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The Determinants of Cloud Computing Adoption in the Banking System: A Case Study of Myanmar's Banks

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Abstract

Many organizations are shifting towards cloud computing to facilitate customer transactions, hence cloud computing has become an interest to multiple banks in the financial sector. The purpose of this research is to examine the determinants of cloud computing adoption in the banking system of two selected banks in Myanmar. The research framework with three hypotheses was developed based on the theories and previous research studies. First- and second-order technique was applied to investigate the causal relationships between the variables in different perspective of technology context, organization context, and environmental context. Multi-stage sampling technique was applied by using probability and non-probability sampling method to nominate a representative target population for quantitative research. Stratified random sampling was firstly employed to proportionately divide the target population to two commercial banks in Myanmar and purposive sampling was used to reach the target respondents who worked relatively with the cloud systems. The samples were collected from 770 respondents via offline questionnaires distribution. Confirmatory factor analysis (CFA) and structural equation model (SEM) were conducted to examine the data, confirm goodness-of-fit and validity of the model, and testing the hypotheses. The results have indicated that environmental context has the highest influence in determining cloud computing adoption in the banking system, followed by organization context and technology context. Therefore, it is important for the bank owners and top management to acquire knowledge and trends of banking industry in order to develop a cloud-based infrastructure that best react and competitive to the marketplace in an instant.

Introduction

Today, cloud computing has become widely discussed in the technology field. Cloud computing is a new technology that enables the users to maintain computer resources without the needs to buy or possess infrastructure and computer hardware (Bien, Bien, & Madiraju, 2009). Since 2007, the flexibility of cloud computing technology became well-known and a hot topic (Wang & Laszewski, 2008). To solve the growing problems of computing and data storage, cloud

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computing technology has been adopted by various sectors such as research institutes, governments, and industrial leaders (Foster, Zhao, Raicu, & Lu, 2008).

The banking sector relies on information technology (IT) for many of its operations. The industry applies IT to meet customer demand, gain a competitive advantage, or increase in transaction volume. In the 21st century, many organizations are shifting towards cloud computing to facilitate customer transactions, such as money transfers from various parts of the country. As a result, cloud computing has become of interest to multiple banks in the financial sector. Cloud computing is defined as a model or system for on-demand web access, convenience (US National Institute of Standards and Technology, 2011), or enabling wide configurable sharing of computing applications with less effort and interactions with counterparty (Mell & Grance, 2011). The characteristics of cloud computing include service measurement, elasticity, resource pooling, broad network access, and on-demand self-service (Mell & Grance, 2011). It is crucial to identify challenges that impede the adoption processes such as associated risk factors and regulations.

Innovation in Myanmar's banking industry can promote customer satisfaction, the attraction of clients, and retention. Hence, adopting cloud computing is critical in boosting economic growth and the delivery of financial services. Besides, the advantages of cloud computing, various factors hinder the adoption process in Myanmar. Munguti & Opiyo (2018) highlighted the technological factors in adoption could include complexity, compatibility to the existing systems, and the relative advantage. Technical compatibility entails the ability to integrate cloud services with existing infrastructure, which may pose challenges to some financial institutions in Myanmar. They might also include perceived benefits to the organization, such as establishing critical linkage with other banks to improve access to information. The environmental aspects that can determine the cloud computing adoption include pressure from the trading partners and competition from other firms (Munguti & Opiyo, 2018). In the bank sector, institutions can gain popularity or prestige over other competitors from the adoption of advance IT infrastructure. As a result of the competitive pressure, some banks may outsource cloud computing systems to meet customer demands and improve on effectiveness.

The potential for implementing cloud computing is evident. However, there is a lack of adequate research conducted in regard to factors that can influence the adoption process in Myanmar's banking industry. Myanmar's banking sector is one of the world's most underdeveloped sectors that cannot effectively perform its role or meet the consumer's desire for rapid and responsive economic development (Berger, 2016). World Bank (2018) stated that there are infrastructure gaps in Myanmar, evidenced by the inability to meet electrical power requirements as well as limited fixed-line internet connections. Gutierrez, Boukrami, & Lumsden (2015) highlighted some of the factors that influence a manager's decision in the adoption process which are competitive pressure, technology readiness, complexity, and pressure from trading partners. Additional factors may involve the need to co-create, customize, enhance service linkage, and adhere to legal regulation in Myanmar's banking sector. Potential challenges may include a lack of standardized procedures for cloud computing in the banking industry. Additional obstacles encompass the shortage of skilled resources that is either professional IT workers or appropriate equipment. Strengths in the adoption process may entail strong political will and support from the Myanmar government on digital investment in the financial sectors. As advantages and challenges on cloud computing adoption remain vital for the banking sector, these concerns should always be well addressed for successful adoption. There is inadequate evidence that supports the significant determinants affecting the cloud computing adoption in the industry of banking, especially banks in Myanmar. Therefore, this research can provide a reference to banks adopting cloud computing in order to frame appropriate change management strategies and prevent monetary losses from implementation failure.

In order to examine the determinants of cloud computing adoption in banking system of two selected banks in Myanmar, theoretical frameworks and previous literature were reviewed and a proposed research framework. The key factors used were based on Diffusion of Innovation (DOI) theory, Technology, Organization, Environment (TOE) framework (Tornatzky & Fleischer, 1990) for innovative technology environment in an organization level and merged with the Technology Acceptance Model (TAM) (Davis, 1989) to consider the potential determinants and its significance of affect. TOE framework and TAM are mostly used for the study of technology adoption at the organizational level (Awa, Ukoha, Bartholomew, & Emecheta, 2015). The factors include technology context of relative advantage,

compatibility, complexity, and security, organization context of top management support, technology readiness, and benefit, environment context of competitive pressure and trends, and adoption of cloud computing consisting of perceived usefulness and perceived ease of use.

The technology context means the internal and external innovation or technology that the organization provides or is likely to adopt (Apanasevic, 2013; Baker 2011). The technology aspect includes the internal and external forces of the organization adopting a particular technology. Jeyaraj, Rottman, & Lacity (2006) found relative advantages, complexity, and compatibility in the independent technology are mostly weigh when adopting a technology within organizations. Several previous research have discussed the fields of new technologies, market expectations, and security in these changing environments (Tuncay, 2010). The previous studies have recommended four technological characteristics when researching the determinants of cloud computing adoption: relative advantage, compatibility, complexity, and security. Relative advantage is described as the extent to which a technological factor is perceived as offering more benefit for the organization (Rogers, 1983). The degree to which a technological context is an advantage more than its drawbacks defines its relative advantage for organizations (Kuan & Chau, 2001). Research evidence seems to suggest that new technology adoption is more feasible once the organization feels that these technologies have a relative advantage (Mohammadi, Saeedikondorib, & Azman Bin Alia, 2017; Sayginer & Ercan, 2020). Kuan & Chau (2001) defined compatibility as the level of consistency between the innovation and the usage behaviors of the individual and/or the current value system. Compatibility was regarded as a key factor in adopting innovation (Macredie & Mijinyawa, 2011; Wang, Wang, & Yang, 2010). Complexity means the extent of understanding complexity and the use of new innovative technologies (Gangwar, Date, & Ramaswamy, 2015). For cloud computing, complexity defined as the extent to which its use and interpretation are considered as a challenge (Tehrani, 2013). Security is defined as a range of policies, processes, and standards to ensure information security in a cloud-based environment (Shin, 2009; Wu, Lan, & Lee, 2011; Nkhoma & Dang, 2013). Security has been described as how much a consumer believes it's risk-free to use cloud services (Armbrust, Fox, Griffith, Joseph, Katz, & Konwinski, 2010).

The organizational characteristics that encourage the adoption and implementation of new technology are organizational contexts (Rogers, 1995). In cloud computing adoption, organizational characteristics are vital in the decisions making (Tan, 2010). Organizational influences may impact the purpose of the new technology adoption in hospitals (Chang, Hwang, Yen, & Lian, 2006; Hsiao, Li, Chen, & Ko, 2008). Chang, Chou, & Ramakrishnan (2009) found that the top manager's support influences on cloud computing adoption. As well as technology readiness that was tested in various research as part of new technology adoption in the organization (Singh & Mansotra, 2019; Gutierrez, Boukrami, & Lumsden 2015; Low, Chen, & Wu, 2011). Moreover, benefit of the technology was tested in the research of Lian, Yen, & Wang (2014); Seham (2017) as organization context. McKinnie (2016) found that the benefits of cloud computing can be impacted by the cloud service model in manufacturing. From the review of previous research, the organizational characteristics considered in this study are top management support, technological readiness, and benefit. Top management support is considered essential for organizations when seeking to establish a supportive environment and the appropriate resources required for cloud services (Low, Chen, & Wu, 2011). The higher degree of support from top management, the greater innovative behavior would benefit the organization's values (Jaruwanakul, 2021). Top management support is defined if managers understand and respect the cloud computing technology adoption. Top management support has an important role in introducing, implementing, and adopting cloud computing (Gupta, Seetharaman, & Raj, 2013; Parasuraman, 2000). Technology readiness is the ability of the company to use new techniques in relation to technological infrastructure, transformation, and human resources (Awa, Ukoha, Bartholomew, & Emecheta, 2015). The readiness of technology is critical for determining the innovative adoption in a firm, and it is regarded as an inhibitor or a decision-maker (Oliveira, Thomas, & Espadanal, 2014; Wang & Qualls, 2007). Benefit is defined as advantages gained from using the cloud computing software to improve operations (Gewald & Dibbern, 2009; Benlian & Hess, 2011). Ghalimi (2010) states that there are three aspects of benefits gained from cloud computing: (1) reduce technology costs by shifting technology expenses to operational costs from the capital investment; (2) enhance the end-user experience; and (3) cloud computing offers organizations the

opportunity to focus on their core competencies. In the research by Ali, Soar, Yong, & McClymont (2015), benefits are the most significant factor that relatively leads to cloud computing adoption.

Laforet (2011) has defined environment as the organization's environment that implicitly influences the motivation or the adoption of innovation. The cloud computing adoption can be the result of pressure and encouragement by the environment of the organization. Competitive pressure is one of the factors mostly studied in many research under the Technology, Organization, Environment (TOE) framework. A significant number of previous studies have addressed emerging technologies, the security requirements, and the demands of these developing environments in cloud computing. A recent survey showed that the changing trend and other cloud service such as higher opportunities of technology adoption compared to larger organizations influences have a high impact on SMEs (Misra & Mondal, 2011). Trends were found to affect the cloud computing innovation in technological development strategy. Apart from trend, competitive pressure was noted as a main driver on technology adoption. The intensity of competitive pressure can motivate the organization to seek for alternative technology enhancement (Maqueira-Marín, Bruque-Cámara, & Minguela-Rata, 2017). Environmental context takes into consideration the specific environment in which the company operates its business, including the market and service providers (Feuerlicht & Govardhan, 2010). Competitive pressure is defined as the level of competition by other companies from the same industry (Low, Chen, & Wu, 2011). Competition thus improves the chances for the adoption of innovation (Oliveira & Martins, 2011). This competitiveness can play an important role in adopting the innovation, especially when technology has a prescribed impact on competition (Li, Sedayao, Hahn-Steichen, Jimison, Spence, & Chahal, 2009). Trends is defined as businesses are constantly trying to incorporate business processes into their current systems and develop internet-based technologies to communicate with a trading partner from a business perspective (Tuncay, 2010). The adoption of cloud computing is becoming an important research focus since it allows organizations and value chain operations to perform data transactions (e.g., finance, including manufacturing, customer service, distribution, sales, collaboration with trading partners, and information sharing) (Gartner, 2009). By outsourcing such services to a cloud service provider, the IT infrastructure costs, and operating overheads are often reduced in maintaining and managing these services (Armbrust, Fox, Griffith, Joseph, Katz, & Konwinski, 2010).

Adoption of cloud computing means "the cloud" which consists of software and services that are in charge of a local computer or server network that remain and operate on the Internet. Cloud adoption is a business approach to develop the capabilities of Internet-based systems and reduce costs and risks (Tafoya, 2020). Considering one of the few studies, Bhatiasevi & Naglis (2015) have analyzed cloud computing adoption in the context of developing countries with the extended Technology Acceptance Model (TAM). According to TAM, perceived usefulness, and perceived ease of use motivate the positive attitude of the users to accept and intent to adopt new technology (Chuleeporn, 2014; Kitcharoen & Vongurai, 2021). Perceived usefulness of cloud computing adoption is defined as the extent that the person thinks that using the technology help improves task performance. This is an important factor because consumers are willing to adopt cloud computing when they perceive that cloud services can boost their organizational productivity, profitability, and productivity (Senk, 2013). Perceived usefulness of cloud computing adoption can be focusing on performance improvement, profitability, flexibility in work, and efficiency. Cloud services are more likely to be adopted by enterprises if they understand all the benefits of cloud solutions (Venkatesh & Davis, 2000). Perceived ease of use is how much the person considers it would be effortless to use a particular system. It is essential for users to research information technology response because it has been shown to affect the use of a specific technical purpose or motivation (Chuleeporn, 2014). Perceived ease of use will contribute to direct collaboration and service, which lessens mental effort in the use and the capability to carry out tasks according to the requirements of an organization.

Objectives

1. To determine the causal relationship and significance of affect between technology context, organization context, environment context, and the adoption of cloud computing in the two selected banks in Myanmar.

2. To provide insights to practitioners on determinants of decision for banks to adopt cloud computing for banking system in this case study

Conceptual framework

The conceptual framework proposed in this research derived from well-known theoretical frameworks in this area of study, which are Diffusion of Innovation (DOI) theory established by Rogers (1995), Technology Acceptance Model (TAM) by Davis (1989) and the Technology, Organization, Environment (TOE) framework developed by Tornatzky & Fleischer (1990). Seventeen variables from theoretical frameworks were developed to formulate a conceptual framework of researching the adoption of cloud computing, which is shown in Figure 1.

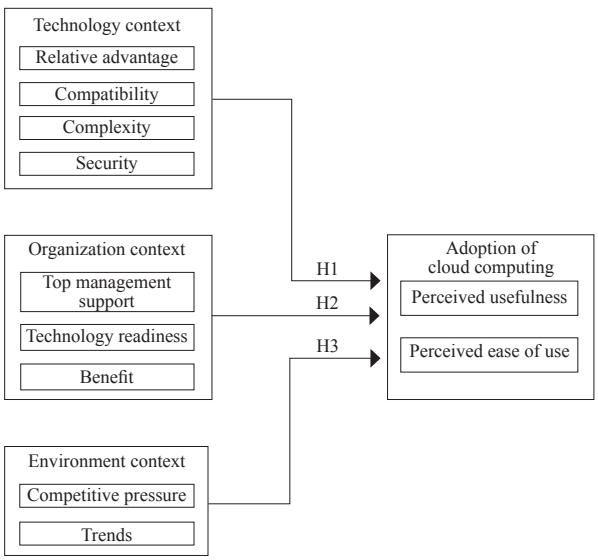

Figure 1 Conceptual framework

Research methodology

The research used quantitative methods and multi-stage sampling in nominating target population. Based on previous research in cloud computing adoption, measurement items were developed to collect empirical data on cloud computing adoption of two banks in Myanmar. The use of previously validated measurement items enhances the reliability of latent constructs and provides a guide for comparison with other studies (Straub, 1989). In certain situations, measurement items had to be adapted for cloud computing. The measurement items are measured using a five-point Likert scale (5 = Strongly Agreed, 4 = Agreed, 3 = Neutral, 2 = Disagreed, and 1 = Strongly Disagreed). Additionally, questions on general information and demographic factors were added for details of the respondents. Reliability test was conducted from 50 respondents by using Cronbach's Alpha values prior to questionnaire distribution to 770 target respondents from two banks in Myanmar. The collected data was then used to analyze Confirmatory Factor Analysis (CFA) to verify the convergence validity and measurement model, and Structural Equation Model (SEM) to examine the causal relationship of each variable and support the hypotheses proposed.

1. Population and sample size

The research focused on the banking system in Myanmar. Two banks were selected for population as they are the only commercial banks in Myanmar that currently employ cloud computing technology in their operations (Lwin, 2020; Microsoft Asia News Center, 2018). The sample unit were at the individual level and the group of people who worked relatively with the cloud systems of the bank. Hair, Black, Babin, Anderson, & Tatham (2006) suggested a minimum sample size of 150 to 400. According to the website of Soper (2006), A-priori Sample Size Calculator for SEMs has recommended a sample size of 342 from setting the number of latent variables at 4, number of observed variables at 11 and probability level at 0.05. As the samples will be collected from two selected banks, sample size for this study was determined approximately doubled and decided to collect at 770 samples. The sample size exceeded the recommended sample size.

2. Sampling technique and data collection

Multi-stage sampling technique was applied by using probability and non-probability sampling method in nominating a representative target population. Multi-stage sampling is the selection of target group by using two or more stages of sampling methods (Onwuegbuzie & Leech, 2007). Stratified random sampling of probability sampling method was applied in the first stage to proportionately divide the target population into two commercial banks in Myanmar that currently employ cloud computing technology in their operations (Microsoft Asia News Center, 2018) as shown in Table 1. Then purposive sampling of non-probability sampling method was applied to reach the target respondents of employees who have been working relatively with the cloud systems of the bank. Data was collected using questionnaires that were handed out offline by the HR department of the selected banks in Myanmar. Therefore, convenience sampling was employed for any respondents who were willing to answer the questionnaires distributed by the HR

department. The questionnaires were completed and returned at 770 sets.

Table 1 Size of population and sample by bank

Bank	Approximate size of population (Employee)	Proportionate size of sample
Bank A	18,000	523
Bank B	8,500	247
Total	**26,500**	**770**

Source: KBZ Bank (2021); Wikipedia (2020)

3. Pilot test

To assess the reliability of constructs in research, Cronbach's alpha is used as the statistical method. Cronbach's alpha or coefficient alpha or ∞-test the reliability or internal consistency. According to Mohsen & Reg (2011), Cronbach's alpha value higher than or equal 0.9 is excellent, between 0.9 and 0.8 is good, and between 0.8 and 0.7 is acceptable. The results of the pilot test shown in Table 2 indicates that all constructs are reliable with coefficient alpha values ranging from 0.710 to 0.915.

Results

1. Demographic factors

The respondents were more female compared to male, representing 52.3% and 47.7%. For the age of the respondents, 60% were 21 to 29 years old, 28.6% were 30 to 39 years old, 8.3% and 3.1% were 40 to 49 years old and over 50 years old, respectively. Majority of the respondents, 80.4% were single and only 19.6% were married. As for the highest level of education, 0.8% were postgraduate and majority of the respondents had a bachelor graduate (61.3%). The remaining 8.4%, 10.5% and 15.7% were college graduate, master, diploma and others were 3.2%. For Monthly income, 32.6% were below MMK 500,000, 30.9%earned between MK 500,001 – 1,000,000, 14.3% earned MMK 1,000,001 – 1,500,000, 8.6%, 4.9% and 8.7% earned MMK 1,500,001 – 2,000,000, MMK 2,000,001 – 2,500,000 and more than MMK 2,500,000, respectively. 45.7% of the respondents worked in banks 2 to 5 years, 28.1% worked in banking industry for less than 2 years, 15.7% were between 6 to 8 years and 10.5% worked in the industry over 9 years.

2. Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) was conducted to study the model's causal relationship that could determine the cloud computing adoption in the banking system in Myanmar. The sufficiency of items for the constructs and the number of dimensions in the empirical research model can be verified through CFA (Bollen, 1989). Also CFA was conducted with 11 dependent variables to measure the fit of data to the empirical study (Jørgensen, Boer, & Laugen, 2006). To assess the validity of the model, there are two major types of construct validity which are convergent and discriminating (Hair, Black, Babin, & Anderson, 2010). This research also applied the Second Order Factor Analysis Technique with weight factor estimation to determine the goodness of fit indices. The research has further considered the Chi-square statistics, GFI (Goodness of fit index), AGFI (Adjusted Goodness-of-Fit Index), NFI (Normed Fit Index), TLI (Tucker-Lewis index), CFI (Comparative fit indices), RMR (Root Mean Square Residual) and RMSEA (Root mean square error of approximation) for four measurement models: Technology Context, Organization Context, Environment Context and Adoption of Cloud, and Overall Measurement Model.

Based on the first- and second-order confirmatory factor analysis, the factor loadings of 12 indicators were ranged from 0.729-0.941 and were found significant at $t>1.96$. Convergent validity was tested by using composite reliability (CR) and average variance extracted (AVE). Convergent validity used for the findings of the constructs are related to other items that measure the same construct or carry a high proportion of variance (Pallant, 2020). The value of both composite reliability and average variance extracted varies from 0 to 1. The result of composite reliability was ranged from 0.838-0.928 which met the acceptable value of 0.60 (Hair, Black, Babin, Anderson, & Tatham, 2006). Hence, all the constructs are adequate for further analysis. The values of average extracted value were 0.565-0.865 which also exceeded 0.5 for adequate convergent validity (Hair, Black, Babin, Anderson, & Tatham, 2006). The summary of the factor loadings, CR and AVE are shown in Table 2.

Table 2 Confirmatory factor analysis (CFA), Composite reliability (CR), and Average variance extracted (AVE)

Second-order factor	First-order factor	Source of questionnaire (Measurement Indicator)	Cronbach's alpha	Standardized loading	CR	AVE
	Relative advantage (RA)	**Moore & Benbasat (1991)**	0.740	0.748	0.838	0.565
Technology context (TC)	Compatibility (CPA)	Kiriinya (2014)	0.828	0.793		
	Complexity (CPX)	Kiriinya (2014)	0.885	0.734		
	Security (SET)	Chellappa & Pavlou (2002)		0.836	0.729	
Organization context (OC)	TopManagement support (TMS)	Kiriinya (2014)	0.710	0.819	0.869	0.688
	Technical readiness (TR)	Sigh & Mansotra (2019)	0.826	0.803		
	Benefit (BFIT)	Lo´pez-Nicola, Molina-Castillo, & Bouwman (2008)	0.773	0.865		
Environmental context (EC)	Competitive pressure (CP)	Kiriinya (2014)	0.902	0.877	0.880	0.786
	Trend (TRD)	Kiriinya (2014)	0.907	0.896		
Adoption of cloud computing (ACC)	Perceived usefulness (PU)	Davis (1989); Venkatesh & Davis (2000)	0.750	0.941	0.928	0.865
	Perceived ease of use (PEOU)	Davis (1989); Venkatesh & Davis (2000)	0.915	0.919		

Note: Composite reliability (CR); and Average variance extracted (AVE)

Discriminant validity is described as the extent to which the variables empirically differ from one another. It also assesses the extent to which the overlapping constructs differ from one another. Discriminant validity is measured by using the Fornell-Lacker criterion. The square root of the average variance extracted (AVE) was compared to the correlation of latent constructs in this method. The variance of a latent construct's own indicator should be explained better than the variance of other latent constructs. Therefore, the correlations with other latent constructs should be lower than the square root of each construct's AVE. Discriminant validity results were established and shown in Table 3.

Table 3 Inter-construct correlation and discriminant validity

Constructs	Correlations			
	TC	OC	EC	ACC
TC	**0.752**			
OC	0.702	**0.829**		
EC	0.719	0.810	**0.887**	
ACC	0.703	0.783	0.804	**0.930**

Note: The square root of each construct's AVE is on the diagonal.

The final measurement model had met the fit indices of CMIN/DF = 2.981, GFI = 0.937, AGFI = 0.924, NFI = 0.961, TLI = 0.965, CFI = 0.965, RMR = 0.012, RMSEA = 0.048 as shown in Table 4.

3. Structural equation model (SEM)

A statistical methodology of SEM takes a confirmatory method to test the causal relationship in structural equations (Byrne, 2010). Grace, Schoolmaster, Guntenspergen, Little, Mitchell, Miller, & Schweiger (2012) also mentioned that structural equation model describes the setting of hypotheses relying on the relationship between cause and effect. The model was conducted and after modified the result showed the overall fit indices, CMIN/DF = 2.738, GFI = 0.922, AGFI = 0.919, NFI = 0.921, TLI = 0.925, CFI = 0.924, RMR = 0.046, RMSEA = 0.046 in the Table 4. The modified structural model to achieved model fitness is illustrated in Figure 2.

Table 4 Model fit indices

Goodness-of-fit indices	Criterion	Measurement model	Structural model
χ^2/df	<3 (Hair, Black, Babin, & Anderson, 2010)	2.981	2.738
GFI	≥0.90 (Bagozzi & Yi, 1988)	0.937	0.922
AGFI	≥0.90 (Segars & Grover, 1993)	0.924	0.919
NFI	≥0.90 (Hair, Anderson, Tatham, & Black, 1998)	0.961	0.921
TLI	≥0.90 (Hopwood & Donnellan, 2010)	0.965	0.925
CFI	≥0.90 (Gefen, Straub & Boudreau, 2000)	0.965	0.924
RMR	<0.05 (Hair, Black, Babin, Anderson, & Tatham , 2006)	0.012	0.046
RMSEA	<0.05 (Browne & Cudeck, 1993)	0.048	0.045

Note: Chi-square statistics, GFI (Goodness of fit index), AGFI (Adjusted Goodness-of-Fit Index), NFI (Normed Fit Index), TLI (Tucker-Lewis index), CFI (Comparative fit indices), RMR (Root Mean Square Residual) and RMSEA (Root mean square error of approximation).

4. Research hypothesis testing

The research conducted SEM analysis in order to find the determinants of cloud computing adoption which consist of technology context, organization context and environmental context. R square value, known as

the coefficient of R^2 determination represent the proportion of variation in the dependent variable. It indicates the amount of variance in the construct that is explained by the variables (Henseler & Sarstedt, 2012).

The summary of the hypothesis testing result was established as shown in Table 5 and the results of structural model is presented in Figure 2. All proposed hypotheses were supported at the significant level at p = 0.05 and the variation of cloud computing adoption can be explained by all independent variables at 68.9%.

Table 5 Hypothesis testing result

Hypothesis	Standardized coefficients (B)	t-value	Result
H1: TC→ACC	0.326	9.783*	Supported
H2: OC→ACC	0.420	13.323*	Supported
H3: EC→ACC	0.562	17.846*	Supported

Note: *Significant at p-value, p<0.05.

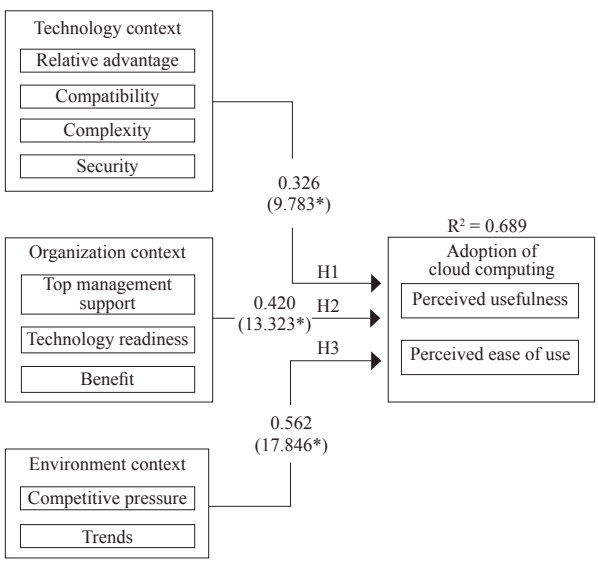

Figure 2 The results of structural model
Note: *Significant at p-value, p<0.05.

H1: There is a casual relationship between technology context and adoption of cloud computing in the banking system. H1 is supported with the standardized path coefficient of 0.326 and t-value of 9.783 between technology context and adoption of cloud computing. Technology context was mainly driven by the compatibility of cloud computing, which indicates that the consistency of cloud computing with current value systems and employee's usage behavior are vital to the adoption, hence in line with the studies of Macredie & Mijinyawa (2011) and Wang, Wang, & Yang (2010).

H2: There is a casual relationship between organization context and adoption of cloud computing in the banking system. H2 is supported with the standardized path coefficient of 0.420 and t-value of 13.323 between organization context and adoption of cloud computing. From the results, organization context was greatly characterized by the benefits gained from using the cloud computing in order to improve banking operations (Gewald & Dibbern, 2009; Benlian & Hess, 2011).

H3: There is a casual relationship between environmental context and adoption of cloud computing in the banking system. H3 is supported with the standardized path coefficient of 0.562 and t-value of 17.846 between environmental context and adoption of cloud computing. Environmental context has the highest affect in adopting cloud computing which the respondents have characterized this context as a trend. This result can prove the studies of Tuncay (2010); Gartner (2009) that cloud computing is becoming an important aspect of IT infrastructure in order to enable the banks to perform data transactions, communicate and collaborate with their trading partner and value chains.

Discussion

In the study, the authors aimed to study the determinants of cloud computing adoption in the banking system in Myanmar. The questionnaires were distributed offline by the HR Manager of the bank at the headquarter office, and 770 questionnaires were completed and returned. The proposed research framework was developed from various theories and empirical research. The factors included in the proposed framework were relative advantage, compatibility, complexity and security as the first-order constructs of technology context, top manger support, technical readiness and benefit as first-order constructs of organization context, competitive advantage and trend of environmental context and lastly, perceived usefulness and perceived ease of use as the first-order constructs for adoption of cloud computing. The confirmatory analysis was conducted to ensure the reliability and validity of each construct. Furthermore, the structural equation model (SEM) was applied to carry hypothesis testing and results of the study.

In summary, all contexts of technology, organization, and environmental are determinants of cloud computing adoption in the banking systems. Hence, the results have proven the theory of TOE framework

that these three contexts have a critical influence on technology adoption in an organization (Tornatzky & Fleischer, 1990). Compatibility and complexity are the characteristics of technology context that are important for determining the innovation adoption as studied by Rogers (1995) in Diffusion of Innovation (DOI) theory. Also perceived usefulness and perceived ease of use are the significant factors that can represents the acceptance of the adoption of the technology according to TAM.

The most affecting factor is environmental context which are prioritized by the characteristics of trend and competitive pressure. The banking sector heavily relies on information technology for huge transactions retention, enabling broad network access, and facilitating customer transactions (Mell & Grance, 2011). Therefore, in order to gain or maintain competitive advantage, continuous development of innovation and IT is essential (Li, Sedayao, Hahn-Steichen, Jimison, Spence, & Chahal, 2009). The second impacting determinant to the cloud computing adoption is organization context. The respondents have prioritized the characteristics of this context as benefits, top management support and technical readiness. By adopting the new innovation or technology, advantages should be recognized by the banking employees in helping improve their daily operational tasks (Gewald & Dibbern, 2009; Benlian & Hess, 2011) and also customers to earn their satisfaction from using the banking services. When cloud computing is perceived as a benefit, support from top management is important to make it happen, ranging from the improvement of IT infrastructure and people for technology readiness (Oliveira, Thomas, & Espadanal, 2014; Tornatzky & Fleisher, 1990) to introducing to implementing the technology (Parasuraman, 2000). The least affecting factor is technology context, which is characterized by compatibility, relative advantage, complexity, and security. This could imply that when there is a business environment pressure on adopting a new innovation that were also perceived as beneficial to operations, technology constraints are unavoidable to overcome or timely resolved in order to compete in the market.

Suggestions

The result of this study has found various factors are critical to determine the cloud computing adoption. The main critical factors were technology, organization and environmental contexts. The most influential factor from the research finding was the environmental contexts. It is important for the bank owners and top management to have a well-round knowledge of the banking industry, including its trends and not only in Myanmar, but on the global banking industry. This would allow the management to react and compete in the marketplace instantly or innovate technology that serves the customer needs and satisfaction. Employing the right technology or cloud-based infrastructure to support bank operations and customers may result to company values and a competitive advantage. Organization context is also important. it is considered as the internal factor that the bank owner should emphasize to convey the advantages of cloud computing and providing sufficient resources and support to employees to allow efficient work performance. Hence, the advantages and ease of use of cloud computing should be ensured and promoted both to customers and the bank employees in order to persuade the cloud computing adoption.

Limitation and further study

The research focused on the cloud computing adoption in the banking system in Myanmar. Therefore, the study has some limitation which can be discovered for further study in other countries. The result may not be applicable to the internet banking, mobile banking and mobile wallets. The study focused on the analysis of data consolidated from two selected bank, which each bank might have different opinions that led to different results. Further research is suggested to better understand the organization context and environmental context that has resulted into the most significant driver for cloud computing adoption.

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