Journal of Global Information Management
Volume 27 • Issue 4 • October-December 2019

An Empirical Study on Factors Affecting Switching Intention to Cloud Enterprise Resource Planning:
A Comparison Between Public and Private Clouds

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ABSTRACT

With the diffusion of cloud computing, public and private enterprise resource planning (ERP) have received increasing attention. However, several prior studies have investigated the factors that affect cloud system adoption for either public or private cloud systems. This article attempts to compare public and private cloud ERP. A research model is developed based on Two-Factor Theory and empirically test our hypotheses by collecting 253 public cloud samples and 227 private cloud samples. The results show that system quality and perceived ease of use positively affect switching benefits, which in turn positively affect switching intention. Security risk, satisfaction, and breadth of use positively affect switching costs. The moderating effects of public and private clouds affect the relationships between perceived ease of use and switching benefits, between breadth of use and switching costs, and between switching costs and switching intention. The findings offer suggestions for promoting organizations to switch to cloud public and private ERP.

KEYWORDS

Cloud Computing, Enterprise Information Systems, Private Cloud, Public Cloud, Switching Intention, Two-Factor Theory

1. INTRODUCTION

In recent years, cloud computing has become an emerging development in information technology (IT). Cloud computing provides business products, services, and solutions that are delivered and consumed in real time by organizations (Gen, 2008). According to the International Data Corporation (IDC) enterprise cloud computing survey, 28% of organizations' total IT budgets will be dedicated to cloud computing in 2017. The organizations will move 60% of their total IT environments into clouds by 2018. Total spending on IT infrastructures for cloud environments will grow from $37.1 billion

DOI: 10.4018/JGIM.2019100103
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in 2016 to $59.5 billion in 2020. In 2020, spending on public and private cloud IT infrastructure will reach $38.4 billion and $21.1 billion, respectively (IDC, 2016). Thus, organizations are moving to clouds faster than expected.

Public clouds allow organizations to access online services and resources provided by cloud service providers over the internet. Organizations do not own their core IT and thus save the costs of IT personnel and infrastructure. Private clouds allow organizations to access services and resources that they already own via an intranet. Thus, organizations must own their core IT infrastructure and invest considerable resources in managing and maintaining their utilized data and services (Géczy et al., 2012; Kenyon, 2012; Welsh & Gregory, 2012).

Public and private clouds have common business benefits that attract organizations to cloud enterprise resource planning (ERP), such as system functionalities and useful interfaces (Welsh & Gregory, 2012). However, there are different challenges and barriers in adopting public and private cloud ERP. Since organizations' access to data and services is controlled by cloud service providers over the internet, public clouds pose a greater security risk than private clouds. On the other hand, since private clouds require IT infrastructure, hardware and in-house services, they are more expensive than public clouds (Géczy et al., 2012). Thus, it is difficult to choose between public and private cloud ERP for organizations.

Prior studies have investigated the factors that affect either public or private cloud system adoption (Lian et al., 2014; Low et al., 2011). However, the two options should be considered at the same time when deciding to adopt cloud solutions, since only one of them can be chosen. The reality is that most organizations have already implemented enterprise systems prior to planning a shift toward cloud services. Since switching to public or private cloud ERP means relinquishing incumbent ERP, an investigation of adoption alone may not precisely consider the dilemma faced by organizations. Therefore, the purpose of this study is to construct a model to investigate and compare the different factors that affect organizations' switching intention to public and private cloud ERP. In particular, this research will answer the following questions:

- What are the factors that motivate and demotivate organizations to switch to cloud ERP?
- What factors particularly affect switching intention between public and private clouds?

To answer these research questions, this study examined cloud-related benefits and costs based on Two-Factor Theory. Two-Factor Theory proposes enablers and inhibitors that affect user job satisfaction (Herzberg, 1995). Several information systems (IS) studies employed this theory to investigate two categories of factors that affect system adoption (Islam, 2014; Lee et al., 2009; Liu et al., 2011). In this study, we characterize the enablers and inhibitors as switching benefits and switching costs. Switching benefits and costs can be influenced by various factors (Kim & Kankanhalli, 2009; Park & Ryoo, 2013). The factors that can enhance perceived benefits are system quality, information quality, and perceived ease of use based on Information Systems Success Model (DeLone & McLean, 1992) and Technology Acceptance Model (TAM) (Davis, 1989; Davis et al., 1989). According to previous studies, the factors that increase potential costs are the security risk of new systems (Lee et al., 2013; Paquette et al., 2010; Ratten, 2016), and satisfaction with and breadth of use of incumbent systems (Park & Ryoo, 2013; Ye et al., 2008).

To the best of our knowledge, this study is the first to compare public and private clouds. After dividing the overall data into public and private cloud samples, similar factors are identified that motivate switching intention in the two samples. In the case of the switching inhibitors, different factors demotivate organizations' switching intention, such as breadth of use and switching costs. In addition, public and private clouds play a moderating role in the hypothesized relationships. These findings contribute to the literature on cloud realms and improve our understanding of the process

of switching in cloud systems. Based on our results, cloud service providers can understand how organizations choose between public and private cloud ERP.

The paper is organized as follows. The next section reviews cloud computing and Two-Factor Theory. Section three describes the developed research model and hypotheses. Sections four and five describe our research methodology and the results of the analyses. Section six discusses the research findings, and section seven proposes theoretical and practical implications. The final section concludes with the contributions and limitations of this study.

2. LITERATURE REVIEW

2.1. Cloud Computing

Gartner (2009) defined cloud computing as "…a style of computing in which scalable and elastic IT-enabled capabilities are delivered as a service using internet technologies." The National Institute of Standards (NIST) (2011) defined cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

Cloud-based models can be classified into public clouds, private clouds, and hybrid clouds. A public cloud is a model in which the services and resources are provided by cloud service providers and accessed over the internet. Because the cloud infrastructure provides open use by multiple organizations, organizations do not own their core IT. A private cloud is one data center in which the services and infrastructure are maintained on private networks, such as the internet, an intranet, or by secure communication protocols. Because the cloud infrastructure is used exclusively by a single organization, all IT services and resources must be maintained in-house. A hybrid cloud is a composition of public and private clouds that is used by a single organization. An organization can access critical services and resources via an intranet and access non-critical services and resources provided by cloud service providers over the internet (Géczy et al., 2012; NIST, 2011; Welsh & Gregory, 2012).

Cloud computing has been applied to deploy various enterprise systems, such as business accounting, ERP, customer relationship management, and e-commerce. The software is accessed on the cloud using the internet or intranet to access services and resources that are hosted by internal organizations and external service providers (Acumatica, 2017). Among cloud-based software, cloud ERP is important for most organizations because ERP systems utilize cloud computing platforms to integrate all of the essential functionalities for running a business into a complete system, including their financial accounting, management accounting, human resources, manufacturing, and order processing (Salleh et al., 2012). Public cloud ERP implementations allow organizations access to data and system modules that are available from ERP providers over the internet. Private cloud ERP implementations refer to data and system modules that are owned by the organization and are hosted on-premise or by a third-party provider.

Although previous studies have not focused particularly on cloud ERP, many have studied either public or private cloud enterprise systems (Chang & Hsu, 2017; Hsieh, 2015; Lian et al., 2014; Low et al., 2011; Xu et al., 2017; Polites & Karahanna, 2012). Since few studies have addressed switching intention to cloud ERP, the aim of this study is to understand the switching process from incumbent ERP to cloud ERP. In particular, we further compare public and private cloud ERP.

2.2. Two-Factor Theory

Two-Factor Theory, which was proposed by Herzberg (1995), consists of motivators (enablers) and hygiene factors (inhibitors). Motivators that lead to job satisfaction include advancement, recognition,

responsibility, and achievement. Hygiene factors that lead to job dissatisfaction include supervision, pay, company policies, and working conditions (Robbins & Stephen, 2007). Because there is a weak correlation between motivators and hygiene factors, the two types of factors are not in opposition to each other; they can influence employees' work motivations simultaneously.

Recently, Two-Factor Theory has been adapted and applied to domains in IS, such as mobile-based services (Lee et al, 2009; Liu et al., 2011) and learning systems (Islam, 2014). Researchers have posited that enablers and inhibitors are the two main factors that affect users' adoption and acceptance of IS (Park & Ryoo, 2013). The enablers represent the factors that motivate users to adopt a product or services, while the inhibitors represent the factors that inhibit users from using it (Cenfetelli & Schwarz, 2011). As Herzberg (1995) argued, the two types of factors are not in opposition. Thus, users can hold the perceptions of enablers and inhibitors simultaneously.

Two-Factor Theory has also been applied to investigate switching intention from incumbent systems to cloud systems (Lee et al., 2013; Park & Ryoo, 2013). Park and Ryoo (2013) characterized the enablers and inhibitors as switching benefits and switching costs, respectively. Switching benefits (e.g., enhanced work effectiveness, improved efficiency, increased productivity, and increased competitive advantage) are assumed to motivate organizations to adopt cloud systems. Switching costs include the time and effort of switching to cloud systems and the loss of previous systems. Switching costs can lead to decisions against using new systems. Organizations simultaneously evaluate the two types of factors, namely, switching benefits and switching costs when they make decisions regarding switching to cloud systems. Thus, this study investigates the effects of switching benefits and costs on organizations' switching intention to cloud ERP. Switching benefits and costs in this study refers to the perceived benefits gained and losses incurred, respectively, by switching from incumbent ERP to cloud ERP.

2.3. Factors Affecting Cloud System Adoption

The primary factors that motivate cloud system adoption are threefold. The functionalities of cloud systems can be kept up-to-date and expanded. In addition, cloud computing allows organizations to access services and resources over the internet or an intranet anytime and anywhere. Since most data are integrated into the same system and database, organizations easily manage data and read real-time information (Kenyon, 2012; Welsh & Gregory, 2012). When cloud service providers specialize in cloud systems, they have more experience in designing easy interfaces for customers (Géczy et al., 2012). Thus, system quality, information quality, and ease of use of cloud systems are investigated in this study.

Based on Information Systems Success Model, system quality and information quality positively affect use and satisfaction, which in turn positively affect individual impact and organizational impact. DeLone and McLean (2003) posited that system quality and information quality are the two main determinants of net benefits. According to TAM, perceived ease of use determines perceived usefulness. According to Kim and Kankanhalli (2009), the construct of switching benefits is adapted from the perceived usefulness of TAM. Thus, we posit that system quality, information quality, and perceived ease of use of cloud ERP positively affect switching benefits.

On the other hand, there are some factors that demotivate cloud system adoption. Security risk is the key challenge for organizations (Fan et al., 2015; Gartner, 2015, Gen, 2009). Organizational data are the most valuable assets. When organizations access data and services on the World Wide Web, they are concerned about unauthorized access, breach and disclosure of organizational information. Cloud service providers' opportunistic behaviors also increase organizations' security risk (Chang & Hsu, 2017). When organizations switch to new systems, they consider the costs of relinquishing incumbent ERP. Park and Ryoo (2013) argued that satisfaction with and breadth of use of incumbent system influence switching costs in cloud environments. Thus, we posit that the security risk of cloud ERP and satisfaction with and breadth of use of incumbent ERP positively affect switching costs.

System quality, information quality, and perceived ease of use relate to the benefits of adopting cloud systems (Davis, 1989; Davis et al., 1989; DeLone & McLean, 2003) and can be considered as motivators that encourage cloud adoption. On the other hand, the security risk of cloud ERP and satisfaction with and breadth of use of incumbent ERP relate to implementation costs of new systems and sunk costs of relinquishing incumbent systems (Lee et al., 2013; Paquette et al., 2010; Park & Ryoo, 2013; Ratten, 2016; Ye et al., 2008). These factors can be regarded as de-motivators that discourage cloud adoption. The two kinds of factors (i.e., motivators and de-motivators) increase switching benefits and switching costs, respectively.

According to two-factor theory, an individual can hold perceptions of both motivators and de-motivators simultaneously because each of the two factors is not the opposite of the other (Cenfetelli & Schwarz, 2011; Park & Ryoo, 2013). Following this logic, the antecedents of switching benefits and switching costs should not negatively impact each other. In addition, it is difficult to argue that system quality, information quality, and perceived ease of use of new systems can lower the sunk costs of incumbent systems and the implementation cost of new systems. Moreover, since switching costs represent the costs of relinquishing incumbent systems, the satisfaction with and breadth of use of incumbent systems may increase the sunk cost and decrease the intention of adopting cloud ERP, but they should not directly impact the benefits of cloud ERP.

The purpose of this study is to investigate the factors that affect switching intention to public and private cloud ERP. System quality, information quality, and perceived ease of use are regarded as the antecedents of switching benefits. The security risk of cloud ERP and satisfaction with and breadth of use of incumbent ERP are also considered to be the predictors of switching costs.

3. RESEARCH HYPOTHESES AND MODEL

System quality in this study refers to the performance characteristics of the cloud ERP, including adaptability, availability, reliability, response time, and usability. In addition, cloud ERP is more accessible and more mobile than client/server ERP. In cloud environments, organizations can access data in real-time from any device with an internet connection. The ubiquitous accessibility of cloud systems enhances the utility of ERP. When organizations can access all functionalities and data in real time, the effectiveness and efficiency of their work can be enhanced. Thus, it is expected that system quality increases switching benefits. This study hypothesizes:

H1: System quality positively affects switching benefits.

Information quality in this study refers to the characteristics of the output provided by the cloud ERP, including completeness, understandability, relevance, timeliness, and consistency. Since cloud systems are designed with internet standards in mind, data exchange interfaces in cloud ERP should be more open than those in on-premise ERP. Thus, the data that are integrated into cloud ERP are more complete, consistent, and real-time than in on-premise ERP. With higher-quality information, organizations can obtain better job performance (Ifinedo et al., 2010; Lin, 2010; Tsai et al., 2012). Thus, it is expected that information quality increases switching benefits. This study hypothesizes:

H2: Information quality positively affects switching benefits.

Perceived ease of use in this study refers to the degree to which an organization believes that using cloud ERP would be free of effort. Since cloud systems are designed with web user interfaces, which, in general, can hold less information in a page than the user interface of a client/server architecture, the data displayed on the screen of cloud ERP should be simpler than those of on-premise ERP. Simplified data expression can lead to perceived ease of use. If a system is easy to use, organizations can spend

less time learning to use it, thereby increasing work productivity (Chang et al., 2014; Chang & Hsu, 2017; Moon & Kim, 2001; Pavlou, 2003; Wu and Wang, 2005). Thus, it is expected that perceived ease of use increases switching benefits. This study hypothesizes:

H3: Perceived ease of use positively affects switching benefits.

Switching benefits in this study refer to the perceived utility that an organization would enjoy by switching from incumbent ERP to cloud ERP. Along with the characteristics of cloud computing, the potential benefits of cloud ERP, including work effectiveness, efficiency, productivity, and competitive advantage, would be improved. Previous studies have indicated that perceived benefits increase behavioral intention (Kuan & Chau, 2001; Liu et al., 2008; Yao et al., 2007). Thus, switching benefits of cloud ERP should increase switching intention. This study hypothesizes:

H4: Switching benefits positively affect switching intention.

Accessing data via an internet protocol is a primary concern in adopting cloud computing (Gen, 2008, 2009). Since unauthorized users have more chances to intercept data that are transmitted via the internet protocol, the chances of data misuse and leakage are a concern for organizations (Wu et al., 2017). Security risk is perceived as a potential cost associated with cloud ERP; therefore, security risk should increase switching costs of cloud ERP (Fan et al., 2015). This study hypothesizes:

H5: Security risk positively affects switching costs.

Satisfaction in this study refers to the affect with (feeling about) incumbent ERP use in an organization. Satisfaction with incumbent ERP increases the psychological costs of replacing it with cloud ERP since the psychological sunk cost is increased (Park & Ryoo, 2013; Xu et al., 2017; Ye et al., 2008). Thus, it is expected that satisfaction increases switching costs. This study hypothesizes:

H6: Satisfaction positively affects switching costs.

Breadth of use in this study refers to the degree to which an organization uses the features and options offered by incumbent ERP. Breadth of use can be considered a sunk cost because users have spent much time and effort in learning the features and options of the systems (Park & Ryoo, 2013; Ye et al., 2008). When organizations have invested much time and effort encouraging employees to use incumbent ERP, they will reject switching to cloud ERP. Several studies have found that breadth of use and sunk costs lead to resistance to change (Kim & Kankanhalli, 2009; Polites & Karahanna, 2012). Thus, it is expected that breadth of use increases switching costs. This study hypothesizes:

H7: Breadth of use positively affects switching costs.

Switching costs in this study refer to the negative perceptions of time and effort that are invested in using incumbent and cloud ERP. After investing in learning to use incumbent ERP, organizations may prefer to continue using the current system. Switching to cloud ERP implies that organizations will lose an irrecoverable investment in incumbent ERP. Additionally, organizations also need to invest extra time and effort in learning to use cloud ERP. Previous studies have found that switching costs negatively affect behavioral intention to use new systems (Fan et al., 2015; Hsieh, 2015; Kim & Kankanhalli, 2009; Xu et al., 2017). Thus, switching costs incurred by cloud ERP should decrease switching intention. This study hypothesizes:

H8: Switching costs negatively affect switching intention.

Organizations adopting public and private cloud systems emphasize different benefits and costs. Public cloud adopters are attracted by low cost and readiness to cloud systems, while private cloud adopters are allured by data security and system customization (Rackspace, 2018; Welsh & Gregory, 2012). Since public clouds offer low cost services at the cost of standard interfaces and uniform functionalities, the cloud implementations attract organizations' attention to the ease of use of the systems since the interfaces cannot be changed. The same reason also causes the potential adopters to compare the functionalities of incumbent systems with public cloud systems. Since breadth of use of incumbent systems is an indicator of the functionalities being utilized, it should also affect switching decisions. On the other hand, private clouds offer the convenience of ubiquitous services with data security and customized functionalities with the downside of high cost. Therefore, security risk and switching cost have more serious impacts on the decision of private cloud adopters than that of public cloud adopters. Thus, this study hypothesizes that the relationships between perceived ease of use and switching benefits, between breadth of use and switching costs, between security risk and switching costs, and between switching costs and switching intention are different across the two samples.

The effect of perceived ease of use should be greater for public cloud adopters than for private cloud adopters. Private cloud systems can be customized to design customer requests, but public cloud systems have limited customization options, to reduce service providers' maintenance costs (Géczy et al., 2012). As a result, public cloud adopters have to pay special attention to the interfaces of cloud systems (Polites & Karahanna, 2012; Low et al., 2011). Thus, public cloud adopters are more sensitive to perceived ease of use than private cloud adopters when evaluating switching benefits. This study hypothesizes:

H9: The effect of perceived ease of use on switching benefits is larger for public clouds than for private clouds.

The effect of security risk should be greater for private cloud adopters than for public cloud adopters. Although private clouds are more expensive than public clouds, security and data control are the main reasons that private cloud adopters opt for this choice (Géczy et al., 2012; Lian et al., 2014). Because private clouds allow organizations to maintain control of security and own the data in-house, private cloud adopters can minimize risk of the organizations' data and services. Thus, private cloud adopters are more sensitive to security risk than public cloud adopters when evaluating switching costs. This study hypothesizes:

H10: The effect of security risk on switching costs is larger for private clouds than for public clouds.

The effect of breadth of use should be greater for public cloud adopters than for private cloud adopters. For public cloud adopters, all data that are locally stored have to be migrated to the internet along with business processes. This implies that the gaps between original business processes and the functionalities offered by public cloud systems have to be closed by the adopters by changing the processes. Breadth of use of incumbent ERP is an indicator of the processes that have to be changed and the data that have to be migrated (Géczy et al., 2012). For private cloud adopters, the data are still kept locally, and the customization of functionalities can be conducted more thoroughly (Rackspace, 2018). Thus, public cloud adopters are more sensitive to breadth of use than private cloud adopters when evaluating switching costs. This study hypothesizes:

H11: The effect of breadth of use on switching costs is larger for public clouds than for private clouds.

The effect of switching costs should be greater for private cloud adopters than for public cloud adopters. Private clouds require greater initial costs and deployment time than public clouds (Hsieh, 2015; Lian et al., 2014). The costs include the investment for acquiring software and hardware and the salary for hiring IT personnel to manage and maintain the cloud (Kenyon, 2012). The costs of cloud investments are the underlying concern for organizations when switching to private clouds (Steadfast, 2013). Thus, private cloud adopters are more sensitive to switching costs than public cloud adopters when making decisions on system switching. This study hypothesizes:

H12: The effect of switching costs on switching intention is larger for private clouds than for public clouds.

This study considers deployment of a profitability analysis function and organization size as control variables of this model. Since profitability analysis is an advanced function in financial modules of ERP systems, this study treats the use of the function as a threshold. If the function is deployed, then the ERP is considered an advanced utilization. In contrast, if the function is not deployed, the ERP is considered to be at an elementary level of utilization. Organization size is determined by the number of employees and revenue (Fan et al., 2015). The two factors are expected to influence organizations' switching intention. Thus, these control variables are included for evaluating their covariance with the research model.

4. RESEARCH METHODOLOGY

4.1. Instrument Development

A survey method was used to test the research model and hypotheses. All items for nine constructs in this study were adapted from previous studies and were modified to fit the context of cloud computing. System quality and information quality were measured using five and four items, respectively based on DeLone and McLean (2003). Perceived ease of use was measured using three items based on Davis et al. (1989). Security risk was measured using three items based on Dinev and Hart (2006). Satisfaction was measured using two items based on Bhattacherjee (2001). Breadth of use was measured using three items based on Ye et al. (2008). Switching benefits and switching costs were measured using four and two items, respectively based on Kim and Kankanhalli (2009). Switching intention was measured using two items based on Venkatesh et al. (2003). Twenty-eight items were developed for the questionnaire (see Appendix A) and measured on a seven-point Likert scale, which ranged from "strongly disagree" (1) to "strongly agree" (7).

4.2. Data Collection

Because cloud ERP is the most common application of cloud systems (Low et al., 2011), the cloud systems investigated in this study are public and private cloud ERP. The data were collected via marketing activities that introduced public and private cloud ERP software. After attending the activities, the participants were invited to participate in our research. In the survey, the respondents were randomly assigned questionnaires related to switching intention to public or private cloud ERP. To investigate organizations' switching intention, we ensured that the organizations of the respondents had incumbent enterprise systems. The data collected in this study potentially exhibit selection bias because the participants who are unwilling to shift to cloud ERP may not have attended the marketing activities.

Among one thousand five hundred questionnaires, we received 480 questionnaires from owners or top managers within organizations, which is a response rate of 32%. Most respondents were males (38.8%), aged 26-35 years old (41.9%), had a university degree (75.4%), worked in an information technology department (26%) and worked in the electronic and electrical equipment industry (30.4%).

The workforces of most organizations ranged from 51 to 100 employees (20.4%), and their revenues were less than $100 million (26.5%). Most organizations used ERP to conduct profitability analyses (66.5%). In our dataset, 253 respondents completed public cloud related questionnaires, and 227 respondents completed private cloud related questionnaires. The respondents' demographic profiles for the two samples are shown in Appendix B.

5. DATA ANALYSIS AND RESULTS

This study uses partial least squares (PLS) to test the measurement and structural models because PLS allows researchers to use a small sample size to examine a complex model. The measurement model examines the convergent validity and discriminant validity for our items and constructs. The structural model examines the hypothesized relationships between the constructs in the research model. We also consider common method bias (CMB) to examine potential bias during the data collection process.

5.1. Common Method Bias

To examine CMB, this study employs Harman's single factor test by using a principal component factor analysis. If a single construct accounts for the majority of the covariance among all constructs, CMB might exist (Harman, 1976; Podsakoff & Organ, 1986). Our results show that the variance of each constructs ranges from 2.33% to 14.33% in the overall data, from 5.94% to 17.91% in the public cloud sample, and from 5.61% to 12.88% in the private cloud sample. Since the evidence indicates that each principle construct explains approximately an equal amount of the variance, CMB might not be present in this study.

5.2. Measurement Model

PLS is used to assess the convergent validity and discriminant validity of the measurement model for the public and private cloud samples. Convergent validity is assessed using factor loading, composite reliability (CR), and average variance extracted (AVE) (Fornell and Larcker, 1981). The factor loading for each item exceeds the recommended value of 0.7 (see Appendix C). As shown in Table 1, the CR for each construct exceeds the recommended value of 0.7, and the AVE for each construct exceeds the recommended value of 0.5. Thus, reliability and convergent validity are supported in this study.

Table 1. Convergent validity

	Overall Data			Public Cloud Sample			Private Cloud Sample		
	CR	AVE	Cronbach's α	CR	AVE	Cronbach's α	CR	AVE	Cronbach's α
SQ	0.93	0.71	0.90	0.94	0.75	0.92	0.91	0.68	0.88
IQ	0.94	0.79	0.91	0.96	0.84	0.94	0.92	0.73	0.88
PEOU	0.93	0.82	0.89	0.96	0.88	0.93	0.91	0.77	0.85
SR	0.91	0.77	0.93	0.96	0.89	0.94	0.94	0.84	0.92
SAT	0.96	0.92	0.91	0.95	0.90	0.89	0.92	0.85	0.84
BOU	0.95	0.87	0.93	0.95	0.87	0.92	0.91	0.77	0.85
SB	0.92	0.75	0.89	0.95	0.83	0.93	0.88	0.65	0.82
SC	0.93	0.71	0.90	0.93	0.87	0.84	0.91	0.83	0.79
SI	0.93	0.88	0.86	0.96	0.92	0.92	0.90	0.82	0.77

SQ: Service quality; IQ: Information quality; PEOU: Perceived ease of use; SR: Security risk; SAT: Satisfaction; BOU: Breadth of use; SB: Switching benefits; SC: Switching costs; SI: Switching intention

Additionally, Cronbach's alpha for each construct exceeds the recommended value of 0.7 (Nunnally, 1978); thus, internal consistency for each construct is supported.

Discriminant validity is assessed using the two criteria recommended by Chin (1998). First, the loadings of items on their associated constructs are higher than those on other constructs. Second, the square root of AVE for each construct is larger than its correlations with other constructs. As shown in Table 2, discriminant validity is demonstrated in this study. In addition, the variance inflation factor (VIF) is calculated to test the level of multicollinearity among measures. We find that the VIF values for the overall data, public cloud sample, and private cloud sample vary from 1.01 to 2.78, 1.11 to 3.28, and 1.01 to 2.30, respectively, which are below the threshold of 10 (Hair et al., 1998; Mathieson et al., 2001).

Table 2. Inter-construct correlations

		SQ	IQ	PEOU	SR	SAT	BOU	SB	SC	SI
SQ	Overall	**0.84**								
	Public	**0.86**								
	Private	**0.82**								
IQ	Overall	0.77	**0.89**							
	Public	0.80	**0.92**							
	Private	0.73	**0.85**							
PEOU	Overall	0.58	0.53	**0.91**						
	Public	0.65	0.58	**0.94**						
	Private	0.49	0.47	**0.88**						
SR	Overall	-0.08	-0.07	-0.08	**0.88**					
	Public	0.24	0.21	0.23	**0.95**					
	Private	-0.55	-0.50	-0.47	**0.92**					
SAT	Overall	0.05	0.05	-0.03	-0.12	**0.96**				
	Public	-0.29	-0.31	-0.32	-0.05	**0.95**				-
	Private	0.69	0.64	0.51	-0.39	**0.92**				
BOU	Overall	0.05	0.06	-0.03	-0.16	0.75	**0.93**			
	Public	-0.25	-0.22	-0.24	-0.12	0.57	**0.93**			
	Private	0.62	0.56	0.43	-0.42	0.74	**0.88**			
SB	Overall	0.58	0.48	0.60	-0.09	-0.04	-0.01	**0.87**		
	Public	0.63	0.56	0.69	0.13	-0.21	-0.11	**0.91**		
	Private	0.53	0.39	0.49	-0.41	0.36	0.32	**0.81**		
SC	Overall	-0.01	0.02	-0.05	0.14	0.56	0.49	-0.05	**0.93**	
	Public	-0.02	-0.07	-0.01	0.20	0.46	0.37	0.05	**0.93**	
	Private	0.07	0.15	0.00	0.07	0.24	0.16	-0.09	**0.91**	
SI	Overall	0.48	0.39	0.43	-0.15	0.01	0.00	0.52	-0.08	**0.94**
	Public	0.53	0.47	0.44	0.04	0.26	-0.22	0.53	-0.03	**0.96**
	Private	0.42	0.30	0.45	-0.40	0.34	0.30	0.54	-0.25	**0.90**

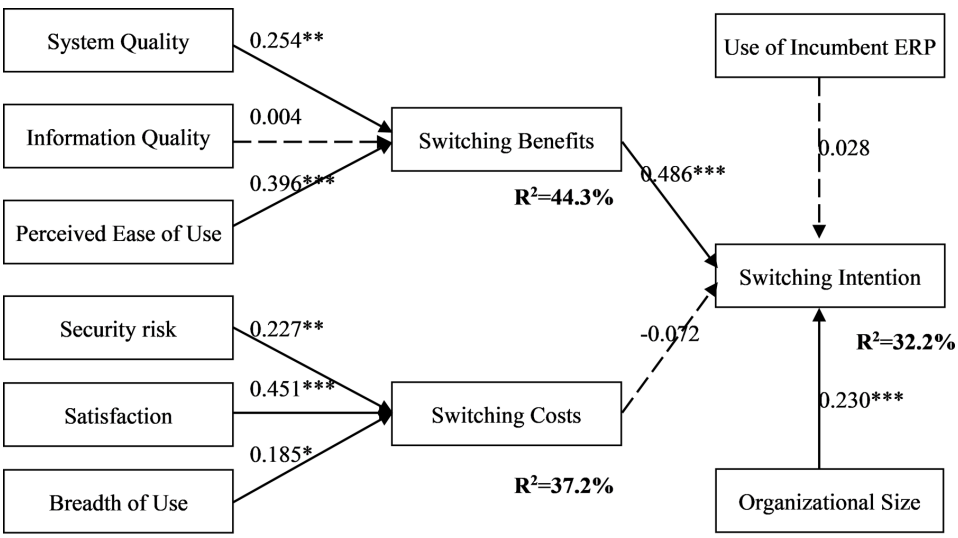
5.3. Structural Model

PLS is examined in all of the hypothesized relationships between the constructs. Figure 1 shows the results for the overall data. System quality (β=0.254, p<0.01) and perceived ease of use (β=0.396, p<0.001) have significantly positive effects on switching benefits, thereby providing support for H1 and H3. Contrary to our expectations, information quality (β=0.004, p>0.05) has no significant effect on switching benefits; thus, H2 is not supported. The two paths account for 44.3% of the variance in switching benefits. Security risk (β=0.227, p<0.01), satisfaction (β=0.451, p<0.001), and breadth of use (β=0.185, p<0.05) have significantly positive effects on switching costs, thereby providing support for H5, H6, and H7. The three paths account for 37.2% of the variance in switching costs. Switching benefits (β=0.486, p<0.001) have a significantly positive effect on switching intention, thereby supporting H4. However, switching costs (β=-0.072, p>0.05) have no significant effect on switching intention; thus, H8 is not supported. The proposed model explains 32.2% of the variance in switching intention. Table 3 shows the comparative results between the public and private cloud samples.

This study additionally uses PLS-Multi-Group Analysis (PLS-MGA) to examine the significance of the hypothesized relationships between the public and private cloud samples (Huang & Shiau, 2017; Shiau, 2016). Table 4 shows that the effect of perceived ease of use on switching benefits and the effect of breadth of use on switching costs are significantly larger for the public cloud sample than for the private cloud sample, thereby supporting H9 and H11. The effect of switching costs on switching intention is significantly larger for the private cloud sample than for the public cloud sample, thereby supporting H12. However, there is no significant difference in the effect of security risk between the two samples; thus, H10 is not supported.

The results reveal that organization size significantly affects switching intention (β=0.230, p<0.002), but deployment of a profitability analysis function has no significant effect on switching intention (β=0.028, p>0.05). Thus, our empirical results are related to covariation with the control variable of organization size.

Figure 1. Results for overall data



*p<0.05; **p<0.01; ***p<0.001

Table 3. Comparison of public and private cloud samples

Hypothesis	Public Cloud Sample	Private Cloud Sample
SQ→SB	0.254**	0.425*
IQ→SB	0.069	-0.064
PEOU→SB	0.484***	0.313***
SR→SC	0.241***	0.197***
SAT→SC	0.360***	0.302***
BOU→SC	0.192*	0.019
SB→SI	0.445***	0.516***
SC→SI	-0.010	-0.207**

*p<0.05; **p<0.01; ***p<0.001

Table 4. The results of moderating effect of public and private clouds

Hypothesis	Path Coefficients-Diff (| Public Cloud Sample – Private Cloud Sample|)	p-Value (Public Cloud Sample vs. Private Cloud Sample)
H9: PEOU→SB	0.171	0.080*
H10: SR→SC	0.044	0.385
H11: BOU→SC	0.173	0.098*
H12: SC→SI	0.154	0.071*

*p<0.1; **p<0.05; ***p<0.01

6. DISCUSSION

The purpose of this study is to investigate organizations' switching intention to cloud ERP. According to our results, system quality and perceived ease of use positively affect switching benefits, which in turn positively affect switching intention. Security risk, satisfaction, and breadth of use positively affect switching costs.

Information quality is not found to significantly affect switching benefits. One possible explanation is that ERP does not provide enough information to support organizations' needs. Scholars have hypothesized that ERP is good for storing, accessing, and executing transaction data but not for providing decision-making information (Adam & Doyle, 2001; Radding, 2000). To ensure information quality, a data warehouse should be implemented in addition to ERP (Inmon, 2000; Sammon et al., 2010). Since organizations only access transaction data, the perceived utility of ERP may be limited by the information quality of systems. Thus, the relationship between information quality and switching benefits is not supported by this study.

Switching costs do not significantly affect switching intention in the overall data. However, after dividing the overall data into public and private cloud samples, switching costs are found to have no significant effect on switching intention for the public cloud sample. Therefore, the main reason for the insignificance of switching costs in the model is that switching costs are not related to switching intention for public cloud adopters. Since public cloud ERP adopters do not own their core IT services and resources, the time and effort spent setting up the environments are very low. Since the costs are so low, the main factor that determines switching intention is switching benefits, which are independent of switching costs.

Breadth of use is not found to significantly affect switching costs for the private cloud sample. The reason may be that private cloud and client/server ERP are both in-house and centrally managed and maintained. Thus, data do not have to be moved from local storage to the cloud (Kenyon, 2012). As a result, breadth of use of incumbent ERP does not have a significant effect for the private cloud sample.

The effect of security risk on switching costs is not significantly different between the public and private cloud adopters. This may indicate that security risk is an important factor that affects switching costs equally across samples. Thus, public and private clouds do not significantly moderate the relationship between security risk and switching costs.

7. IMPLICATIONS FOR THEORY AND PRACTICE

7.1. Implications for Theory

Although several prior studies have investigated the factors that affect cloud system adoption (Lian et al., 2014; Low et al., 2011), few have addressed switching issues. However, switching issues are of equal importance, if not more importance, than adoption issues since most existing organizations have implemented client/server ERP. The decision is whether to replace incumbent ERP with cloud ERP.

In this study, switching benefits significantly affects switching intention, but switching costs do not affect switching intention. These findings are different from those of studies investigating the adoption of technology. With the adoption of technology, both benefits and costs have significant effects (Kim & Kankanhalli, 2009; Park & Ryoo, 2013; Polites & Karahanna, 2012). Future study is recommended to confirm the effectiveness of costs on switching intention.

Although several studies have addressed system quality, information quality, and perceived ease of use as the determinants of IS usage intentions (Ifinedo et al., 2010; Lin, 2010; Tsai et al., 2012), this study treats these factors as the antecedents of switching benefits. The results show that system quality and perceived ease of use, but not information quality, affect switching benefits. Future research is encouraged to confirm that system quality and perceived ease of use have significant effects on switching benefits.

Although several studies have investigated the effects of security risk, breadth of use, and satisfaction on switching costs (Fan et al., 2015; Park & Ryoo, 2013; Xu et al., 2017; Ye et al., 2008), this study is the first one to posit and verify that the three factors simultaneously affect switching costs. Future research is suggested to verify these findings.

Another contribution of this study is the investigation of the moderating effects of public and private clouds. In particular, this study posits and confirms that the effect of perceived ease of use on switching benefits and the effect of breadth of use on switching costs are larger for public clouds than for private clouds. Although switching costs are found to have no impact on switching intention in the overall data, the results did indicate that the factor affects switching intention when making decisions regarding switching to private clouds. Since no prior work has simultaneously addressed public and private clouds, future research is encouraged to verify these findings.

7.2. Implications for Practice

Switching benefits are found to be the most important factors that affects switching intention to public and private cloud ERP. Cloud service providers should promote the benefits of new systems, such as enhanced effectiveness, enhanced efficiency, increased productivity, improved product/service quality, and improved competitive advantage for organizations. Cloud service providers can attempt to increase switching benefits by emphasizing system quality and perceived ease of use (Park & Ryoo, 2013; Polites & Karahanna, 2012). Thus, to provide high system quality and a user interface that is easy to operate, cloud service providers must make a continuous effort and invest resources for such innovations.

Switching costs are major barriers to switching to private cloud ERP. Cloud service providers should aim to reduce organizations' awareness of switching costs by providing coaching and training (Hsieh, 2015; Lian et al., 2014; Xu et al., 2017). Cloud service providers can further attempt to reduce switching costs by reducing the security risk of cloud ERP and the satisfaction with and breadth of use of incumbent ERP.

Cloud service providers should acknowledge that risk constitutes a tremendous barrier to switching to cloud ERP (Gen, 2008, 2009). Although private clouds are more secure than public clouds, organizations are still concerned about information breaches. To mitigate their perceived uncertainty and risk, cloud service providers should offer protection policies for public and private cloud environments. This requires that cloud service providers continuously invest effort and resources in information security.

Satisfaction with incumbent ERP is an important determinant of switching costs in the public and private cloud samples. A higher breadth of use also increases the barrier to switching to public cloud ERP for organizations. Therefore, cloud service providers should de-emphasize targeting organizations which have high satisfaction with and breadth of use of incumbent systems.

8. CONCLUSION AND LIMITATIONS

This study aims to investigate the factors that affect switching intention from incumbent ERP to cloud ERP. To the best of our knowledge, this study is the first to compare public and private cloud ERP. We use Two-Factor Theory as a theoretical framework and characterize enablers and inhibitors as switching benefits and switching costs. The results show that system quality and perceived ease of use positively affect switching benefits, which in turn positively affect switching intention. Security risk, satisfaction, and breadth of use positively affect switching costs. After dividing the overall data into public and private cloud samples, breadth of use is found to affect switching costs for the public cloud sample, and switching costs are found to affect switching intention for the private cloud sample. The moderating effects of public and private clouds affect the relationships between perceived ease of use and switching benefits, between breadth of use and switching costs, and between switching costs and switching intention. Since the empirical findings show that different factors affect the switching process, we also contribute to the study of clouds. These findings offer suggestions for promoting organizations' decisions to switch to public and private cloud ERP.

Our study has some limitations. First, this study focuses only on public and private clouds. Future research can address other cloud-based models, such as the hybrid cloud. Second, the ERP under study is cloud ERP. Future work could use our model to examine other cloud systems, such as business accounting, CRM, and eCommerce software. Third, there is a selection bias because those who are unwilling to shift to clouds may not have attended the marketing activities. Future studies may be needed to verify our findings in other countries or areas. Finally, this study does not measure actual switching behavior. Future studies could extend this study to examine switching behavior.

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APPENDIX A: MEASUREMENT ITEMS OF CONSTRUCTS

Table 5. Measurement items of constructs

Construct	Measurement Items	Sources
System Quality	1. The cloud ERP system is adaptable. 2. The cloud ERP system is available all the time. 3. The cloud ERP system is reliable. 4. The cloud ERP system has fast response time. 5. The cloud ERP system is useful for my company.	DeLone and McLean (2003)
Information Quality	1. Information on the cloud ERP system is complete. 2. Information on the cloud ERP system is understandable. 3. Information on the cloud ERP system is relevant. 4. Information on the cloud ERP system is timeliness.	DeLone and McLean (2003)
Perceived Ease of Use	1. Learning to use the cloud ERP system would be easy for me. 2. It would be easy for me to become skillful at using the cloud ERP system. 3. I would find the cloud ERP system easy to use.	Davis et al. (1989)
Security Risk	What do you believe is the risk for the cloud ERP adopters due to the possibility that 1. Information submitted could be misused? 2. Information could be made available to unknown individuals or companies without your knowledge? 3. Information could be made available to government agencies?	Dinev and Hart (2006)
Satisfaction	How do you feel about your overall experience of traditional ERP system use: 1. Absolutely terrible/absolutely delighted 2. Very dissatisfied/very satisfied	Bhattacherjee (2001)
Breadth of Use	1. We take/took advantage of additional features offered by traditional ERP system. 2. We have/had used a variety of traditional ERP system's features.3. We use traditional ERP in many different tasks.	Ye et al. (2008)
Switching Benefits	1. Changing to the new way of working with the cloud ERP system would enhance my company's effectiveness than working in the current way. 2. Changing to the new way of working with the cloud ERP system would help accomplish relevant tasks more quickly than working in the current way. 3. Changing to the new way of working with the cloud ERP system would increase productivity than working in the current way. 4. Changing to the new way of working with the cloud ERP system would improve product/service quality than working in the current way.	Kim and Kankanhalli (2009)
Switching Costs	1. We have already put a lot of time and effort into mastering the current way of working 2. It would take a lot of time and effort to switch to the new way of working with the cloud ERP system.	Kim and Kankanhalli (2009)
Switching Intention	1. My company intends to switch to the cloud ERP system in the future. 2. I predict my company would switch to the cloud ERP system in the future.	Venkatesh et al. (2003)

APPENDIX B: PROFILE OF RESPONDENTS

Table 6. Profile of respondents

Measure	Items	Overall Data		Public Cloud Users		Private Cloud Users	
		Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
Gender	Female	186	38.8	90	35.6	96	42.3
	Male	294	61.3	163	64.4	131	57.7
Age	18-25 years	62	12.9	10	4.0	52	22.9
	26-35 years	201	41.9	65	25.7	136	59.9
	36-45 years	122	25.4	93	36.8	29	12.8
	46-55 years	69	14.4	60	23.7	9	4.0
	56-65 years	22	4.6	22	8.7	0	0.0
	Over 65 years	4	0.8	3	1.2	1	0.4
Education	Senior high school	42	8.8	26	10.3	16	7.0
	University	362	75.4	159	62.8	203	89.4
	Master	11	2.3	4	1.6	7	3.1
	Doctor	65	13.5	64	25.3	1	0.4
Department	Administration	28	5.8	18	7.1	10	4.4
	Financial accounting	98	20.4	30	11.9	68	30.0
	Information Technology	125	26.0	59	23.3	66	29.1
	Human resources	19	4.0	7	2.8	12	5.3
	Manufacturing	20	4.2	6	2.4	14	6.2
	Purchase	19	4.0	10	4.0	9	4.0
	Research and development	26	5.4	6	2.4	20	8.8
	Sales and distribution	61	12.7	46	18.2	15	6.6
	Strategy	68	14.2	63	24.9	5	2.2
	Others	16	3.3	8	3.2	8	3.5
Industry	Education services	24	5.0	9	3.6	15	6.6
	Electronic & electrical equipment	146	30.4	97	38.3	49	21.6
	Retail	84	17.5	52	20.6	32	14.1
	Household goods & home construction	33	6.9	20	7.9	13	5.7
	Health care	30	6.3	15	5.9	15	6.6
	Technology hardware & equipment	60	12.5	14	5.5	46	20.3
	Telecommunications	19	4.0	9	3.6	10	4.4
	Food & beverage	22	4.6	6	2.4	16	7.0
	Financial and insurance	6	1.3	5	2.0	1	0.4
	Oil & gas	6	1.3	4	1.6	2	0.9
	Travel & leisure	9	1.9	4	1.6	5	2.2
	Media	3	0.6	2	0.8	1	0.4
	Software & computer services	12	2.5	2	0.8	10	4.4
	Others	41	8.5	14	5.5	27	11.9

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Table 6. Continued

Measure	Items	Overall Data		Public Cloud Users		Private Cloud Users	
		Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
Numbers of employees	Less than 50	89	18.5	84	33.2	5	2.2
	51-100	98	20.4	85	33.6	13	5.7
	101-200	50	10.4	28	11.1	22	9.7
	201-300	44	9.2	8	3.2	36	15.9
	301-400	61	12.7	12	4.7	49	21.6
	401-500	45	9.4	21	8.3	24	10.6
	501-1000	21	4.4	6	2.4	15	6.6
	More than 1000	72	15.0	9	3.6	63	27.8
Revenue ($ million)	Less than 100	127	26.5	109	41.5	18	7.9
	100-250	64	13.3	39	15.4	25	11.0
	250-300	42	8.8	13	5.1	29	12.8
	300-350	25	5.2	4	1.6	21	9.3
	350-400	18	3.8	0	0.0	18	7.9
	400-450	23	4.8	3	1.2	20	8.8
	450-500	41	8.5	6	2.4	35	15.4
	500-550	16	3.3	4	1.6	12	5.3
	550-800	18	3.8	7	2.8	11	4.8
	More than 800	106	22.1	68	26.9	38	16.7
Deployment of profitability analysis function	Yes	319	66.5	139	54.9	180	79.3
	No	161	33.5	114	45.1	47	20.7

APPENDIX C

Table 7. Cross-loadings for overall data

	SQ	IQ	PEOU	SR	SAT	BOU	SB	SC	SI
SQ1	**0.84**	0.72	0.51	0.00	0.01	0.02	0.48	-0.06	0.39
SQ2	**0.87**	0.65	0.49	-0.07	0.06	0.05	0.52	0.04	0.46
SQ3	**0.83**	0.64	0.49	-0.11	0.05	0.04	0.47	0.02	0.37
SQ4	**0.87**	0.65	0.50	-0.06	0.11	0.10	0.55	0.05	0.48
SQ5	**0.80**	0.62	0.45	-0.10	0.00	-0.03	0.46	-0.09	0.30
IQ1	0.66	**0.88**	0.46	-0.12	0.05	0.04	0.41	0.00	0.35
IQ2	0.70	**0.93**	0.49	-0.07	0.05	0.05	0.45	0.01	0.38
IQ3	0.69	**0.87**	0.48	0.00	0.05	0.06	0.44	0.04	0.33
IQ4	0.69	**0.87**	0.44	-0.08	0.03	0.07	0.42	0.01	0.35
PEOU1	0.53	0.50	**0.90**	-0.06	0.01	0.00	0.53	-0.04	0.41
PEOU2	0.52	0.47	**0.93**	-0.07	-0.05	-0.02	0.56	-0.03	0.39
PEOU3	0.53	0.46	**0.89**	-0.10	-0.05	-0.06	0.54	-0.06	0.38
SR1	-0.09	-0.09	-0.05	**0.75**	-0.29	-0.32	-0.09	-0.03	-0.14
SR2	-0.06	-0.07	-0.04	**0.87**	-0.22	-0.26	-0.04	0.06	-0.13
SR3	-0.09	-0.07	-0.09	**0.99**	-0.12	-0.15	-0.12	0.14	-0.15
SAT1	0.05	0.06	-0.04	-0.08	**0.97**	0.75	-0.04	0.58	0.01
SAT2	0.06	0.03	-0.02	-0.16	**0.95**	0.69	-0.04	0.49	0.01
BOU1	0.05	0.07	0.01	-0.20	0.67	**0.94**	-0.01	0.43	-0.01
BOU2	0.05	0.07	-0.03	-0.14	0.72	**0.96**	0.01	0.47	0.02
BOU3	0.03	0.03	-0.05	-0.10	0.72	**0.90**	-0.04	0.46	0.00
SB1	0.50	0.40	0.51	-0.08	-0.03	0.05	**0.86**	-0.03	0.46
SB2	0.51	0.41	0.52	-0.08	-0.05	-0.03	**0.86**	-0.06	0.46
SB3	0.50	0.39	0.52	-0.08	-0.07	-0.06	**0.85**	-0.07	0.44
SB4	0.51	0.47	0.54	-0.09	0.00	-0.01	**0.89**	-0.02	0.45
SC1	0.02	0.03	-0.04	0.10	0.59	0.53	-0.05	**0.95**	-0.05
SC2	-0.03	0.00	-0.05	0.17	0.45	0.36	-0.05	**0.92**	-0.11
SI1	0.45	0.38	0.40	-0.11	0.02	0.00	0.50	-0.06	**0.94**
SI2	0.44	0.36	0.41	-0.16	0.00	0.01	0.48	-0.09	**0.94**

Table 8. Cross-loadings for the public cloud sample

	SQ	IQ	PEOU	SR	SAT	BOU	SB	SC	SI
SQ1	**0.85**	0.73	0.58	0.36	-0.35	-0.27	0.50	-0.12	0.40
SQ2	**0.89**	0.71	0.58	0.13	-0.26	-0.23	0.54	-0.01	0.48
SQ3	**0.89**	0.66	0.55	0.20	-0.20	-0.18	0.55	0.06	0.49
SQ4	**0.87**	0.67	0.57	0.18	-0.22	-0.17	0.60	0.04	0.53
SQ5	**0.82**	0.70	0.54	0.16	-0.23	-0.23	0.49	-0.10	0.36
IQ1	0.71	**0.92**	0.53	0.11	-0.25	-0.18	0.51	-0.05	0.45
IQ2	0.74	**0.94**	0.53	0.14	-0.26	-0.17	0.51	-0.06	0.45
IQ3	0.74	**0.88**	0.53	0.34	-0.34	-0.25	0.53	-0.06	0.38
IQ4	0.75	**0.93**	0.54	0.17	-0.31	-0.21	0.49	-0.10	0.44
PEOU1	0.61	0.56	**0.94**	0.27	-0.32	-0.24	0.61	-0.03	0.41
PEOU2	0.62	0.57	**0.95**	0.22	-0.29	-0.19	0.70	0.01	0.41
PEOU3	0.60	0.51	**0.92**	0.15	-0.28	-0.25	0.63	0.00	0.40
SR1	0.21	0.19	0.20	**0.95**	-0.05	-0.13	0.10	0.15	0.05
SR2	0.24	0.21	0.25	**0.96**	-0.07	-0.13	0.18	0.18	0.05
SR3	0.22	0.20	0.20	**0.93**	-0.03	-0.09	0.09	0.22	0.01
SAT1	-0.26	-0.27	-0.29	-0.04	**0.96**	0.57	-0.16	0.46	-0.24
SAT2	-0.29	-0.33	-0.31	-0.06	**0.94**	0.51	-0.23	0.41	-0.25
BOU1	-0.24	-0.20	-0.23	-0.13	0.55	**0.97**	-0.10	0.37	-0.20
BOU2	-0.22	-0.18	-0.21	-0.12	0.56	**0.96**	-0.07	0.37	-0.18
BOU3	-0.24	-0.26	-0.22	-0.07	0.47	**0.86**	-0.16	0.28	-0.23
SB1	0.62	0.52	0.64	0.14	-0.19	-0.11	**0.92**	0.04	0.51
SB2	0.55	0.48	0.59	0.13	-0.20	-0.16	**0.89**	0.05	0.49
SB3	0.55	0.50	0.64	0.09	-0.17	-0.13	**0.92**	0.04	0.46
SB4	0.57	0.53	0.65	0.09	-0.19	-0.02	**0.92**	0.04	0.47
SC1	-0.02	-0.08	0.02	0.14	0.42	0.38	0.05	**0.93**	-0.04
SC2	-0.03	-0.06	-0.03	0.23	0.43	0.30	0.04	**0.93**	-0.02
SI1	0.49	0.42	0.41	0.05	-0.22	-0.21	0.48	0.00	**0.96**
SI2	0.53	0.47	0.43	0.02	-0.26	-0.21	0.54	-0.06	**0.97**

Table 9. Cross-loadings for the private cloud sample

	SQ	IQ	PEOU	SR	SAT	BOU	SB	SC	SI
SQ1	**0.84**	0.72	0.43	-0.53	0.62	0.56	0.44	0.07	0.39
SQ2	**0.85**	0.57	0.40	-0.43	0.55	0.52	0.49	0.06	0.44
SQ3	**0.76**	0.61	0.41	-0.49	0.52	0.46	0.36	0.05	0.22
SQ4	**0.88**	0.61	0.43	-0.45	0.62	0.56	0.48	0.03	0.40
SQ5	**0.78**	0.53	0.35	-0.40	0.55	0.48	0.40	0.07	0.25
IQ1	0.60	**0.83**	0.37	-0.41	0.58	0.48	0.28	0.14	0.24
IQ2	0.65	**0.92**	0.44	-0.38	0.61	0.49	0.38	0.16	0.29
IQ3	0.63	**0.85**	0.44	-0.53	0.52	0.47	0.34	0.11	0.26
IQ4	0.62	**0.81**	0.33	-0.40	0.46	0.49	0.33	0.12	0.25
PEOU1	0.43	0.44	**0.87**	-0.45	0.48	0.38	0.45	-0.05	0.42
PEOU2	0.41	0.38	**0.90**	-0.41	0.42	0.38	0.41	0.05	0.38
PEOU3	0.45	0.41	**0.86**	-0.38	0.44	0.36	0.43	0.01	0.38
SR1	-0.55	-0.50	-0.44	**0.84**	-0.45	-0.47	-0.44	0.02	-0.40
SR2	-0.52	-0.47	-0.45	**0.98**	-0.36	-0.39	-0.38	0.09	-0.37
SR3	-0.53	-0.46	-0.45	**0.92**	-0.36	-0.38	-0.40	0.04	-0.39
SAT1	0.64	0.61	0.47	-0.32	**0.97**	0.70	0.31	0.27	0.30
SAT2	0.66	0.57	0.49	-0.44	**0.88**	0.67	0.37	0.15	0.35
BOU1	0.52	0.47	0.42	-0.44	0.60	**0.89**	0.23	0.14	0.23
BOU2	0.55	0.50	0.36	-0.35	0.63	**0.91**	0.30	0.14	0.27
BOU3	0.57	0.52	0.34	-0.32	0.70	**0.83**	0.30	0.13	0.30
SB1	0.36	0.28	0.37	-0.38	0.26	0.23	**0.76**	-0.10	0.41
SB2	0.45	0.31	0.43	-0.34	0.31	0.30	**0.81**	-0.06	0.41
SB3	0.48	0.43	0.42	-0.32	0.32	0.25	**0.85**	-0.03	0.45
SB4	0.43	0.25	0.36	-0.29	0.25	0.25	**0.80**	-0.09	0.46
SC1	0.14	0.21	0.02	0.01	0.30	0.22	-0.06	**0.91**	-0.17
SC2	-0.01	0.07	-0.02	0.12	0.13	0.07	-0.09	**0.91**	-0.29
SI1	0.42	0.33	0.41	-0.33	0.34	0.27	0.53	-0.23	**0.92**
SI2	0.34	0.21	0.40	-0.40	0.26	0.28	0.43	-0.23	**0.89**

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