Chapter 1
Multi–Perspectives of Cloud Computing Service Adoption Quality and Risks in Higher Education

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ABSTRACT

Universities worldwide are starting to turn to cloud computing. The quality characteristics, which include access to a wider network of computing resources, pay-as-you-go services, self-services, agile services, and resource centralisation provide a convincing argument for HEIs to adopt cloud services. However, the risks leading to non-adoption range from security issues to a lack of cloud vendor support. The findings suggest that security, privacy, and trust are the key determinants to non-adoption as stakeholders felt that the cloud cannot fully guarantee the safeguarding of sensitive information. Key determinants to cloud adoption include improving relationships between students and teachers via collaborative tools and proposing cloud apps for mobile devices for accessing virtual learning materials and email securely off-campus. In conclusion, university stakeholders are still unconvinced about adopting cloud services, but future advances of the cloud may help to steer their decision to adopt this innovative technology given its overwhelming potential.

INTRODUCTION

Recently, cloud computing (CC) has become a major player in education (Sultan, 2010). CC is a ubiquitous computing paradigm that enables users to access a host of cloud services. These computing paradigms are Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a service (IaaS) (see Sultan, 2010). Software applications, for instance, virtualized by CC, can be distributed over the Internet rather than deploying them on computers or workstations (Rindos et al., 2010). As such, CC has been

integrated into e-learning systems, mobile learning and online distance learning (Cvetkovic et al., 2017; Rao and Selvamani 2015; Doelitzscher et al., 2011; Round, 2011; Al-Zoube et al., 2010). In particular, Higher education institutions (HEIs), including Universities and colleges are now starting to implement three types of CC models; public, private and hybrid clouds, with private clouds being the most prevalent among colleges to establish their own CC environment (Schaffer et al., 2009). In addition, Universities also purchase CC services from a third party service providers (Shakeabubakor et al., 2015). Willcocks et al., summarises the aforementioned CC components as follows (see Fig.1):

Figure 1. CC components (Willcocks et al., 2014)
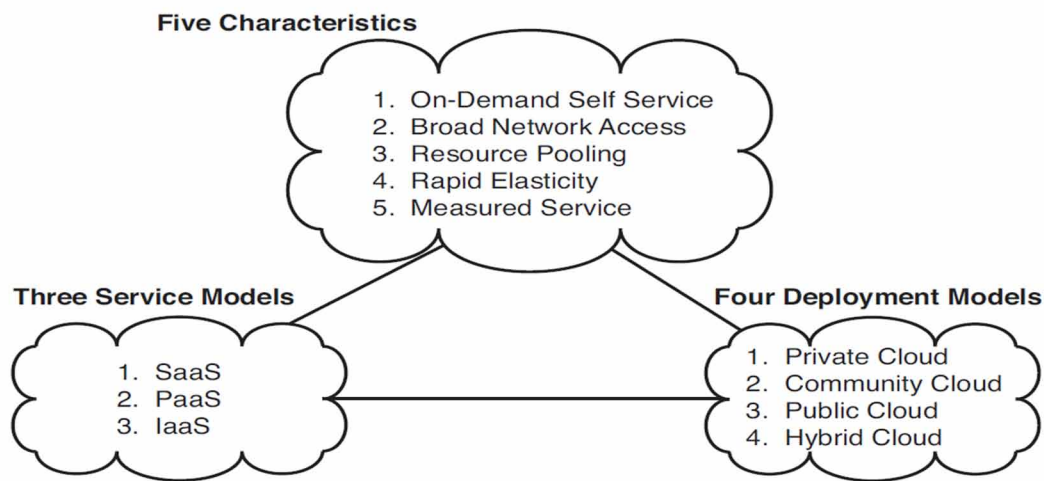
In this research, HEIs refer to university level institutions that provide a wide range of courses at undergraduate and postgraduate level, and teaching and research services. Quality in the context of this study is defined as the quality elements or characteristics, which make CC a powerful and viable technology for Universities to adopt. Whereas, the risks refer to the potential barriers or dangers that may dissuade Universities from adopting CC. Adoption refers to stakeholders' acceptance of CC, whereas non-adoption refers to the rejection of CC (outcome). Adoption of the cloud among Universities has fluctuated over the years due to the quality (or perhaps, the benefits) (Sultan et al., 2010) and risks (challenges) (Okai et al., 2014) of the cloud.

Although there is a clear understanding about the specific components related to the cloud (Fig.1), the problem under investigation is a limited understanding of the quality and risks associated with CC that influence HEIs', namely Universities' adoptive decision. Currently, CC is widely accepted among various firms, industries, businesses and even government agencies (Alassafi et al., 2017; Chang, 2015; Ammurathavalli & Ramesh, 2014; Hoberg et al., 2012; Low et al., 2011). There is limited research to support the quality and risks associated with CC, particularly with emphasis on UK Universities. Therefore, this paper sought to explore the quality and risks associated with CC from a multiple perspective in the context of UK Universities.

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