Chapter 34
Cloud Computing Technology Innovation Advances:
A Set of Research Propositions

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ABSTRACT

This paper seeks to investigate the advances in the consumer adoption process of technological innovations in cloud computing services. The paper aims to focus on the increased role of cognitive computing and big data affecting adoption of emerging technologies. As more consumers worldwide are using mobile computing, the role of online advertising is examined to understand the marketing affects of cloud technology. This leads to a discussion about how the value of social capital to consumers adopting cloud computing technology, which highlights how consumers learn and interact with emerging technological innovations. To overcome the concerns about security and transparency of data stored on cloud computing servers, the role of cloud computing technology in alleviating consumer concerns is stated. The findings highlight the importance of changing the mindsets of consumers when using a technological innovation and the obstacles to the use of cloud computing technology. The paper describes the advances in cloud computing technology in connection to emerging innovations that can be of use to practitioners as well as researchers in the field.

1. INTRODUCTION

Cloud computing involves the use of remote servers over the internet to provide on-demand access of information services (Ratten, 2014a). Services accessed in the cloud include software, hardware and infrastructure that can be reconfigured based on consumer demand. The wide variety of services available on cloud servers has lead to more consumers using interactive technology applications (Karakas and Manisaligil, 2012). Part of the reason for the fast advances of cloud technology has been its ability to allow consumers access to current information systems that have been generated based on relevant data needs. As more cloud services are being made available to consumers there has been an increasing

acceptance by companies to provide multiple technology services. The usage of mobile computing devices including smart phones and tablets has given rise to the need for consumers to access more information services. This has lead to cloud computing adoption rates to increase as it provides consumers with a way to better utilise their computing devices (Ratten, 2014b).

Cloud computing uses information infrastructure to provide flexibility with accessing online data (Bradshaw, Milland and Walden, 2011). As more people are travelling and working from home it has become increasingly important for them to access information in multiple formats and via different computing devices (Stein, Ware, LaBoy and Schaffer, 2013). Cloud computing offers these formats as a convenient way to access multiple technology services (Marston, Li, Bandyopadhyay, Chang and Ghalsasi, 2011).

Cloud computing represents the next cycle and stage of computing as a technological innovation. The rise of mobile computing devices has led to more consumers wanting to access services at any time and geographic location. This has forced more consumers to adopt cloud computing and increasing numbers of businesses utilising cloud infrastructure. The benefit of cloud computing for consumers is that services can be outsourced to provide better information infrastructure. The widespread adoption of cloud computing technology by consumers has increased pressure on traditional data centres because of changing application needs. The deployment of cloud computing has meant that technology has had to innovate by making things easier and faster for consumers.

Innovations are defined as any idea, product or service that is new (Hameed et al, 2012). Technology innovations are further defined as an innovation with a computer application and can include products, services or design applications. There are two major approaches to understanding the adoption of a technological innovation (Raza and Standing, 2010). The first is the factor approach, which involves looking at patterns of innovation and the main steps that consumers have as part of the adoption. The second is the process approach and incorporates a more holistic understanding of the adoption by looking at the different ways to evaluate and implement a technological innovation (Ratten, 2012). The process approach suggests that the steps of initiation, decision and implementation are involved in the adoption of a technological innovation (Ratten, 2013). When a consumer initiates the adoption process they are recognising the usefulness of a technological innovation. The pre-adoption steps a consumer goes through will include acquiring more knowledge and information about the innovation (Gallivan, 2001).

The first phase of the adoption process involves consumers deciding the usefulness and ease of use of a technology (Fichman, 2001). The implementation phase of the adoption process involves consumers willing to purchase and use the innovation. After implementing the innovation consumers will then experiment with the technology to see if there are different ways of using the technology (Damanpour, 1991). Part of this experimentation involves generating new usages for the innovation that might include developing better way to use the technology.

The focus of this paper is on the technology innovation advances of cloud computing services. The structure of this paper is as follows. First, the theoretical framework for this paper is discussed that is based on the way consumers adopt innovations. This includes a focus on the technology acceptance model and social cognitive theory as a way to understand the internet and external drivers of a consumer's decision to adopt emerging innovations. Second, the perceptions of consumers towards perceived usefulness and ease of use in adopting cloud technology is examined. In addition, the role of online advertising, social capital and security concerns of consumers towards cloud computing in stated. Third, the limitations and suggestions for future research are stated that highlight the interesting advances in cognitive computing and the internet of things that will occur in the next decade as more computing devices become

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