

Yousef Alharbi¹
Fazle Rabbi
Rabee Alqahtani

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UNDERSTANDING UNIVERSITY STUDENT'S INTENTION TO USE QUALITY CLOUD STORAGE SERVICES

Abstract: *The use of various Internet networks and applications, which provides cost-effective, easy-to-access, and several free and pay service have been the focus of cloud storage systems over the last few years. Throughout technology management and education, the idea of cloud storage has received considerable attention, but we are interested in investigating the purpose of using cloud storage facilities at Malaysian universities. Thus, we identified that perceived usefulness, perceived ease of use social influence, facilitating conditions, and personal innovativeness have an effect on the intention of cloud storage usage. We also developed the hypotheses that these five factors can influence the intention of cloud storage usage. Through an online survey questionnaire, 366 undergraduates with convenience sampling and analyzed using the Social Sciences Application Statistical Suite (SPSS) answer data collection. Our research has shown that social influence does not show a vital role in influencing the intention of scholars to utilise cloud storage, while other influences have been recognized as they influence the intention. The results have consequences for researchers, manufacturers, and educational institutions both theoretically and practically.*

Keywords: *Cloud Storage Services; Intention to Use; Technology Acceptance Model (TAM); Higher Education.*

1. Introduction

In this century, the growth of innovation and technology is changing the lives of every individual in the world. Cloud computing has now become the industry's buzzword. Although it is not an entirely new idea, it has now become omnibus because of the growth of the Internet and telecommunications, mobile devices, increased connectivity, and end-user mobility requirements. The Internet has changed the way we do things and many facets of our culture significantly. Innovation is ignited differently than before, with new

ideas quickly spread across national boundaries (Xue, 2005). This development is no exception for Malaysia. As with many other nations, Malaysia's Internet is now omnipresent (Azman et al., 2014). Most of the time 86% of Malaysians spend up to 20 hours in Internet a week (which is about 32.8% for 0-10 hours and 11-20 hours a week), mostly in the home (82%) after school, from 6 to 12.00 pm (51%). Cloud storage is trendy among internet users today as they can quickly obtain similar

¹ Corresponding author: Yousef Alharbi
Email: y.gh.9090@gmail.com

information in other devices and transfer the file to another user. The way information is stored and the way that the current cloud storage runs the system. Cloud storage is capable of providing everything in the "cloud," which is ambiguous and accessible online from a computer and a server collection (Wu, 2010). It is not only about computer storage, but it is also possible to install cloud storage on mobile devices and laptops (Arpaci, 2016). Cloud Computing is a centralized, dynamically scalable distributed computing model, which provides computer power, space and business applications as Internet services (Stanoevska-Slabeva et al., 2010).

Different companies offer many types of cloud storage service products on the market. For instance, "Dropbox" through "Dropbox inc," "Google Drive" through "Google," "One Drive" through "Microsoft Corporation." (Bocchi, 2015). Cloud storage in the markets has its advantages, according to Drago et al. (2013), which indicates that these cloud storages have different markets and that customers can use the cloud service for their purpose. Cloud storage is commonly used for personal use among individuals (Ambrose & Ananth, 2010).

Users of cloud storage can be categorized as many types. Student, company, and many other people, for example. The cloud storage feature will boost its user's performance in terms of mission. According to Ercan (2010), cloud computing has been adopted dramatically by academic industries because it has been embraced effectively by both students and officers to get the tools from the network. The implement of cloud storage has been shown to provide the student with a lot of freedom, because information is available electronically, data security is available, data can be accessed anywhere (Fernandez, 2012).

Cloud storage applications not only for training effectiveness. It can also achieve the educational institution's efficiency and economic effect. For their daily operations,

several educational institutions have implemented cloud storage. Many types of work addressed here depend on companies adopting and using cloud computing technologies. Nonetheless, a small number of studies analyze the acceptance conditions in educational environments for cloud computing technology.

1.1. Research Gap

Students have used cloud storage systems today and have grown over the last few years. Cloud storage has been substituted for items like USB flash or hard backup. The same benefits to view and exchange are available everywhere by storing information and media files in the cloud. A number of recent cloud research projects have taken place (Alamri et al. 2014; Navimipour et al., 2015).

Current research has been carried out about cloud. Shin (2015) has studied the factors influencing future consumers' use of cloud computing. The findings show that perceived cloud services influence user preferences and behavior, including ease of use, connectivity, affordability, protection and trustworthiness. One study has addressed potential risks involved with the use of government cloud, including user assurance, continuing service provision, illegal access controls, security protocols, transparency and data protection and legal competence.

Most categories of ordinary customers and specialist businesses, government departments and institutions, such as educational establishments, are using more and more cloud storage facilities. Thanks to its simplicity and efficiency, the new trend in data storage is cloud computing. A variety of cloud storage issues and concerns persist. The development of cloud-based ICT systems has increased from \$43 million in 2012 to some \$900 million by 2020. In Malaysia, it is expected to grow. Malaysia's cloud market is not large, but is enormous.

Cloud stakeholders from Malaysia and

public and private agencies recently launched efforts to encourage cloud services among government and SMEs. Some authors have been investigating Malaysian small and medium-sized companies' understanding and acceptance of cloud computing. Additionally, it looks at the reasons why technology was not implemented. For several factors, the analysis is important. The report further provides cloud storage providers with realistic insights into the extent of cloud storage knowledge so that more steps are taken to improve its recognition and adoption. The study results provide an important measure of the level of technology use by companies in Malaysia, since the IT industry forms one of the country's major economic zones.

Since small and medium-sized entrepreneurs are the most common external source of information, their level of cloud awareness will activate Malaysia's government's initiatives to increase the degree of cloud adoption of SMEs. Students quickly lose their pen and paper moments. Therefore, we should be open-minded to pursue this trend when in this age of globalization and the younger generation. There are many problems with working on the student to get them able to attend. They need something to make it easier for them. According to some papers, cloud use means you are constantly able to access your major digital assets, whether it is Word reports, tablets or photos.

Cloud storage has several strengths to graduates. Cloud storage is a perfect idea for distracted students, as it provides many unique advantages that even the most frenzied student organizes. This can be done as well as students for less than \$20 per month on a small cloud server, which permits budgets to stay. The average student now stores everything online, resulting in a massive number of documents and files.

We also proposed the advantages of cloud computing for education institutions, for example: provision of on-line software to assist in teaching, portable learning

environments preparation, virtual learning assistance, the development of improved curriculum, learning and evaluation tools and adaptability of learning systems (Gonzalez-Martínez et al., 2015).

In the meantime some authors identified a number of issues about transparency trust, such as open facilities, areas for the legal system, intelligence fields, restricted sharing of knowledge and confidentiality of information. Shin investigated the recognition by government agencies, based upon the TAM of distributed computing administrations. The results show that the importance and simplicity of cloud computing are significant predecessors. These reports rely on the incorporation and use of cloud storage devices. For educational contexts, there is less research on the determinant of cloud computing. The present study indicates that this issue must be solved using cloud storage facilities.

2. Literature Review

2.1. Perceived Usefulness

Perceived usefulness is defined as the degree to which a person trusts that utilizing an IT will improve their job performance (Davis, 1989). Rewards, benefits, and bonuses for consistent performance in a business atmosphere improve and a widely regarded system that the consumer also feels is beneficial to strengthen. This is based on the term "useful," as it is also "capable of profit." The TAM points to two convictions: potential profit and perceived ease of use. The personal willingness of individuals to use IT is defined the expected advantage is defined by a person's confidence that using an IT enhances the efficiency of his / her job when someone using an IT describes easiness as effortless. Many external factors (e.g., IT technology, organization, or the user's personal characteristics) affect both these beliefs. For many reasons, people use cloud storage from storing and exchanging

data, including commonly-used files, to handling e-mails, saving media and creating a disaster recovery-proof backup solution. Cloud storage is generally less expensive and more versatile than standard hard drive management (Tahir, 2016). Arpaci (2016) notes that a student can be described as the degree that improves its academic performance by using mobile cloud storage services. Meier and Khodabandloo (2017) have reported that in terms of user use, the TPM model follow the same definition as the TAM model.

When complemented by the TAM, the TPM also applies to expected utility as the level of efficiency and success of the customer with the use of a given development program. The TPM model refers to the input component that is directly associated with the perceived value. If a customer feels his perceived cost is too large, given his sense of perceived utility, he will most likely reject the information system. A program that is highly influenced by its perceived utility indicates that a consumer believes in a significant association between use and efficiency (Davis 1989).

2.2. Percieved Ease of Use

Davis (1989) implemented the perceived ease of use under the TAM. Davis (1989) described perceived convenience, as it is simple to use to calculate people's faith in technologies. Davis also described perceived easy-to-use initiatives, though, that they could affect perceived value. In addition, there is some improvement in perceived ease of use due to the improvement of the TAM. TAM was also advanced as Technology Acceptance Theory 2 (TAM 2) by Venkatesh and Davis (2000). TAM 2 also holds perceived ease of use as variables that may affect perceived utility. The explanation for the ease of use perceived will affect the usability perceived. TAM 2 notes that a perceived utility is one of the variables that may influence perceived functionality in the

cognitive instrument phase. All variables that may affect perceived value are cognitive processes component.

The perceived ease is therefore also correlated with the expected utility. In other words, the user's intent as seen as simple to use and sense of use, these two components are independently operated inter-dependent (Martins et al., 2014) to evaluate the program and the user's behaviour. The function of the consumer is thus defined. The improvement of TAM is UTAUT, which introduced by Venkatesh et al (2003). In this UTAUT, it is a combination of TAM and other theories. These theories are the innovation diffusion theory (IDT), the motivational model (TRA), and the theory of planned behavior (TPB). In UTAUT, there are four main factors. One of the main factors from this model is "effort expectancy." These key factors mean it has the same meaning with Perceived Ease of Use in TAM.

2.3. Social Influece

With relation to the views of other key individuals about the use of health IT, subjective norm (SN), or social impact was clearly established. While this concept is in line with the Planned Behavior Theory (TPB). This excludes certain ways in which social factors affect behaviour, for instance through a culture of IT safety, or when individuals are affected by the behavior of others around them. This model provides useful mechanisms for examining factors that influence the states of mind for the distributed personal computing and for defining ways in which the invention is actually used (Moqbel et al., 2014). According to Fishbein and Ajzen (1975), social impact can be defined by undergraduate studies as awareness of the need or need to use portable distributed storage administrations by many people that are critical of them.

This theory clarifies that mindsets are closely related to the intentions of behavior, predict their actual actions and alter mentalities through "social influence" or by social pressures. Others' approach to one technology also affects an individual's intent to use this technology, e.g. when a person's family or peers frequently convince the person to join social networks (Ellison et al., 2007). Students with higher social expectations are more optimistic about the use of these programs. This suggests that the more positive attitudes and intentions towards the use of these services are the more favorable the subjective standards of mobile cloud storage. One of development adoption's most esteemed ideas is TAM. A wide range of tools and applications has been used. In the estimation and implementation of several IT systems, TAM has been shown to be extremely efficient. This demonstrates how the thoughts, beliefs and attitudes of undergraduate students are affected by external factors (Moqbel et al., 2014).

2.4. Facilitating Condition

Ghalandari (2012) indicated that conditions for facilitation are a variable that refers to the level to which an individual recognizes the necessary technical and organizational infrastructure for using the system. Initially, facilitative conditions are characterized as the environmental goals, which stakeholders agree to make an action easy to carry out (Shuhaiber, 2016). Such empirical variables are theorized to directly influence the decision to use IT services. Conditions of facilitation may include relevant partners (students and faculty members), technical infrastructure and technical support for interactive education systems (Shuhaiber, 2016).

2.5. Personal Innovativeness

Based on Rogers's innovation dissemination theory, it has been stated that innovation is expected to be adopted by individuals with higher personal innovation earlier (June, 2014). This architecture will, rather than internationally, be re-conceived by a specific area. The PIIT thus became a person's readiness to check every new IT (June 2014). Chang (2014) said that the level to which an individual feels he is inclined to make use of the new technologies could be described as personal innovation. Personal creativity is the innate innovative personality of an individual with regard to new technologies, and the innovative personality of an individual is generally considered a very nature of risk-taking tendency (Chang, 2014).

2.6. Theoretical Background

The theoretical framework that we are using is the TAM by Davis (1989). According to Davis (1989), the TAM is a theory that study about the reason for user applies some technologies. A main reason for the use of technology is the belief that the perceived utility and perceived ease of use. In this study, we will test Malaysian undergraduates' purpose of using cloud storage. Davis (2003) stated UTAUT is a theory that upgraded from TAM. It was included the other factors such as facilitating conditions, social influence, and personal innovativeness in the old models. Figure 1 shows the theoretical framework of this study. Table 1 shows the hypothesis development.

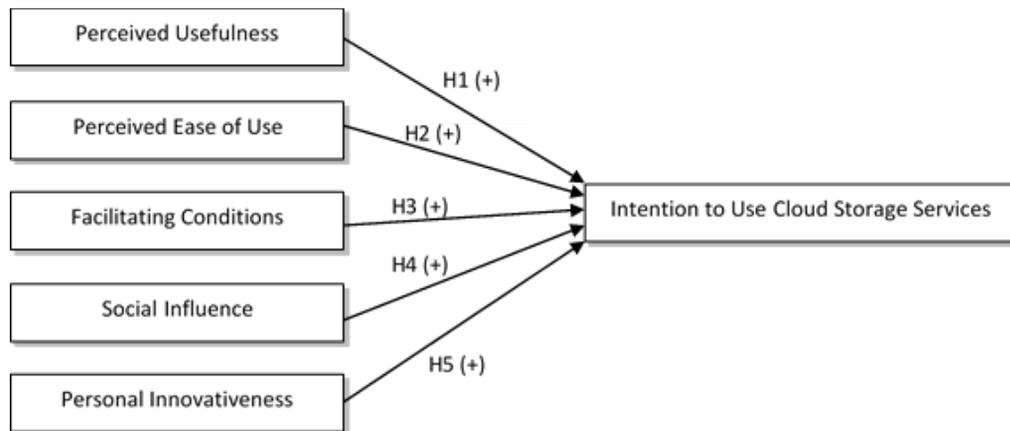


Figure 1. Theoretical Framework

Table 1. Hypothesis Development

Hypothesis development
H1 There is an effect of perceived usefulness on intention to use cloud storage services among Malaysian Undergraduates.
H2 There is an effect of perceived ease of use on intention to use cloud storage services Malaysian Undergraduates.
H3 There is an effect of facilitating conditions on intention to use cloud storage services Malaysian Undergraduates.
H4 There is an effect of social influence on intention to use cloud storage services Malaysian Undergraduates.
H5 There is an effect of personal innovativeness on intention to use cloud storage services Malaysian Undergraduates.

3. Methodology

3.1. Population and Sample size

For this project research, the total of research population is 22,000 students of undergraduate Universiti Utara Malaysia. They are currently studying in College of Business (COB), College of Arts and Sciences (CAS) and College of Law, Government and International Studies (COLGIS). The sample used in this research was students from every semester and above who are an intention to use cloud storage service.

The study used convenience sampling because it involves using participants, and

our target sample is around 378 undergraduate students. This is because they are convenient and available (Cheery, 2018). Students who responded to this survey may be attracted by using cloud storage services. For instance, students can expect cloud storage service will be useful and accomplish tasks more quickly and increase productivity. Most school systems allow students to use previously unavailable computer software either because of cost or because the capability of local technology is limited. We now have many apps for users to use and to make it easier. The most relevant for university students is largely underfunded and represents a fragmented student community, where long journeys

demand an even larger investment of time. Cloud storage can be highly beneficial in education settings (Behrend et al., 2011).

3.2. Data Collection Method

We collected data using a questionnaire. In this report, an online survey system (Google form) is used to collect data on factors that support UUM undergraduate use cloud storage. Firstly, the instruction and the explanation of the type of cloud storage are explained, and only the active UUM undergraduates are asked to complete the questionnaire. The questions contained in the questionnaire are closed-ended questions instead of open-ended questions as it is easier for researchers to code the collected data for subsequent analysis. The questionnaire's item also uses nominal scale, ordinal scale, and Likert scale, which are considered as closed-ended questions.

In this questionnaire, there is 2 section. The first section contains 22 questions that measured in the Likert Scale, which is measured from "strongly disagree" to strongly agree." The Likert scale is designed to examine the level of agreement or disagreement of respondents towards a question that asked in the questionnaire. For example, the question of "I expect cloud storage services will be useful in my life." has been asked with 7-point Likert scale with the following anchors: 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree and 7 = Strongly Agree. The items for perceived usefulness, perceived ease of use, facilitating conditions, and personal innovativeness were adopted from Thakur and Srivastava (2014) and items for social influence were adopted from Venkatesh et al. (2012). In total 366 online questionnaires collected from the respondents by using the convenience sampling method.

4. Findings

4.1. Demographic Profiles

We analyze the demographic background of the respondents (Table 2). With relation to data collected, we may assess the factors influencing UUM graduates 'intention to use cloud storage services. Demographic data will be analyzed by using the frequency analysis. The outcome shows that respondents were at the age of 22 years old, Malaysian, and currently in the third year of their study were the majority.

Table 2. Demographic Profiles

	Frequency	Percentage (%)
Age		
19	2	.5
20	29	7.9
21	47	12.8
22	103	28.1
23	85	23.2
24	77	21.0
25	17	4.6
26	1	.3
27	1	.3
28	1	.3
35	3	.8
Total	366	100.0
Nationality		
Malaysian	364	99.5
Others	2	.5
Total	366	100.0
Study Year		
First Year	52	14.2
Second Year	94	25.7
Third Year	189	51.6
Forth Year	24	6.6
Fifth Year	7	1.9
Total	366	100.0

Table 3. Descriptive Statistics

Variables	Mean	Std. deviation	Skewness	Kurtosis
USE	5.4331	1.18537	-.910	1.327
EOU	5.3388	1.10401	-.911	1.509
FAC	5.1633	1.10144	-.646	.890
SOC	4.8506	1.27385	-.507	.020
INN	5.0861	1.09017	-.542	.798
INT	5.5719	1.06507	-.859	1.579

Table 3 shows a summary of the descriptive statistics of this study. The means of the variables in the study were 5.43 (Perceived usefulness (USE)), 5.33 (Perceived ease of use (EOU)), 5.16 facilitating conditions (FAC), 4.85 Social influence (SOC), 5.09 Personal innovativeness (INN) and 5.57 Intention to use (INT). The skewness and kurtosis are in the range of +2 and -2, so it is considered the data is normal.

4.2. Reliability Test

Reliability measure is an indication of the degree to which the item measures the concept is without bias or free from random error. All of the six variables were tested for the internal consistency reliability by using Cronbach’s alpha. The alpha of 0.70 and above is considered acceptable, the alpha of 0.80 and above is assumed good, and the alpha of 0.90 and above is deemed excellent.

Table 4. Reliability Test

Variables	Number of item	Cronbach Alpha
Perceived usefulness (USE)	4	.938
Perceived ease of use (EOU)	3	.875
facilitating conditions (FAC)	4	.882
Social influence (SOC)	3	.836
Personal innovativeness (INN)	4	.841
Intention to use (INT)	3	.922

4.3 Correlation Analysis

Pearson’s correlation coefficient utilized to check the significance of a linear relationship or association between two variables. The correlation coefficient ranges from -1.00 to +1.00, with zero demonstrating completely no relationship between metric variables (Hair, Babin, Money, & Samouel 2003). The correlation value between perceived usefulness and intention to use cloud storage services is 0.722, while the correlation coefficient value between perceived ease of use and intention to use cloud storage services is 0.749. After that, the correlation coefficient value between facilitating

conditions and intention to use cloud storage services is 0.730, and the correlation coefficient value between social influence and intention to use cloud storage services is 0.541. Lastly, the correlation coefficient value between personal innovativeness and intention to use cloud storage services is 0.614.

4.4. Multiple Regression

Multiple regression analysis is conducted to identify the linear relationship between perceived usefulness, perceived ease of use, facilitating condition, social influence, personal innovativeness to use cloud storage services among UUM

undergraduates. Table 5 shows the model summary for the R square; there are have 65% supports for intention to use cloud storage services, and 35% refuse for

intention to use cloud storage services. Refer to Table 6 and Table 7 for Anova and Coefficients findings.

Table 5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.808 ^a	0.652	0.648	0.63226

Table 6. Anova

Model	Sum square	df	Mean Square	F	Sig.
Regression	270.138	5	54.028	135.151	.000 ^b
Residual	143.912	360	0.400		
Total	414.050	365			

a. Dependent variable: INT;

b. Predictors: (Constant, INN, USE, SOC, EOU,FAC)

Table 7. Coefficients

Model	Unstandardised B	Coefficients Std. Error	Standardised Coefficients Beta	t	Sig.
(Constant)	0.978	0.183		5.353	0.000
USE	0.232	0.047	0.258	4.955	0.000
EOU	0.308	0.054	0.319	5.679	0.000
FAC	0.146	0.060	0.151	2.438	0.015
SOC	0.025	0.036	0.030	0.708	0.479
INN	0.160	0.043	0.164	3.742	0.000

5. Discussions and Conclusion

The outcomes show that cloud storage is affected by perceived value, perceived efficiency, social influence, facilitative

conditions and personal innovation. However, it revealed that social influence was not a vital part of the students ' use of cloud storage. The outcomes are listed in Table 8.

Table 8. Summary of findings

	Hypotheses	Results
H1	There is an effect of perceived usefulness on intention to use cloud storage services among Malaysian Undergraduates.	Supported
H2	There is an effect of perceived ease of use on intention to use cloud storage services among Malaysian Undergraduates.	Supported
H3	There is an effect of facilitating conditions on intention to use cloud storage services among Malaysian Undergraduates.	Supported
H4	There is an effect of social influence on intention to use cloud storage services among Malaysian Undergraduates.	Rejected
H5	There is an effect of personal innovativeness on intention to use cloud storage services among Malaysian Undergraduates.	Supported

a. Dependent Variable: INT

5.1. Implications

The study provides credence to the TAM theory where the perceived usefulness, perceived ease of use social influence, facilitating conditions, and personal innovativeness have an effect on the intention of cloud storage usage. Furthermore, the outcomes confirm that TAM is suitable to provide logical reasons for the use of cloud storage. In addition, this research can explain why someone wants to use cloud storage to complete his or her job. This work however indicates that the purpose of using the cloud storage method among undergraduates does not affect social influence. Cloud storage services should search at elements that effect the desire of individual users to use cloud storage to make a meaningful difference. The outcomes would help service providers to effectively implement competitive cloud storage strategies. Through partnering with cloud providers, institutions are able to use these tools.

Colleges should have cloud storage skills. It is also essential for the universities to encourage the educational use of cloud storage services.

5.2. Suggestions for future study

Future studies could include undergraduates or postgraduates from other universities which is not included in this study, which help to establish the possibility of the proposed conceptual would model being generalized. Ultimately, more work can be done to analyze possible differences in the users' cloud storage needs and expectations from different jobs.

Future research may consider potential mediators or moderators that may influence the link between perceived usefulness, perceived ease of use of social influence, facilitating conditions, social influence, and personal innovation for using cloud storage services.

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Yousef Alharbi

 University of Newcastle,
Sydney, Australia
y.gh.9090@gmail.com
Fazle Rabbi

 Australian Computer
Society,
Melbourne, Australia
bilirabbi@yahoo.com
Rabee Alqahtani

 University of Wollongong,
Sydney, Australia
rabee3_1983@hotmail.com
