosola et al., 2015).

Therefore, cloud computing has become a suitable option for many organizations. The International Data Corporation (IDC), a worldwide cloud information technology (IT) infrastructure tracker, analyst and forecaster, provides a five-year (2015 to 2019) forecast of cloud computing. According to IDC, the total spending on cloud IT infrastructure (servers, storage, and Ethernet switches) grew by 24.1%, amounting to \$32.6 billion in 2015; the annual growth rate on public cloud IT infrastructure was 29.6%; while the traditional IT infrastructure deployment recorded a decline of -1.6% (IDC, 2015). This report indicates an increasing adoption rate of cloud computing technologies while showing drastic decline in traditional IT infrastructure. Comparatively, cloud computing provides cost reduction on IT infrastructure and maintenance; improves communication and scalability; promotes business continuity; offers reliable backup and recovery services; provides automatic software integration, quick deployment, and unlimited storage; and provides easy access to information, expert service, and convenience (Hemlata, 2015). Owing to its substantial advantages, the technology is being embraced by many organizations and countries worldwide (Bildosola et al., 2015; Gantz et al., 2012; Omar, 2015).

Regardless of its numerous benefits, cloud computing has faced outright rejection (Sultan, 2010) and has been openly and strongly criticized (Armbrust et al., 2010). Zhou et al. (2012) mention lack of knowledge, poor internet connectivity, security of cloud services, lack of trust, and interoperability with existing systems as barriers to cloud adoption. Shimba (2010) points out that technical, policy, and organizational obstacles may prevent companies from adopting cloud computing services. Similarly, Yeboah-Boateng and Essandoh (2014) identify top management support, trainability, competence of cloud vendors, resistance to new technology, and compatibility with existing IT infrastructure as the key factors affecting cloud computing adoption in organizations. Notwithstanding the challenges, the benefits derive from the use of cloud computing seem to outweigh the limitations, hence its massive implementation trend worldwide (IDC, 2015).

However, recent findings indicate that cloud adoption rate is relatively low in some developing countries (Alismaili et al., 2015; Omar et al., 2015; Senarathna et al., 2016; U.S. Department of Commerce, 2016). Organizations in the developing countries need to benefit from cloud technology in order to realize increased productivity and enhanced efficiency in businesses operations. This therefore heightens the need for a deeper research into each of the cloud computing adoption factors (technological, environmental and organizational), focusing on consistent theoretical lenses, to determine factors hindering cloud adoption in developing countries, and hence offer guidelines for organizations planning to adopt cloud technology.

Accordingly, based on the extended Unified Technology Acceptance and Use Theory (UTAUT2), the goal of this study is to investigate the factors that influence the adoption of cloud computing in the context of a developing country, in particular Ghana. In order to achieve the objective of this study, three research questions are formulated: (a) what is the impact of technological factors on the adoption of

21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/examining-the-contributing-factors-for-cloud-computing-adoption-in-a-developing-country/224650

Related Content

On the Use of System-Level Benchmarks for Comparing Public Cloud Environments

Sanjay P. Ahuja (2019). *Handbook of Research on Cloud Computing and Big Data Applications in IoT* (pp. 24-38).

www.irma-international.org/chapter/on-the-use-of-system-level-benchmarks-for-comparing-public-cloud-environments/225409

Designing Instruction and Professional Development to Support Augmented Reality Activities

Kelly M. Torresand Aubrey Statti (2021). *International Journal of Fog Computing* (pp. 18-36).

www.irma-international.org/article/designing-instruction-and-professional-development-to-support-augmented-reality-activities/284862

Navigating Green Computing Challenges and Strategies for Sustainable Solutions

J. Jeyaranjani, K. Rangaswamy, A. Ashwitha, Ramakrishna Gandi, R. Roopaand P. Anjaiah (2024). *Computational Intelligence for Green Cloud Computing and Digital Waste Management* (pp. 42-59).

www.irma-international.org/chapter/navigating-green-computing-challenges-and-strategies-for-sustainable-solutions/340521

From Cloud Computing to Fog Computing: Platforms for the Internet of Things (IoT)

Sanjay P. Ahujaand Niharika Deval (2018). *International Journal of Fog Computing* (pp. 1-14).

www.irma-international.org/article/from-cloud-computing-to-fog-computing/198409

Solutions for Securing End User Data over the Cloud Deployed Applications

Akashdeep Bhardwaj (2019). *Cloud Security: Concepts, Methodologies, Tools, and Applications* (pp. 1030-1046).

www.irma-international.org/chapter/solutions-for-securing-end-user-data-over-the-cloud-deployed-applications/224620