

Original Research Article

The Factors Influencing the Adoption of Software as a Service (SaaS): An Analysis of SMEs in Sri Lanka

Abstract:

The purpose of this study is to investigate the factors that influence the adoption of Software as Service (SaaS) at Small Medium Enterprises (SMEs) that have adopted online business in Sri Lanka. Prior studies have shown that SMEs significantly benefit due to the adoption of SaaS. Conceptualization of this researcher's variables and their interrelationship have been supported by theory of Diffusion of Innovation (DOI) of Rogers' (1962) and Technological Organizational and Environmental (TOE) Framework of Tornatzky and Fleisher (1990). Accordingly, the research sought to explain the adoption of SaaS using Awareness, Trust, Cost, Top Management Support, Complexity and Relative advantage. The study was conducted among 250 randomly selected SMEs adopting online business using questionnaires addressed to managerial and ICT professionals who were capable of making ICT decision at SMEs under study. However only 224 questionnaires were returned with complete data required for the purpose of analysis. The study employed principal component analysis to reduce the data and employed Ordinary Least Square (OLS) to test the relationship between the variables. It is found that Cost (CT), Complexity (CX) and Relative Advantages (RA) are having significant impact on SaaS adoption in SMEs in Sri Lanka. Furthermore, this study has extended the existing body of knowledge by providing empirical support for explaining SaaS adoption by SMEs in Sri Lanka. The finding will help various parties engaging in promoting the adoption of SaaS among SMEs with the view of SMEs' development in Sri Lanka.

Keywords: SaaS Adoption, Cloud Computing, Small and Medium Enterprises, Software as a Service, Sri Lanka

Introduction

Nowadays, the growing of Information technology (IT) innovation led the SMEs to make a decision regarding adoption of advanced technology to solve the organizations computing requirements, to support their services, products and to satisfy their business operation need to create a large infrastructure of Information technology and resources employment in order to effectively and efficiently utilize the limited resources (Ayoobkhan, 2017). One of these technologies is "Cloud computing". The Cloud is generally accessible to business companies and access to Small and Medium Enterprises (SMEs) in particular. Cloud computing technology offers many significant benefits to business enterprises with a specific reference to the reduction of cost saving benefits: hardware investment, maintenance costs and low power consumption (Ayoobkhan, 2017; Irshad, 2015; Oliveira et al., 2014). The service is dynamically scalable (on-demand self-service and rapid elasticity) because users only have to consume the amount of online computing resources they actually need without human interaction with the provider (Ayoobkhan, 2017; Brender and Markov, 2013; Alshamaila, 2013; Low et al., 2011). It is very useful for SMEs that meet high and low demands of IT services and must pay only when it is paid for server usage increases. The service is based on a utility basis (pay-as-you-go service) and low investment result is no risk of immediate access to any fixed costs and cost savings improvements (Ayoobkhan, 2017; Irshad, 2015; Oliveira et al., 2014; Li, 2010; Walterbusch et al., 2013). National Institute of Standards and Technology (NIST) define the Cloud computing as "Cloud computing is a model for enabling convenient, on demand network access to 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.

Most organizations today are making great utilization of Cloud computing in couple of ways. To start with, the organizations that make Cloud innovation much of the time don't have to make it rather it can be given by a Cloud

organization infrastructure. A valid example is the point at which each organization in Benchmark's portfolio makes utilization of Cloud foundation of Amazon. The concept of Cloud computing is a moderately new idea in a few firms and consequently making the greater part of them to have low trust in the Cloud computing framework (Ayoobkhan, 2017) Inferable from the diverse ideas and observations concerning the idea, most clients have required significant investment to appreciate and actualize the framework. With this sort of negative observation in regards to multifaceted nature of Cloud administrations, the rate of dissemination has been comfortable pace and in constrained limit (Ondiek, 2016). The Cloud appreciates this relative favorable position given that it permits the organizations to reconsider about the region of setup and additionally how to set up their IT spending plan as they advance to concentrate on the issues of awesome concern. Presently, Cloud Computing is not a pattern however it has continuously turned into a noteworthy device for the majority of the organizations from the point of view of Vaquero (2009). Further, Makris (2011) notes that Cloud computing is mobile and at the same time a remote data center through which users can comfortably share information with neighbors and the strangers at the same time. Therefore, Cloud computing ensures that the users can economically access all the available IT resources at any point and time in the manner in which they deem fit.

The Small Medium Enterprise (SME) sector has been identified as an important strategic sector in the overall policy objectives of the Government of Sri Lanka (GOSL, 2017) and it is seen as a driver of change for inclusive economic growth, regional development, employment generation and poverty reduction. SME sector is envisaged to contribute to transform lagging regions into emerging regions of prosperity. The Government of Sri Lanka recognizes SMEs as the backbone of the economy, as it accounts for more than 75% of the total number of enterprises, provides 45% of the employment and contributes to 52% of the Gross Domestic Production (GDP) in compare to India. SMEs promote broad based equitable development and provide more opportunity for Women and Youth participation in the economic development of the country (see table 1). With the globalization trend, the SME sector is not merely seen as a sector for “protection and promotion” but, more importantly as driving force for “growth and development”. Therefore, Government of Sri Lanka recognizes that enhancing national and international competitiveness is fundamentally important for this sector to face the emerging challenges and develop SMEs as a thriving sector. Given the nature of this sector and the challenges faced, it is important to have a Government led intervention and support mechanism to upgrade and strengthen this sector to meet the expectations of the country (GOSL, 2017).

Table 1: Countries' and SMEs' contribution to GDP up to December, 2017

Country	Contribution to GDP	Contribution to Employment	No of Enterprises as % of the total	GDP per capital Dec.2017 in US \$
Sri Lanka	52%	45%	75%	4065
India	32%	40%	95%	1751
Malaysia	36%	67%	97%	9817
Singapore	Over 50%	70%	99%	57722

The overall objective of the study is to develop a framework that will be a background that will guide SMEs in adopting SaaS in Sri Lanka. It will also ensure that the Software as a Service platforms will be chosen will improve the value and the benefits that come along with it. This study proposes the following objectives; To study the current status of SaaS adoption in SMEs in Sri Lanka, To identify the relevant factors influencing for the adoption of SaaS for SMEs, To develop a conceptual framework for technology adoption of SaaS for SMEs, To empirically validate the conceptual framework as adoption model of SaaS for SMEs in Sri Lankan context.

Literature review and Hypotheses Development

According to Son (2011), the computing technology provides the organizations and firms the chance to acquire on-demand various Information Technology facilities through the diverse internet applications that occur using a payment or unrestricted mode tailored on the usage. Through this, organizations can formerly advance their technical and considered quickness. Moreover, the research studies that have been conducted in the past have majorly concentrated on the usage of the Cloud Computing in organization and the conveyance models, teething troubles related with moving to Cloud and Cloud selection. The studies have dwelled on Cloud Computing without

giving clear references to the organization and related factors contributed to the successful adoption of SaaS. According to Ayoobkhan (2017), SMEs play a key part in the economy to surety that companies have a considerate of the matters connected with adopting Cloud Computing. Workers do not need to worry about the storage and the setting of the information with the conception of cloud computing as all these properties can be retrieved through a mobile or computing means of their choice at any prearranged time and anywhere so long as there is an internet association according to ; Alshamaila, (2013). According to Wyld (2010) remote-based email such as, Yahoo Mail, Gmail, MSN Mail Hotmail, or any comparable service, may be the easiest way to explain the basics of how Cloud computing function, since forecasters have pointed to the fact that our thoughtful of how Cloud computing works can be best agreed by means of our own particular use of Google's Gmail and GoogleApps according to Ondiek (2016). A recent study was conducted by Rackspace (2009), it has been mentioned that 60% of people are not well conversant with the term Cloud computing, in particular SaaS, the remaining percentage had a shallow knowledge in this regard. According to Lin et al (2009), the Information Technology customers are the fundamental focus of the SaaS service. SaaS allows the clients to make their own particular application through application programming interface (API) (Liu et al, 2010) which has helped in solving customization as a drawback (Sun et al,2008). The SaaS enables a company to pay more often than not a month to month charge to acquire Mell (2009). Recent research has shown that there are significant advantages of SaaS when adopted by SMEs.

Buyya, et al., (2011), note that some of the cost that is eliminated include; system upgrade, data storage, incising, hardware purchases and maintenance. It is also used to encourage close collaborations. However, there is a knowledge gap as pertains to the understanding of the factors that influence the effective adoption of SaaS in SMEs according Bhat (2010). The Government of Sri Lanka has taken efforts to increase the competitive level of SMEs are facilitated more through improvement of infrastructure and low cost but the adoption has still been on the decline. The Sri Lankan government has made efforts to increase the competitiveness of SMEs. This is for improving infrastructure and helping low cost, but adoption is still down. However, information on SaaS is limited and only few sectors have been adopted this service. Up to now, there has not been existing much committed studies on SaaS concerns in Sri Lanka. According to a study there is inadequate information on fruitful case studies and indicators on SaaS implementation. According to Nabeel (2016), SMEs are performing well but yet they are missing a lot. This could be considered as an issue of delusion in this study. Further, this research will also cover the gaps in previous studies, as reported in Ondiek (2016), that there's a big disconnect between the popular and scholarly discussion about SaaS for SMEs leading to limited and inadequate access to relatable information in this regard. The study will also review existing adoption models are not contextualized for developing countries pertaining to SaaS adoption factors by SMEs. Therefore this study will formulate an acceptable framework for adoption of SaaS in Cloud computing for SMEs in Sri Lankan context. Moreover, the study brings more understanding of the Cloud Computing Software as used as a service adoption for SMEs. The research tends to fill the knowledge gap that exists between Cloud SaaS computing for the SMEs. This paper, consequently, should be able to function as instrument for an SME that is uncertain on what Cloud computing particularly Software as a service is adopted.

According to Rogers and Shoemaker (1971), the consumers often undergo a lot while striving to get a new product. The process is hectic and entails acquisition of knowledge, conviction, process of making decision and ideally confirming the decision before proceeding to approve the artefact or even the facility. Once the consumer approves and finds the innovation, any innovation begins with adoption or rejection procedure. On the other hand, Howard and Moore (1982) emphasized that for one to comfortably adopt, they have to know the new brands that get into the market. By being unaware of the new brand, the adoption of IT is affected negatively (Sathye, 1999). In accordance to the conceptual framework of this study the factor generated the following research hypothesis as given: *H1: There is a positive and significant relationship between Awareness and SaaS adoption*

According to Siau (2003), Trust is regarded as a measure of buyers' level of accreditation that the service will be well-furnished with least conceivable anticipation. Amongst the signs of the goal to use SaaS, dependence has been perceived to be a standout amongst the most indispensable fundamentals that influence a person to use the invention (Pearson, 2007). According to Klein (1996), Trust is equally an important portion in imagining out if an individual buys products or services by means of the Web. Trust is the base of the vital association between an industry and its Internet consumer Spekman (1988). A customer's ability to utilize from an Internet store which is affected by his or her state of mind and impression of danger (Ondiek, 2016). The person's willingness to take part in online trades of cash and individual delicate data (Wang, et al., 2003). As designated by Enders, et al. (2006), non-Internet supporters require wide effort of influence before they begin participating in e-keeping money and make an e-propensity. A study carried out by Poon (2008) reveals that approximately 70% of the respondents correspond that

trust is influencing them to use Internet saving money. Therefore, in this study the factor generated the following research hypothesis as given: *H2: There is a significant relationship between Trust and SaaS adoption Services*

According to Tornatzky and Klein (1982), Cost as the amount to which the usage of a development is acknowledged to be comparatively exclusive. The application of information systems (IS) is measured a safe approach for SMEs in terms of as long as together a substance for transaction based innovativeness and as a foundation of cost savings and practical development (Khamis 2015; Faasen et al., 2013). The distribution of this systems are based on Cloud computing knowledge that minimizes the possession cost, upfront cost and conservation cost. In accordance to the conceptual framework this study the factor generated the following research hypothesis as given: *H3: There is a significant relationship between Cost and SaaS adoption Services*

According to Young and Jordan (2008), it mentions to Promising time to the (ICT) program to a convinced grade its cost, probable, infectious up on consequences, measuring plans and hopeful the regulatory matters obligatory with organizing ICT with the organization technique of the business. According to Young (2008); Daylami et al., (2005), it has been revealed that the Top Management Support and methods can be biased toward improved performance change. Cloud computing implementation management maintenance is considered as the chief connection amongst individual and hierarchical ICT development in their audit of the indicators and biases in IT. According to Thong, (1999) and Low et al., (2011) the topmost administration maintenance key to possess the reputation of conceivable change over an pronounced deliberation for the reminder, and by directing signs of the importance of the new information to different personalities from the organization. According to (Premkumar and Potter, 1995; Annukka, 2008), manager affiliation guarantees the enough assets to be disseminated so as to cuddle the new know-how. According to (Daylami et al., 2005; Wilson et al., 2008) best organization sustenance is deliberated to affect ICT development implementation. The implementation of SaaS Cloud computing is strategically important when considered from the organization top management. In accordance to the conceptual framework this study the factor generated the following research hypothesis as given: *H4: There is a positive and significant relationship between Top Management Support and SaaS adoption Services*

The degree to which an invention is apparent as comparatively difficult to appreciate and use representation will be fewer probable if the detection is careful as actuality more inspirational to use. SMEs might be antagonized with trials when commissioning a new knowledge in footings of changing the departments in which they intermingle with their work-related systems. Conferring to Rogers, (2003) performing will be fewer likely if the expansion is watchful as being more thrilling to use. SMEs may be endangered by the encounters when accepting a new experience in rappings of moving the performances in which they interrelate with their commerce systems (Chaudhury and Bharati, 2008, Tiwana Bush, 2007; Harindranath et al., 2008). According to Sahin (2006) in order to increase occupation rate, the new know-hows have to be user friendly. This factor is more disadvantageous to the adoption probability unlike other innovation characteristics. Hence, SMEs predisposition to implement SaaS services is increased by the decreased complexity of SaaS. So, it leads to the following research hypothesis which is in accordance with the research Hypothesis; *H5: There is a positive and significant relationship between Complexity and SaaS adoption Services*

According to Rogers (2003), the extent to which an invention is witnessed as being enhanced than the suspected. It is taken as an essential needle for the new IS inauguration. The result of relative improvement on employment occupation has been systematically observed in aforementioned benefits that were accepted by some research scholars (Thong, 1999; Gibbs and Kraemer, 2004; Premkumar and King, 1994; Lee, 2004). According to Lee (2004), when dealings have a qualified improvement of invention then the chances of implementation will spontaneously increase. Cloud computing notably presents several benefits upon its adoption. Cloud computing can offer several advantages that can be linked to issues of capacity, reliability, as well as flexibility. Having this ensures that there is immense reduction in cost of entry for the SMEs and thus the businesses can access several resources within a short time span Miller (2008). Relative advantages that accrue from Cloud computing are many. So, the following research hypothesis which is in accordance with the research Hypothesis; *H6: There is a positive and significant relationship between Relative Advantages and SaaS adoption Services*

Research Methodology

Adoption of SaaS is broadly a topic under information technology service adoption and it is an aspect of firms' innovativeness. To examine the factors that influence the adoption of SaaS, this study hence broadly adopted two prominent theories namely diffusion of innovation (DOI) theory of Rogers (1962), and the technology, organization, and environment (TOE) framework of Tornatzky and Fleisher (1990). The DOI theory holds that individual, structural and external characteristics of organizations are important antecedents to organizational innovativeness. The TOE framework on the other hand affirms that three such contexts namely technological, organizational and environmental contexts of an enterprise impact on technological innovation of a firm. There are previous studies that have employed TOE framework to explore the IT adoption (e.g. Thong 1999, Gibbs and Kraemer 2004, Hsu et al. 2006, Zhu et al. 2006a, Li 2008, Soares-Aguilar and Palma-DosReis 2008, Chong et al. 2009, Oliveira and Martins 2010b). Accordingly, the conceptual framework of the present study can be represented in the diagram below.

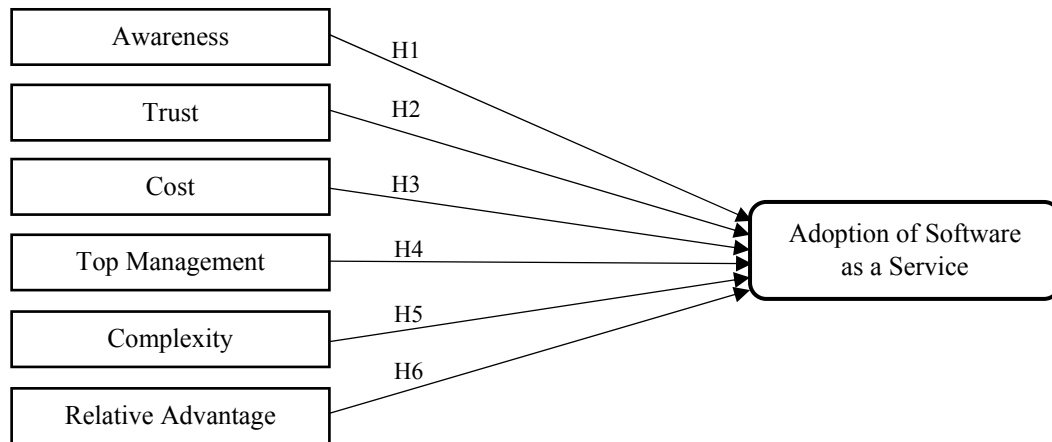


Figure 1: Conceptual Framework of the

In line with previous similar studies on this subject (e.g. Ondiek and Nabeel, 2016; Alshamaila, 2013; Buyya, 2011; Annuka, 2008), this research too adopts a quantitative approach. Self-administered questionnaire were issued among selected ICT employees in executive positions and managers capable of making ICT decisions in the firms studied. Some of the matter touched in the questionnaire include the demographic profile of the SMEs, impact of factors of DOI and TOE on their Cloud computing adoption strategies. The questionnaire contained five Likert scale questions to measure the DOI and TOE considerations related to adoption of this technology. According to Business Directory, Sri Lanka, 2017; Chamber of Commerce Sri Lanka, 2016/2017; <http://www.lankayp.com>; www.slt.lk; www.lankabusinessonline.com and www.ips.lk the total number of SMEs adopting Cloud Computing is 489 which constitute to the population of this research and thus the appropriate size of sample for this study was determined as 250 firms. SMEs adopting Cloud computing are extensively concentrated in the western province of Sri Lanka. The collected data were analyzed using statistical computer programs known as SPSS Version 21. The study first examined the measurement model to test reliability and validity, and followed by the multiple linear regression analysis was to test research hypotheses and research model of this study.

Data Analysis and Discussion of the Findings

A total of 250 questionnaires were issued and 231 returned. However, only 224 was used for data analysis after data screening was completed. Several items were used to measure all variables and for each item, a corresponding Likert Scale with anchors ranging from 1 as “Strongly Disagree” and 5 as “Strongly Agree” was used. For each item listed, the respondents were requested to mark any of the five options given. The study first examined the measurement model to test reliability and validity, and followed by the multiple linear regression analysis was to test research hypotheses and research model of this study.

Descriptive Statistics

This section present the demographic characteristics of the respondents of this study.

Table 1a: Demographic characteristic of the respondents

Description	Frequency	Percentage
Gender		
Male	182	81%
Female	42	19%
Age		
18 - 25	28	13%
26 - 35	59	26%
36 - 45	77	34%
46 - 56	42	19%
Above 56	18	8%
Educational Level		
Ordinary Level (O/L)	47	21%
Advance Level	62	28%
Bachelor Degree	85	38%
Master Degree	23	10%
PhD	07	3%
IT experience		
1 - 5 years	76	34%
6 - 10 years	112	50%
11- 15 years	36	16%

Table 1a describes the demographic characteristic of the respondents participated in this survey. Most of the participants were men, 182 (81%) and female participants 42 (19%). It is important to consider the age of participants in this study. Most of the respondents were young people, 73% of the total. As far as the Educational level of the respondents are concern, more than 51% are degree holders. IT experience is concerned, around 76 (34%) of the respondents are having 1 to 5 years of experience while around 112 (50%) of the respondents are having 6 to 10 years of IT experience. Others around 36 (16%) of the respondents are having 11 to 15 years of experience. This could be considered as an evidence towards adoption Cloud computing technology. Even though the success of the study may be depending on other factors as well.

Adopter and Non-adopters of SaaS

To determine whether the respondent's organizations are currently using SaaS, the respondents were asked to indicate whether they currently use or intend to use SaaS in the business. Based on the questions, three categories of respondents' SMEs were identified in this study.

Table 2: SMEs' Intention to adopt SaaS

Description	Frequency	Percentage
SMEs adopted SaaS	152	69%
SMEs having Intention to adopt SaaS in the near future	55	25%
SMEs have no intention to adopt in the near future	17	6%

152 (69%) SMEs have been identified as the adopters of SaaS in this survey study. While around 55 (25%) SMEs are expressed their intention n to use SaaS in the near future, a few number of SMEs (17) expressed their idea as no intention to adopt SaaS even in the near future. Hence, the descriptive analysis it is apparent that most of the SMEs have adopted SaaS as it is useful. Moreover, in this study, the researcher has focused on the SMEs who were adopted SaaS, for further analysis.

Reliability and Validity of the construct

Validity and reliability are two important steps that determine the quality and usefulness of data collected. Generally, the higher value of Cronbach's Alpha illustrates a higher reliability. For reliability test, the normal

standard value is 0.7 (Haleem, 2017). Therefore, if the value of alpha more than 0.7, then a high reliability has been proved (Refer Table 3). For the six constructs: Awareness (AW), Trust (TS), Cost (CT), Top Management Support (TM), Complexity (CX), Relative Advantage (RD) and ADP.

Table 3: Reliability of the constructs

Constructs	Cronbach's Alpha	N of Items
AW	0.734	5
TS	0.701	5
CT	0.715	5
TM	0.812	6
CX	0.802	5
RD	0.799	5
ADP	0.770	5

Validation Test of the Constructs

This section reveals the results of the factor analysis based on both independent and dependent variables. As shown in Table .4 below, the KMO values for both the independent and dependent variables exceeded the threshold value of 0.6. Discriminant and convergent validity was measured by means of average variance extracted (AVE). Convergent validity is adequate when the AVE value of each construct exceeds 50% (Ayoobkhan, 2018; Nijam, 2016; Haleem, 2016). As shown in Table 4 below, the AVE values for all of the study's constructs were well above the threshold. Consequently, both discriminant and convergent validity was acceptable in this study. Thus, the scales used in this study are both reliable and valid. **Table 4: Validity of the constructs**

Constructs	Kaiser-Meyer-Olkin (KMO)	Average Variance (AVE)	No of Items
AW	0.727	53%	5
TS	0.701	51%	5
CT	0.716	53%	5
TM	0.761	57%	6
CX	0.739	56%	5
RD	0.750	55%	5
ADP	0.749	57%	5

Regression Analysis and Hypothesis Testing

Regression analysis is used to understand which among the independent variables are related to the dependent variable, at the same time to explore the forms of these relationships. Table 5 describes the results of the linear regression analysis was used to test research hypotheses.

Table 5 Analysis of Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.225	.438		.515	.608
AW	.059	.077	.048	.760	.449
TS	.099	.072	.084	1.374	.172
CT	.299	.071	.296	4.210	.000
TM	.098	.081	.092	1.202	.231
CX	.229	.089	.213	2.833	.000
RD	.387	.080	.348	4.808	.000

Awareness (AW): According to the table 5, the p-value for AW is more than 0.05 and the coefficient value is 0.059. Hence ADP does not depend on AW. Therefore, the hypothesis was rejected and there is an insignificant relationship between AW and ADP. Hence, it is confirmed that AW was not identified as one of the major factors in order to adopt SaaS in SMEs in Sri Lanka. *Thereby rejecting H1 that “There is a significant relationship between the Awareness (AW) and the SaaS adoption in SMEs in Sri Lanka.*

Trust (TS): In Table 5, the p-value of TS is more than 0.05 and the coefficient value is 0.099. Hence ADP does not depend on TS. Therefore, the hypothesis H2 was rejected and it is confirmed that there is an insignificant relationship between TS and ADP. Hence, it is confirmed that TS was not identified as one of the major factors in order to adopt SaaS in SMEs in Sri Lanka. *Thereby rejecting H2 that “There is a significant relationship between the Trust (TS) and the SaaS adoption in SMEs in Sri Lanka.*

Cost (CT): Table 5 implies that the p-value for CT is less than 0.05 and the coefficient value is 0.299. In Sri Lankan context SMEs have been realized that adopting SaaS is not expensive and the tendency of Cost is natural. Hence ADP depends on CT. Therefore, the hypothesis H3 was accepted and there is a significant relationship between CT and ADP. Hence, it is confirmed that CT is identified as one of the major factors in order to adopt SaaS in SMEs in Sri Lanka. *Thereby accepting H3 that “There is a significant relationship between the Cost (CT) and the SaaS adoption in SMEs in Sri Lanka.*

Top Management Support (TM): According to the table 5, the p-value for TM is more than 0.05 and the coefficient value is 0.098. This implies that the support of the Top level management in Sri Lanka in particular in SMEs is unfortunate. Hence ADP does not depend on TM. Therefore, the hypothesis H4 was rejected and there is an insignificant relationship between TM and ADP. Hence, it is confirmed that TM is not identified as one of the major factors to adopt SaaS in SMEs. *Thereby rejecting H4 that “There is a significant relationship between the Top Management Support (TM) and the SaaS adoption in SMEs in Sri Lanka.*

Complexity (CX): In table 5, the p-value for CX is less than 0.05 and the coefficient value is 0.229. Hence ADP depends on CX. Therefore, the hypothesis H5 was accepted and there is a significant relationship between CX and ADP. Hence, it is confirmed that CX is identified as one of the major contributor to adopt SaaS in SMEs. *Thereby accepting H5 that “There is a significant relationship between the Complexity and the SaaS adoption in SMEs in Sri Lanka.*

Relative Advantage (RD): The table 5 implies that the p-value for RD is less than 0.05 and the coefficient value is 0.387 which is the highest value among the constructs. Hence ADP depends on RD. Therefore, the hypothesis H6 was accepted and there is a significant relationship between RD and ADP. Hence, it is confirmed that RD is identified as one of the major contributor to adopt SaaS in SMEs. *Thereby accepting H6 that “There is a significant relationship between the Relative Advantage and the SaaS adoption in SMEs in Sri Lanka.*

Explanatory Power of the Model fitting

Regression analysis helps to identify, how the dependent variable changes when there is a change in independent variables, the researcher has built up several hypotheses to prove the relationship in between adoption of SaaS with AW, TS, CT, TM, CX and RD. Regression analysis is the ideal tool to identify the impact or significance of one variable to another. The Multiple Linear Regression (MLR) analysis was carried out to investigate the impact of these six independent variables to the dependent variable.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.721 ^a	.520	.501	.45287	1.243

The Table 6, presents the model fitting of this study. The R-square value was 0.521. This implies that around 52% of the variation in SaaS adoption by R-squared might be estimated and predicted by this Model in SMEs in Sri Lanka and can be explained by the factors AW, TS, CT, TM, CX and RD in this study. Hence it can be concluded that model is accurate and it can be used for further analysis.

ANOVA in Multiple Regression Analysis

Table 7: ANOVA TEST

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	32.274	5	5.379	26.227	.000 ^b
Residual	29.739	145	.205		
Total	62.013	151			

The p-value from the ANOVA Test in 7, is less than 0.05, which means that at least one of the six variables can be used to model SaaS adoption in SMES in Sri Lanka and also it can be assumed that there is a linear relationship between the independent and dependent variables is not violated.

Hypothesis testing summary

Table 8: Summary of the hypothesis testing

Hypothesis	B	t	p-value	Outcome
H1: There is a significant relationship between the Awareness (AW) and SaaS adoption in SMEs.	0.059	.760	0.449	Not Supported
H2: There is a significant relationship between the Trust (TS) and SaaS adoption in SMEs.	0.099	1.347	0.172	Not Supported
H3: There is a significant relationship between the Cost (CT) and SaaS adoption in SMEs.	0.299	4.210	0.000	Supported
H4: There is a significant relationship between the Top Management Support (TM) and SaaS adoption in SMEs.	0.098	1.202	0.231	Not Supported
H5: There is a significant relationship between the Complexity (CX) and SaaS adoption in SMEs.	0.229	2.833	0.000	Supported
H6: There is a significant relationship between the Relative Advantage (RD) and SaaS adoption in SMEs.	0.387	4.808	0.000	Supported

Discussion

The study found Awareness as not important factor in predicting implementation of Cloud SaaS computing in SMEs in Sri Lanka. The awareness that is insignificant was ($p=0.449$ in the research model). It contradicts previous work of Ondiek et al., (2013), Howard and Moore (1982) that emphasized that for adoption to take place consumers must become aware of new brand. Hence the findings indicated that hypothesis H1 was rejected. Trust was discovered to be important consideration when predicting Cloud SaaS Computing acceptance in the study and was insignificant ($p=0.172$ in the investigation model). It contradicts previous study by Poon (2008) who indicates that approximately 70% of the respondents agree that Trust. In another empirical study in Singapore by Fock and Koh (2006), the authors found out that advanced levels of trust are important and are related with greater willingness to try SaaS. The findings indicated that H2 having insignificant influence towards adoption of SaaS in SMEs in Sri Lanka, hence the Hypothesis was rejected. The study has been observed Cost as significant factors in order to adopt SaaS. The finding of this study in line with (Faasen et al., 2013), the application of evidence systems (IS) such as ERP is measured a safe strategy for SMEs in relationships of as long as both a substance for transaction-based innovativeness and as a foundation of cost investments and practical improvement (Khamis, 2015). The findings indicated that H3 was accepted as the p-value is less than 0.05. The study found that Top Management support is not an important factor in predicting implementation of Cloud SaaS computing in SMEs in Sri Lanka. The Top Management support that is insignificant was ($p=0.231$ in the research model). It contradicts previous work that have demonstrated that technology development selection can be prevented by top administration (Eder and Igbaria, 2001; Daylami et al., 2005). In the present study the p-value of TM is more than 0.05 ($p=0.231$). Hence the findings indicated that hypothesis H4 was rejected. Most of the present finding are consistent with past research which do not report difficulty. According to (Tiwan and Bush, 2007; Harindaranath et al 2008), this is seen as an imperative characteristics for SMEs decision making in the implementation of a new know how. The Cloud SaaS service is easy to operate since these SMEs are scared about the implementation of this program. Based on the acceptance secondhand on Cloud SaaS based this could have reduced the complexity for the organization as its hardware and software support is undertaken by the Cloud SaaS solution vendor. The finding indicates that p-value of this construct is less than 0.05, hence, it was significant contributor of this study. Relative advantage is completely associated with the employment pronouncement on Cloud SaaS figuring and is significant. It is anticipated that SMEs are supposed to see Cloud SaaS service as a new as computing prototypical that could build their benefit before they take a positive reception choice. Given that the vast majority of utilizations that were accounted for as

embraced had a tendency to be those on the essential end of the range it might be that members did not trust that these applications would really offer them an upper hand (Ondiek et al., 2013; Miller, 2008). The finding indicates that the p-value of this construct is less than 0.05, hence, it was significant important to explain SaaS adoption in SMEs.

Research contribution

The research contributes to adoption literature by studying SaaS computing in SMEs in Sri Lankan context. Any researcher can enrich their knowledge and understanding of the SMEs adoptions by viewing the adoption of new IS innovations adoption. This research has developed an SME SaaS computing acceptance model, which is observed in the background to DOI and TOE in a challenge to find out the whole idea of cloud computing. This study, may also help organizational managers to develop practices which assess various risks that are involved in adopting cloud services. Since this research affords good understanding of the factors that contributes to the successful adoption of SaaS in SMEs, therefore, SMEs can prioritize their value and low resources efficiently and efficiently. Furthermore, this research contributes to technology experts and software vendors. Software vendors have to develop strategy that effectively promotes of SaaS computing without wasting time by conducting special classes, presentations, workshops, and on location visits to the interested party in Sri Lanka as quickly as possible. Hence, SaaS computing suppliers may need to expand their connection with SMEs required in the SaaS computing background, to make a sound domain for SaaS computing reception, and to evacuate any unclearness that encompasses this sort of technology. As far as government and policy makers are concerned, SaaS computing selection, requires the best government approaches and directions with the goal that it can exist. Further, policy makers have to create new room to the formal and informal business organizations to extent SaaS Technology Island wide by conducting awareness programs. When all the above variables are put into thought, this examination accordingly gives some vital data to organizations, vendors and policy, innovation specialists and is along these lines, seen as being noteworthy to the present period of fast improvements of SaaS computing advances. Finally, the discourse on the suggestions and commitments of this study was to give rules to arrangement producers, experts and innovation merchants in executing and quickening SaaS computing improvement and usage among different SMEs. Therefore, this particular study has been found to be efficient in improving knowledge on adoption of SaaS innovation among SMEs in Sri Lanka. However, there were still some areas that needed further and elaborate studies.

Conclusion and Recommendation

This research has made an effort to discover and construct an SME SaaS Computing implementation ideal that is reliant on the DOI theory and TOE framework. While undertaking the research, a validated conceptual framework was drawn to help in the determination of the six contextual factors in regards to SaaS computing adoption in SMEs within the island. The SaaS computing adoption is affected by different factors and therefore, making a conclusion that it depends on three context is fallacious. SaaS computing is considered by many to be a vital for ICT invention. This can dispute both the premeditated and operational benefits, for important rates of implementation amongst SMEs. The research reviewed adoption theories and various frameworks so as to develop some of the constructs and models the two theories selected for the study included DOI theory and TOE framework. In order to investigate the implementation of SaaS computing services, a conceptual model of the SMEs and the developed hypotheses outlined. The model consist of six major variable such as Awareness, Trust, Cost, Top Management support, Complexity and Relative Advantage, that are considered to be significant influencing SaaS adoption in SMEs in Sri Lankan context. Finally, statistically analyzing, the research concluded that only three constructs such as Cost, Complexity and Relative Advantage are having positive and significant impact on SaaS adoption in SMEs in Sri Lanka. It is worth noting that this research covered just a small chunk or part of the wide knowledge concerning SaaS innovation adoption. Future research should be carried out in future need to mainly concentrate on the various companies and firms that have big data.

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