Chapter 75
Drivers of Cloud Computing Adoption for E-Government Services Implementation

Fathey Mohammed
Universiti Teknologi Malaysia, Malaysia & Taiz University, Yemen

Othman Bin Ibrahim
Universiti Teknologi Malaysia, Malaysia

ABSTRACT

Adopting and using Information and Communication Technologies (ICTs) in the public sector affords undeniable benefits in terms of efficient and cost-effective provision of services, facilitating public management and promoting transparency and participation through e-government systems. However, many governments around the globe face many challenges and still struggle to implement e-government initiatives successfully. Cloud computing may offer a new chance to address many of these challenges by providing elastic scalable, customized, and highly available environment. Moreover, it is already adopted and proved to be advantageous for governmental institutions in different countries. By analyzing some cases, this paper extracts the main drivers of cloud computing adoption in the public sector organizations. Cost saving and the need for scalability are the main common factors that drive public sector organizations to move their services to the cloud.

INTRODUCTION

Information and Communication Technology (ICT) advancements afford governments with the ability to do their internal and external operations more efficiently (Heeks, 1999). Using ICTs to facilitate government's basic roles and duties, and realize better quality in the provision of public services to people and communities, is called electronic government (Mariuchi, 2001). Over the past decade, governments across the world and at all levels have adopted electronic government. However, many developing countries still face difficulties to implement e-government initiatives, leading to a high level of failure (Al-Rashidi, 2013; Shareef et al., 2010; Wang & Hua, 2011). The most experienced challenges and barriers across the

relevant studies include technological barriers, lack of resources, cost, digital divide, poor management and infrastructure, and lack of IT infrastructure (Al-Rashidi, 2013; Al-Sobhi & Weerakkody, 2010; Rana et al., 2013; Shin, 2008). However, the continuous advancements in technologies related to implementing and delivering e-government services may provide opportunities to overcome some of these challenges, and enhance and make the implemented systems more effective as well.

Cloud computing as a relatively new technology has the key characteristics and the feasible features that make it suitable to be used for e-government implementation. Gartner Research Group predicts that 20% government agencies use cloud computing to be more effective (Stevens and Pettey, 2008). Further, due to its advantages, many countries have launched e-governance services using cloud computing (Sharma et al., 2012). Several examples show that cloud computing has become a strategic direction for many public sector organizations and is already being adopted in critical domains of the government's IT infrastructure in the world. For developing countries, there is a need to assess this opportunity through analyzing the motivations that drive the countries that already implemented e-government services to migrate to the cloud.

In the literature, there is relatively few studies investigated cloud computing in the context of e-government. Some of these studies discussed the proposing benefits of cloud computing to e-government based on its characteristics (Bhardwaj et al., 2010; Chandrasekaran & Kapoor, 2011; Das et al., 2011; Liang, 2012; NASR et al., 2012; Rastogi, 2010; Sharma et al., 2012) and the related challenges (ATSE, 2010, Craig et al., 2009, Kurdi et al., 2011; Mukherjee & Sahoo, 2010; Paquette et al., 2010; Tripathi & Parihar, 2011; Yeh et al., 2010). However, there is a lack of studies that mainly investigate the common factors that drive public sector organizations to use cloud computing for the purpose of e-government services implementation. This study concludes the most common drivers through examining a number of cases from different countries around the world. The following sections of this paper are arranged so that firstly an overview of cloud computing is provided. Secondly, studies related to the subject of this study are reviewed. Thirdly, the methodology followed to achieve the study objective is described. Then, the drivers of cloud computing adoption in the context of e-government are elicited and defined, followed by the conclusion.

CLOUD COMPUTING

The term of cloud computing is a relatively new and it is defined by the IEEE Computer Society as: "A paradigm in which information is constantly stored in servers on the Internet and cached temporarily on clients that include desktops, entertainment centers, computers, notebooks, handhelds, etc.". According to Foster et al. (2008) the cloud can be defined as a large scale distributed computing paradigm where a pool of virtualized, scalable, and manageable storage, computing power, platforms and services can be provisioned on-demand to customers via the Internet. Cloud computing is a collection of virtualized and scalable resources, which can host applications and provide required services to the users and can be charged as per the use like utility (Pokharel and Park, 2009). According to Mell and Grance (2011) the widely accepted definition of cloud computing is the US National Institute for Standards and Technology (NIST) definition which states that cloud computing is a model for providing ubiquitous, adequate and on-demand access to a shared and configurable computing resources (e.g. servers, networks, storage, applications and services) with minimal effort and service provider interaction (Mell and Grance, 2009).

Related Content

Mediation Spaces for Similarity-Based Semantic Web Services Selection
Stefan Dietze, Alessio Gugliotta, John Domingueand Michael Mrissa (2011). *International Journal of Web Services Research (pp. 1-20).*
www.irma-international.org/article/mediation-spaces-similarity-based-semantic/50490

A Method for Predicting Wikipedia Editors' Editing Interest: Based on a Factor Graph Model
Haisu Zhang, Sheng Zhang, Zhaolin Wu, Liwei Huangand Yutao Ma (2016). *International Journal of Web Services Research (pp. 1-25).*
www.irma-international.org/article/a-method-for-predicting-wikipedia-editors-editing-interest/161800

Generic and Specific Compatibility Criteria for Web Service Composition: Formal Abstraction and Modular Verification Approach1
Kais Klai, Samir Tataand Hanen Ochi (2012). *International Journal of Web Services Research (pp. 45-68).*
www.irma-international.org/article/generic-and-specific-compatibility-criteria-for-web-service-composition/80178

Descriptive and Predictive Analytical Methods for Big Data
Sema A. Kalaian, Rafa M. Kasimand Nabeel R. Kasim (2019). *Web Services: Concepts, Methodologies, Tools, and Applications (pp. 314-331).*
www.irma-international.org/chapter/descriptive-and-predictive-analytical-methods-for-big-data/217837

RAW Architecture: Reflective and Adaptable Web Service Model
Javier Parra-Fuente, Salvador Sanchez-Alonzo, Oscar Sanjuan-Martinezand Luis Joyanes-Agular (2005). *International Journal of Web Services Research (pp. 36-53).*
www.irma-international.org/article/raw-architecture-reflective-adaptable-web/3054