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Factors Influencing Cloud Computing Adoption in Malaysian Information Technology Companies

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Abstract

Cloud computing is one of the most popular technology and service and its usage growth has increased in recent years. The purpose of this study is to understand the factors, which influence the adoption of cloud computing by Malaysian Information Technology (IT) companies. The eight independent variables, which are examined in this study, are relative advantage, complexity, compatibility, top management support, firm size, technology readiness, competitive pressure and trading partner pressure. The sample size of this research is 50 IT experts from different IT companies in Malaysia whom may or may not implement cloud computing. The questionnaire considered as a tool for collecting data, contains two parts; the first part is the descriptive part and the second part is questions about the variables. The finding of the study showed that relative advantage, compatibility, top management support and competitive pressure have a significant effect on cloud computing adoption. The study contributes to the application of new technology of cloud computing adoption in the high-tech industry through the use of a wide range of variables. The results also help companies consider their information technologies investment when implementing cloud computing. The research framework hypothesized the relationship of eight factors with cloud computing adoption in Malaysian IT companies, and from the results, it is revealed that these factors are influencing cloud computing adoption by 69.1%, and the most important factor is relative advantage by 33.6%.

Keywords: Cloud Computing (CC) adoption, information technology, Malaysia

1. INTRODUCTION

Today, the computing concept has changed to become service oriented like the traditional utilities such as electricity, gas, water and telephony and delivers the services in the same manner. In such a type of delivery, users can send requests and receive the responses without any concerns about how it works and where these hosts are located. Many paradigm shifts occurred about computing to meet this utility's vision; paradigms like Cluster computing, Grid computing and recently Cloud computing (Buyya, Yeo, Venugopal, & Broberg, 2009).Cloud computing is a very scalable type of computing and because of the virtual resource ability, users can easily share the resources. It is not a must for users to have technical knowledge for using this service (Ercan, 2010). Many servers exchange information among themselves to respond to the online user request; it means a user without any knowledge of what is happening, is connected to many hosts and servers at the same time. In addition to delivering services like online applications, cloud computing includes the datacenters which provide both hardware and software services. These services are referred to as Software as a Service (SaaS) that have been mentioned in definition of terms, and it will be used all along the study. Cloud by itself refers to the internet and generally refers to software and hardware datacenters (Fox, Griffith, Joseph, & Katz, 2009). Cloud computing is

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a kind of internet based computing such as E-mail, (Enterprise Resource Planning) ERP and so on, and internet users can communicate with many exchange servers at the same time (Low, Chen, & Wu, 2011).

1.1 Cloud Computing Types

Generally, there are four types of cloud computing such as Public Cloud, Private Cloud, Hybrid Cloud and Community Cloud that will be explained in the following sentences (Ngongang, 2011). A public cloud is when an owner prepares the resources for the tenant on the public network. The technology belongs to the provider so the user does not have any control over the resources and operations and responsibility of service and delivery is on the provider's shoulder. In this model, the user only pays for any task that the provider prepares for him/her and it is called the pay per use model. It is obvious that cloud providers do not tie themselves to only one customer and they will provide a platform for many users simultaneously. Amazon Web Services, Google App and Microsoft Azure are some examples of public clouds. In contrast, private cloud users have the ability to control the resources on their own private network. The main users of this type of cloud computing are companies. According to the network policies, each company can decide the limitation for different users and how they can access the data. The whole system is inside the company and they have control over it by using a firewall. Therefore, the flexibility of the company is high in this type; the provider or owner can manage the maintenance and upgrades. When the hardware is corrupted, the system automatically switches to another node, which are the virtual servers. The platform of hybrid model is interoperating between public and private clouds. It is suitable for companies which want to have some internal infrastructure inside the company and do not allow a third party cloud to access all their data. This model shows that many enterprises like to have a private cloud for themselves and all the information should not remain in the public cloud. They can decide what information can be kept locally and what information can be kept and processed remotely. The last type of cloud computing is community cloud that allows companies to share the infrastructure and the resources with other companies which are in the same market and field of activities. They can communicate directly or with the help of a third party over the net. Several domain controllers and computers connect together for parallel computing to do the operations and tasks faster. The structure should be on a peer-to-peer network by virtual servers in other nodes to totally record data and when the local server is out of service, it can be accessible from them. In a nutshell, cloud computing is representative of flexibility and adaptability due to the needs of users who are looking for on demand services.

1.2 Fast Growth in Cloud Computing Adoption

Based on the viewpoint of businesses, companies try to generate online technologies to deal with partners in their business by integrating the business transactions to their current IS foundation (Ercan, 2010). One of the main factors to improve the efficiency of operational activities in any company especially IT companies is that data is accessible from anywhere. Cloud computing could be a very good option for companies that want to increase their competitive advantage, because not only does it change the capability of transactions and dealing with costumers in enterprises, but it also plays an important role in many enterprises as a business tactic (Misra & Mondal, 2011). According to many researches, computing is moving toward adopting cloud computing in the future, because of the many advantages that it has like cost deduction of IT services, increasing process throughput, increasing reliability, availability and flexibility (Ograph & Morgens, 2008). Now, the problem is that the growing rate of cloud computing adoption is not as much as expected in spite of many advantages that have been mentioned before about this new technology for enterprises (Buyya et al., 2009). The aim of this study is to understand the factors which have an influence on cloud computing adoption decision in Malaysia due to lack of researches in this field in Malaysia. The scope of study is the IT industry in Kuala Lumpur. To successfully adopt the cloud computing technology by companies and organizations, different factors should be considered and in this research, these factors are divided into three main categories, which are Technological, Organizational and Environmental. Quantitative method is adopted for this research. Questionnaire has been chosen as an instrument for collecting data from the IT staffs of the IT companies in Malaysia, to measure the influential factors of cloud computing adoption decision. With the help from this study, companies can understand the requirements of cloud computing adoption and the most important factor that they should focus on.

2. LITERATURE

Cloud computing theoretical model faces the lack of adoption, because of technological, organizational and environmental sections of the company. To test the IT adoption, many studies have considered the Technology, Organization, Environment (TOE) model, where TOE stands for Technological, Organizational and Environmental point of view. Any inside or outside technologies, which are suitable for a company, can be considered as a technological context. Any organizational indexes like the size of the company, formalization and even the complicated structure of manager can be considered as an organizational context. Finally, external

environment such as competitors, government policy can be considered as the environmental context (Low et al., 2011). Many different literatures regarding cloud computing have been examined and considered to create a strong support for this research. There are many studies in field of could computing word wide including East Asia and Malaysia, however, there is none to cover cloud computing adoption in information technology companies in Malaysia. A short summary of previous studies including related theories and models to cloud computing adoption has been done and reported as follow.

Based on a study, one of the most popular active research areas in management information system (MIS), is the acceptance and adoption of new technologies. Since the early 1990s, most of the IT researches have been concentrated on understanding the influential factors of tendency of users who want to use new technologies. Among all these researches and studies, two most influential theories produced among the other theoretical models, are Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT). Although IDT produced more understandable variables but the experienced evidences have illustrated that the TAM mechanism is much more effective in explaining the users' behavior in acceptance of new technology (Rogers, 2010).

TAM explains two factors related to the adoption intention of users; these factors are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU is the degree a user expects that the new technology can increase its quality and performance and PEOU refers to the degree in which a user expects that a new technology will make his/her job easier (Zhang, Guo, & Chen, 2008). During the last decade, the TAM validity has been proven many times by different scholars and it has been used by a majority of studies in IT adoption (Adams, Nelson, & Todd, 1992). Understanding the effectiveness of PU and PEOU in predicting the users who want to accept a new technology, will help them to develop or improve the projects. It would be worthy for managers to set an accurate target and make better decisions that will lead to improvement in operating and interface characteristics. Some of the advantages of better-informed planning are improvement of the basic quality of the system, reducing the redoing of the work after testing alpha and beta, reducing the development costs and reducing the time of development. Prediction and explaining the future usage behavior from non-complicated measurement, which have been taken after a while of interaction with the system is the main goal of TAM (Deng, Doll, & Hendrickson, 2005).

The TOE framework considers three different aspects of a company's context, which has effects on the process that it adopts or implements a new technology; these contexts are technological context, organizational context and environmental context. The first context, which is technology, describes the internal and external technologies, which are related to the company. It contains the technologies that the company uses currently and also the technologies, which are available in the market. The second context, which is organization, describes the different descriptive measures like scope and size of the company, the managerial centralization, formalization and complexity, the human resources quality and the internal resource capability of the company. The last context is environment, which describes the external aspects like an area that the company is established, company's industry, competitors, dealing with government and access to resources, which are supplied by a third party (Tornatzky & Klein, 1982). These three different groups of variables have an effect on the new technology adoption by the companies and will finally lead to an effect on the performance of the organization's innovation. According to the results of (Swanson, 1994), these three groups of TOE framework and came to the conclusion that adoption of new technology needs a technology portfolio, certain attributes of organization such as size of the company and managerial support and also strong expression on the strategic environment. To extend this argument with the adoption of cloud computing, it can be said that, cloud computing adoption which is enabled by technology development (Borenstein & Saloner, 2001), needs organizational enablers and may reconfigure the organization (Chatterjee, Grewal, & Sambamurthy, 2002) and may change the strategic environment (Kowtha & Choon, 2001). TOE framework has been tested by many empirical researches in different Information Systems (IS) domains. For instance, previously a model of three aspects of Electronic Data Interchange (EDI) adoption has been developed and formulated all the technological variables, organizational variables and environmental variables as the most important drivers for EDI adoption (Iacovou, Benbasat, & Dexter, 1995). According to the research by (Kuan & Chau, 2001), the results proved the worthiness of the TOE framework for complicated IS adoption in their studies. After reviewing many literatures, it is concluded that TOE framework is a foundation for understanding the cloud computing adoption.

Following gaps from previous researches in cloud computing the following variables were picked to be tested in this investigation: relative advantage, complexity, compatibility, top management support, size of company, technology readiness, competitive pressure and trading partner pressure. Table 1 shows a summary of the theories that these variables are taken from.

Table 1. Literature summary

Study	*Theory*	*Factors*
(Beatty, Shim, & Jones, 2001)	*Innovation diffusion IT adoption*	*Relative advantage, complexity, technical compatibility, organizational compatibility, top management support*
(Zhu, Kraemer, & Xu, 2003)	*TOE framework*	*Technology competence, firm scope, size, consumer readiness, partner readiness and competitive pressure*
(Kowtha & Choon, 2001)	*Resource-based view IT adoption*	*Prior competencies, firm size, firm age, competitive intensity, strategic commitment to e-commerce*
(Mehrtens, Cragg, & Mills, 2001)	*Innovation literature*	*Perceived benefits, organizational readiness, external pressure*
(Teo, Tan, & Buk, 1997)	*Contingency theory TOE*	*Technological factors, organizational factors, environmental factors*

According to the framework in Figure 1, the first independent variable is relative advantage, which means the expectancy of companies for adopting and implementing the new technology (Rogers, 2010); therefore, the first hypothesis of this study is:

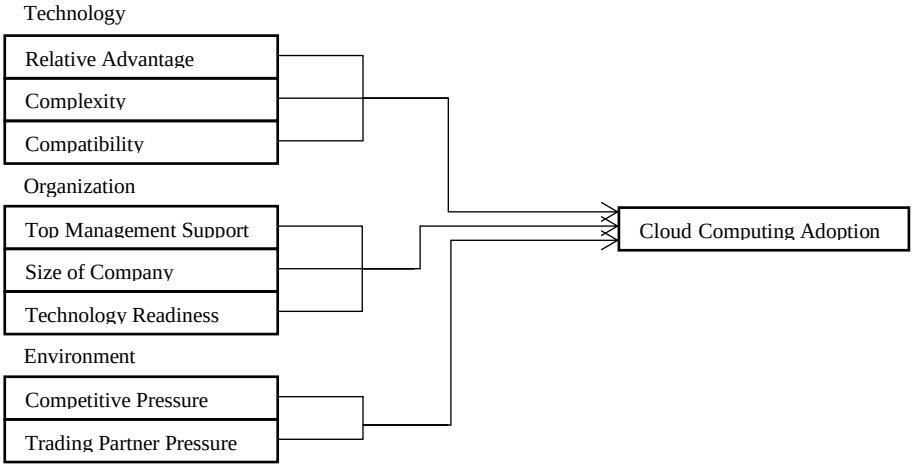

Figure 1. Research Framework

3. DATA COLLECTION

The method for data collection in this study is using primary data, therefore it is necessary to communicate with companies to distribute the questionnaires, and also because this study is done in Malaysia, data of the Malaysian companies could be more accessible and available. So, the scope of this study is the IT companies in Kuala Lumpur, Malaysia. TOE framework which is one of the main frameworks in IT/IS adoption by Rogers (1990) has been hired in this research.

4. ANALYSIS

Cronbach's Alpha has been hired to test the reliability of the variables. Alpha value of 0.70 or above has been considered to show the internal consistency among the items. Table 2 illustrates the Cronbach's Alpha of the eight independent variables and the only one dependent variable.

Table 2. Reliability statistics

Construct	Cronbach's Alpha	N of Items
Relative Advantage	0.712	3
Complexity	0.725	3
Compatibility	0.842	3
Management Support	0.705	3
Size of Company	0.749	3
Technology Readiness	0.719	3
Competitive Pressure	0.850	3
Trading Partner Pressure	0.717	3
Cloud Computing Adoption	0.712	3

As shown in Table 2, all the variables like Relative Advantage, Complexity, Compatibility, Management Support, Size of Company, Technology Readiness, Competitive Pressure, Trading partner Pressure and Cloud Computing Adoption have an Alpha value of more than 0.70, which means there is an internal consistency between the items in the questionnaire.

4.1 Hypothesis Testing

To test the correlation between variables, this study uses the Pearson's Correlation method. Table 4, in appendix A, shows the direction and power of the relationship between eight independent and one dependent variables of this study. The value of Pearson's Correlation is between -1.00 and +1.00, which means if the value of the interaction of two variables in the table of correlation are close to +1.00, it means there is a positive relationship between the two variables and if it is close to -1.00, it means there is a negative relationship between the two variables. The p-value in the table shows the significance of the relationship. The interpretation of the correlations will be done for all the hypothesis of the study to see which can be confirmed or rejected. It also helps to find the significant factors of the model; then, Multiple Regressions tables like Model Summary, Anova and Coefficients will show the percentage of the predictability of the independent variables on the dependent one and the multi regression formula that is shown by changing one variable while other variables are constant, how much a dependent variable changes. Finally, to meet the second objective of the study, the stepwise method was used to separate the most important factors among these eight variables, which have the most effect on Cloud Computing Adoption.

Table 3. Model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.831[a]	.691	.630	.33336	.691	11.435	8	41

Model Summary[b]

Model	Change Statistics
	Sig. F Change
1	.000[a]

a. Predictors: (Constant), TradingPartner, RelativeAdvantage, Complexity, ManagementSupport, TechReadiness, CompetitivePressure, CompanySize, Compatibility
b. Dependent Variable: CCAdoption

R Square in Table 3 means that 69.1% of Cloud Computing Adoption can be predicted by eight independent variables of this study. The p-value of Anova is .000, which is less than 0.05 and it means at least one of the variables can predict or affect the dependent variable, which is Cloud Computing Adoption.

H_1: There is a positive relationship between relative advantage and cloud computing adoption.
Relative advantage of cloud computing is one of the important factors for adopting cloud computing or any other technologies and researchers like (Low et al., 2011), reached the same results of H1 in their studies. As it is obvious from table 5, Appendix B, the value of Pearson Correlation for relative advantage and cloud computing adoption is .580 at the significant level of less than 0.01. This result shows that the relationship between these two variables is significant. In addition, the values in table 4 show that the coefficient of Relative Advantage is .374, it means for an increase in relative advantage, other variables being constant, Cloud Computing Adoption will increase by .374. This shows that the first hypothesis is justified.

H_2: There is a negative relationship between complexity and cloud computing adoption.
In many researches, Complexity of a new technology has a negative effect on new technology adoption. As it is shown in table 5, the value of Pearson Correlation for complexity and cloud computing adoption is .065 and its p-value is .652 which is greater than 0.05; it means although there is a relationship between these two variables but the relationship is not significant. Also, the value of Complexity in table 4.6 is -.177, which means if Complexity increases by one unit, Cloud Computing Adoption will decrease by .177 so the relationship between these two variables are negative, and the second hypothesis is accepted.

H_3: There is a positive relationship between Compatibility and Cloud Computing Adoption.
According to (Cooper & Zmud, 1990) companies prefer to adopt a new technology, which is compatible with their current platform, so Compatibility is considered as a factor, which has an effect on Cloud Computing Adoption in this study. Table 5 shows that the value of Pearson Correlation of Compatibility and Cloud Computing Adoption is .567 at the significant level of less than .001, and it shows that there is a significant relationship between these two variables. The value of Compatibility in the coefficient table 4 is .507, which means if

Compatibility increases by one unit, the Cloud Computing Adoption will increase by .507 with consideration of the fixed amount of other variables. Therefore, the relationship is positive and effective and the third hypothesis is justified as well.

H_4: There is a positive relationship between Top Management Support and Cloud Computing Adoption.
Top Management Support plays an important role in new technology adoption in the company as it has power to provide the facilities for better adoption (Wang, Wang, & Yang, 2010). In Table 5, the value of Pearson Correlation for Top Management Support and Cloud Computing Adoption is .298 at the significant level of less than .05. It means the relationship between these two variables is significant. The value of Top Management Support in coefficient table 4 shows the value of .561. It means if Top Management Support increases by one unit, the Cloud Computing Adoption will increase by .561, while other variables are constant. Therefore, the forth hypothesis is also justified as an effective independent variable for Cloud Computing Adoption.

H_5: There is a positive relationship between Size of Company and Cloud Computing Adoption.
Size of Company, which can be assumed from the capital of the company, revenue of the company and the number of employees, has an effect on Cloud Computing Adoption. Table 5 shows that the value of Pearson Correlation for this variable with Cloud Computing Adoption is .384 at the significant level of .001; it means that the relationship between these two variables is significant. According to table 4, the amount of coefficient for Size of Company is .092; it means by adding one unit to Size of Company, Cloud Computing Adoption will increase by .092 units. In this case, the fifth hypothesis is accepted.

H_6: There is a positive relationship between Technology Readiness and Cloud Computing Adoption.
Based on the research, companies with better IT platforms have a better opportunity to adopt a new technology like cloud computing. This hypothesis proposed a positive relationship between these two variables and according to Table 5, value of Pearson Correlation of Technology Readiness and Cloud Computing Adoption at the significant level of .000 is .502, which is less than .001, and also based on Table 4, the amount of .109 is a coefficient for Technology Readiness and Cloud Computing Adoption. This means that by increasing one unit of Technology Readiness, the Cloud Computing Adoption will increase by .109; the sixth hypothesis is fulfilled and justified.

H_7: Competitive Pressure has a positive effect on Cloud Computing Adoption.
According to (To & Ngai, 2006), companies which are under pressure with their competitors are looking for new technology to compete better with their competitors so they considered Competitive Pressure as an effective variable which has a positive effect on Cloud Computing Adoption. According to Table 5, the value of Pearson Correlation for Competitive Pressure and Cloud Computing Adoption is .258 at the significant level of 0.71; it means that the relationship of these two variables is not significant. On the other hand, Table 4 shows that the value of Competitive Pressure coefficient is -.303; it means by increasing this variable, Cloud Computing Adoption will decrease by -.303, while other variables are unchanged. Therefore, the result shows that there is a negative relationship between these two variables and it is logically acceptable because putting pressure on companies by competitors make companies worry about adopting a new technology and change their routines and they prefer to compete with the same technology that they have at least until the pressure is less. Based on all the justifications above, the seventh hypothesis is rejected.

H_8: Trading Partner Pressure has a positive relationship with Cloud Computing Adoption.
Rejected Trading Partner Pressure is also considered as having a positive relationship with Cloud Computing Adoption. Table 5 shows that the value of Pearson Correlation of these two variables is .444 at the significant level of .001, which means the relationship between these two variables is significant. Table 4 shows that if Trading Partner Pressure increases by one unit, the Cloud Computing Adoption will decrease by .153 because the amount of the coefficient of Trading Partner Pressure is -.153, therefore, the last hypothesis of this study is also rejected due to the above justification. Table 6 demonstrates summary of hypothesizes.

Table 6. Hypotheses testing summary

Hypothesis	Confirm / Reject
H_1: There is a positive relationship between relative advantage and cloud computing adoption.	Confirmed
H_2: There is a negative relationship between complexity and cloud computing adoption.	Confirmed
H_3: There is a positive relationship between Compatibility and Cloud Computing Adoption.	Confirmed
H_4: There is a positive relationship between Top Management Support and Cloud Computing Adoption.	Confirmed
H_5: There is a positive relationship between Size of Company and Cloud Computing Adoption.	Confirmed
H_6: There is a positive relationship between Technology Readiness and Cloud Computing Adoption.	Confirmed
H_7: Competitive Pressure has a positive effect on Cloud Computing Adoption.	Rejected
H_8: Trading Partner Pressure has a positive relationship with Cloud Computing Adoption.	Rejected

According to Table 7, it is reported that 67 percent of cloud computing adoption is predicted by relative advantage, compatibility, management support and competitive pressure, which means that the variables which have been excluded like complexity, size of company, technology readiness and trading partner pressure have an effect of only 2.1 percent on cloud computing adoption. Among the main predictors Relative Advantage by 33.6 percent has the most effect on cloud computing adoption and followed by 19.2% of Compatibility, 8.4% of Management Support and 5.8% of Competitive Pressure and the total effect of 67%.

Table 7. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.580[a]	.336	.322	.45126	.336	24.297	1	48	.000
2	.727[b]	.529	.508	.38429	.192	19.186	1	47	.000
3	.782[c]	.612	.587	.35232	.084	9.919	1	46	.003
4	.819[d]	.670	.641	.32847	.058	7.923	1	45	.007

Table 8. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficient	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	-.446	.817		-.545	.588	-2.092	1.201
RelativeAdvantage	.446	.077	.538	5.767	.000	.290	.601
Compatibility	.475	.107	.645	4.437	.000	.259	.691
ManagementSupport	.544	.164	.312	3.311	.002	.213	.875
CompetitivePressure	-.409	.145	-.387	-2.815	.007	-.701	-.116

Based on Table 8, the final regression formula is:
Cloud Computing Adoption = -.446 + .446 (Relative Advantage) + .475 (Compatibility) + .544 (Management Support) - .409 (Competitive Pressure)
It means: By increasing one unit of Relative Advantage while other variables are constant, Cloud Computing Adoption will increase by .446 units. By increasing one unit of Compatibility while other variables are constant, Cloud Computing Adoption will increase by .475 units. By increasing one unit of Management Support while other variables are constant, Cloud Computing Adoption will increase by .544 units. By increasing one unit of Competitive Pressure while other variables are constant, Cloud Computing Adoption will decrease by .409 units.

5. CONCLUSION

After collecting data by a suitable instrument and analyzing it with SPSS, the results produced can be used by any IT experts and managers in Malaysia who want to adopt cloud computing for their companies. On the other hand, these results will be useful for students who want to continue this research in the future as further references. In this section, the discussion and results of the two objectives of the study will be explained and discussed separately. The first objective was to identify the key factors that influence cloud computing adoption in IT companies in Malaysia. By reviewing literatures, eight factors were considered as influential factors for cloud

computing adoption in Malaysia, which are, Relative Advantage, Complexity, Compatibility, Top Management Support, Size of Company, Technology Readiness, Competitive Pressure and Trading Partner Pressure. The effect of these factors have been measured in the data analysis and the result in Table 4 shows that 69.1 percent of cloud computing adoption can be predicted by these eight independent factors. Complexity, Competitive pressure and Trading Partner Pressure had a negative effect on cloud computing adoption and it is mostly true because complicated technologies take time to be taught to employees and it may reduce the pace of the progress in a company so more complex technology leads to less tendency of adopting that technology. Pressure that is on companies by competitors and trading partners will make companies more conservative about adopting a new technology and they will refuse to change their current systems with the new one, which may slow the process of doing jobs in a company at the very early days or weeks of adoption. Therefore, if the Pressure on companies were high, their desire to adopt and implement a new technology will decrease. Other variables like Relative Advantage, Compatibility, Top Management Support, Size of Company and Technology Readiness have a positive effect on cloud computing adoption, and it is accepted by many other researchers like (Kuan & Chau, 2001), (Hong & Zhu, 2006), (Wang et al., 2010) and (Lee & Kim, 2007). In this case, all the hypotheses were accepted except for hypotheses 7 and 8, which were rejected in this study.

The second objective is to understand the most important factors, which have an effect on cloud computing adoption. One of the usual methods to understand the most important factors in SPSS is the Stepwise method. By checking Table 7, it is found that four factors out of eight have the most influence; these variables are Relative Advantage, Compatibility, Top Management Support and Competitive Pressure. These have the influence of 67 percent from the total of 69.1 on cloud computing adoption. Relative Advantage by itself has 33.6 percent of influence and it is supposed to be the most important factor in this research, as (Low et al., 2011) also accepted. The result of this research shows that there are eight independent factors that should be considered when a company wants to adopt cloud-computing technology. These factors are relative advantage, complexity, compatibility, top management support, and size of company, technology readiness, competitive pressure and trading partner pressure. Among these factors, relative advantage, compatibility, top management support and competitive pressure have the most impact on cloud computing adoption in Malaysian companies. In a nutshell, companies should bear in mind that they can evaluate themselves with these factors before any adoption to see if they are qualified to adopt cloud computing.

6. LIMITATIONS AND FUTURE RESEARCH

This research had some limitations which has been identified for future research directions. First of all, the sample size of this study was only 50 IT experts from different companies and it is considered a small size. However, the reason why a small sample size had been chosen is because of the difficult access to the employees and managers of the companies in Malaysia. The second limitation of this study is that in Malaysia, companies are very restricted and they are not patient enough to answer all the questions accurately and it will lead to non-accurate results, although the result of this study is close to those done in other countries. The third considered limitation is generalization. Because of lack of access to all the IT companies in Malaysia, these results could not be generalized to all companies in Malaysia. It is recommended to researchers who want to investigate more on cloud computing adoption that, they can choose more companies as a sample from all around Malaysia and not only Kuala Lumpur to have a more accurate and reliable data and results, and to make the study more generalizable. In addition, other researchers can work on other factors like Costs, Security, etc. to see the problem from different points of view. Finally, those who have enough time for research can use “Interview” to get a deeper viewpoint of respondents and the result would be more accurate and reliable.

This study provides some recommendations to help companies, which are looking for efficient and effective implementation of cloud computing. Training staffs about cloud computing could be the first recommendation of this study. Some companies think that only adopting the new technology in their companies is enough and the rest will go fine, but statistics and measures are representative of this fact that managers should train employees on how to use this technology to reach their goals fast. In this case, management should gather all the staffs and provide a meeting to introduce cloud computing to them and talk about the benefits that this new technology has and also how this system can make their job easier and more convenient than the system they used before. Therefore, the eagerness of employees to deal with cloud computing will increase and it will increase the efficiency of using it. This study shows that the related benefits, compatibility of new technology with previous technology and support of managers have the most impact on good adoption of cloud computing in Malaysia. Companies should use some methods to show the benefits of cloud computing to employees and explain the whole system in a way that staffs feel that it is not hard to continue their jobs by switching to the newly implemented technology and also convince the employees that the management will support them in using the new technology much easier.

However in this research, Complexity as an independent variable does not have an important effect on cloud computing adoption but managers should know that complexity could decrease usage, because employees are looking for a technology that makes their job easier not harder, so they should keep this technology as easy as possible.

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APENDIX A

Table 4. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
(Constant)	-.203	1.486		-.137	.892			
RelativeAdvantage	.374	.091	.451	4.130	.000	.580	.542	.359
Complexity	-.177	.175	-.133	-1.013	.317	.065	-.156	-.088
Compatibility	.507	.164	.687	3.097	.004	.567	.435	.269
ManagementSupport	.561	.197	.322	2.853	.007	.298	.407	.248
CompanySize	.092	.247	.054	.375	.710	.384	.058	.033
TechReadiness	.104	.120	.109	.864	.393	.502	.134	.075
CompetitivePressure	-.303	.192	-.287	-1.579	.122	.258	-.239	-.137
TradingPartner	-.153	.212	-.111	-.722	.474	.444	-.112	-.063

a. Dependent Variable: CCAdoption

APPENDIX B

Table 5 Correlation

Correlations

		CCAdoption	RelativeAdvantage	Complexity	Compatibility	Management Support	CompanySize	TechReadiness	CompetitivePressure	TradingPartner
Pearson Correlation	CCAdoption	1.000	.580	.065	.567	.298	.384	.502	.258	.444
	RelativeAdvantage	.580	1.000	-.071	.244	-.211	.391	.450	.127	.126
	Complexity	.065	-.071	1.000	.545	.228	-.034	.048	.708	.167
	Compatibility	.567	.244	.545	1.000	.296	.355	.264	.779	.702
	ManagementSupport	.298	-.211	.228	.296	1.000	-.259	.067	.236	.246
	CompanySize	.384	.391	-.034	.355	-.259	1.000	.592	.070	.502
	TechReadiness	.502	.450	.048	.264	.067	.592	1.000	.033	.262
	CompetitivePressure	.258	.127	.708	.779	.236	.070	.033	1.000	.341
	TradingPartner	.444	.126	.167	.702	.246	.502	.262	.341	1.000
Sig. (1-tailed)	CCAdoption	.	.000	.326	.000	.018	.003	.000	.035	.001
	RelativeAdvantage	.000	.	.312	.044	.070	.003	.001	.190	.191
	Complexity	.326	.312	.	.000	.055	.407	.370	.000	.124
	Compatibility	.000	.044	.000	.	.019	.006	.032	.000	.000
	ManagementSupport	.018	.070	.055	.019	.	.035	.322	.049	.043
	CompanySize	.003	.003	.407	.006	.035	.	.000	.314	.000
	TechReadiness	.000	.001	.370	.032	.322	.000	.	.409	.033
	CompetitivePressure	.035	.190	.000	.000	.049	.314	.409	.	.008
	TradingPartner	.001	.191	.124	.000	.043	.000	.033	.008	.
N	CCAdoption	50	50	50	50	50	50	50	50	50
	RelativeAdvantage	50	50	50	50	50	50	50	50	50
	Complexity	50	50	50	50	50	50	50	50	50
	Compatibility	50	50	50	50	50	50	50	50	50
	ManagementSupport	50	50	50	50	50	50	50	50	50
	CompanySize	50	50	50	50	50	50	50	50	50
	TechReadiness	50	50	50	50	50	50	50	50	50
	CompetitivePressure	50	50	50	50	50	50	50	50	50
	TradingPartner	50	50	50	50	50	50	50	50	50