Outlining the Issues of Cloud Computing and Sustainability Opportunities and Risks in European Organizations: A SEM Study

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ABSTRACT

Cloud computing and sustainability have become part of a core strategy in organizations globally and locally, since their characteristics assist both businesses and individuals to become unique and exclusive in their work and study. Businesses and individuals should integrate sustainability in their strategy and to include cloud computing technology as a tool for sustainable work, especially in the Information Technology (IT) departments to cut costs and increase efficiencies and productivity. This paper examines European organizations’ awareness of cloud computing and sustainability opportunities and risks, via an online survey targeting 56 Information Technology managers in Europe. A Cloud Computing Conceptual model was developed using structural equation modeling (SEM) to evaluate the survey results. The study results confirmed that cloud computing technology opportunities, including sustainability in the organization’s strategy, will enhance their job performance and job satisfaction, use and awareness; however, security, privacy and risks are still a major concern.

Keywords: Cloud Computing, European Organizations, Opportunities, Risks, SEM, Sustainability

INTRODUCTION

In the 21st century, organizations globally and locally are faced with a new challenge particularly since the 2008 global financial economic crisis, and issues relating to globalization and sustainable development. Furthermore, these organizations are also facing more challenges and pressures from the government, media, stakeholders, and environmental organizations and groups.
to consider ‘saving the planet’ rather than just ‘making a profit’. Currently, many organizations are incorporating sustainability and green technology in their agenda to satisfy the needs of their organization’s aims and objectives; also, stakeholders and employees are encouraged to become good stewards of both their community and environment. The integration of cloud computing and sustainability in an organization’s agenda and strategy will transform the workplace, shifting the focus from capital expenditure, infrastructure, applications, usage, mobility, and cost structure (Cubitt, Hassan, & Volkmer, 2011; Issa, Chang, & Issa, 2010). The results of several studies indicate that cloud computing is a “model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with the minimal management effort or service provider interaction” (Mell & Grance, 2011, p. 2). Zissis & Lekkas (2011) maintain that cloud computing is empowered by virtualization technology, which allows to create one or more virtual machines in one machine and can run any software, from operating systems to end-user applications. By adopting cloud computing, organizations may be able to reduce their capital expenditure, carbon footprint, and enhance their reputation for sustainability (Grossman, 2009). Furthermore, this technology provides the feature of high scalability, which means that firms can purchase service as they grow in size, thereby avoiding the necessity to build their own IT infrastructure (Berl et al., 2010; Thake, Holme, & Williams, 2011). By the same token, Stewart and Kennedy (2009) confirm that this technology reduces energy consumption of IT hardware.

Finally, a number of recent studies show that cloud computing promises to enhance performance, reliability and scalability in the Information Technology services of organizations, as demonstrated by (Armbrust et al., 2009; Biel, Grill, & Gruhn, 2010; Erdogmus, 2009; IBM, 2009). Furthermore, cloud computing encourages organizations to become more ethically responsible and more sustainable in their work (Newton, 2003; Weybrecht, 2010). Therefore, all organizations require a strategy to incorporate and implement effective cloud computing services and facilities. To achieve this, organizations must provide some type of training for their employees regarding the move to cloud computing, and make them aware of both the risks and opportunities presented by cloud. From the financial perspective, one of the most important objectives of such a move would be to increase market share and win the loyalty of new and existing customers (Laurent, 2008).

This paper affords an assessment of the European organizations readiness to move towards a more sustainable way of doing business particularly by using Information and Communication Technologies (ICT), especially the use of green IT technology in the workplace (i.e. cloud computing). Furthermore, this paper aims to raise awareness of cloud computing and sustainability factors in European organizations, as it makes a new and significant theoretical and practical contribution to the current literature on cloud computing and sustainability, by raising awareness of the relatively new terms, ‘cloud computing’ and ‘sustainability’, in relation to opportunities and risks. To evaluate the survey results, the researchers use structural equation modeling. This paper is organized as follows: 1) What is Cloud Computing? 2) What is Sustainability? 3) Sustainable ICT; 4) Research Methods and Questions(s); 5) Participants; 6) Research Model – Cloud Computing Conceptual Model; 7) The Online Survey Questions; 8) Results; 9) Discussion and New Theoretical Significance; and 10) Conclusion.

WHAT IS CLOUD COMPUTING?

Currently, many businesses and individuals consider technology as essential for the effective and efficient completion of tasks. Technology devices range from supercomputers to the iPad.
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