

CONSUMER BEHAVIOR OF INTEREST AND USE OF CLOUD COMPUTING TECHNOLOGY AS SUPPORT TO BUSINESS ACTIVITIES

JAM

16, 1

Received, March 2017

Revised, June 2017

September 2017

Accepted, February 2018

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Abstract: The objective of this study is to assess the various factors that determine consumer behavioral intention and actual use of cloud computing as a technology considered capable of supporting business activities. The population of this research is the collegestudents in Malang. The data was collected through survey method. 153 questionnaires were distributed directly to the respondent or via an internet link. The study shows that there are several factors determining the behavior of individual's intention and actual usage of cloud computing technology, that is the compatibility and the ease of use on cloud computing. Both factors proved to have partial mediation effect on the actual usage of cloud computing through the behavioral intention of using cloud computing. Other findings are positive effects of the usefulness of cloud computing on behavioral intention on using cloud computing, and the cloud computing user's image on the actual usage of cloud computing. Business may consider cloud computing technology as well as those factors to be applied to gaining more consumers and can be used as a breakthrough to add new competitive advantage.

Keywords: Consumers Behavior, Behavioral Intention, Actual Usage of Technology, Cloud Computing Technology, University Students in Malang



Journal of Applied
Management (JAM)
Volume 16 Number 1,
March 2018
Indexed in Google Scholar

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DOI: [http://dx.doi.org/](http://dx.doi.org/10.21776/ub.jam.2018.016.01.05)
10.21776/ub.jam.2018.016.
01.05

Human behavior is one of the things that need to be learned in Managing and developing business, especially about consumer behavior. Businesses certainly have their own way to know and meet the interests and expectations of consumers. technology has been believed to help business performance. In addition, the application of a particular form of technology can be a form of competitive advantage. This underlies the

argument that the application of technology can also act as a breakthrough to achieve success in business. One form of technology that became a major phenomenon in the last two decades is cloud computing technology (Strauss, Kristandl, and Quinn, 2015). Cloud computing is a technology that adds to the aspect of technology development has attracted many business people in helping their operational needs (Jeffery and Neidecker-Lutz, 2010 and Sabi, et al., 2016), making it more practical and economical in terms of time and financially. Monroy, Arias, and Guerrero (2013) even mentioned that cloud computing is an important element found in the world after water, electricity, air and telephone equipment. So, it is not excessive if the use of cloud

computing is included in the latest trends that reveal the progress of the embodiment of technological sophistication of the latest generation (Hutchinson, Ward, and Castilon, 2009).

Previous research has discussed that cloud computing is a cutting-edge technological innovation and attracts a wide range of people to adapt on the basis of the benefits it can generate. The topic of diffusion of cloud computing is also classified as a significant research topic (Gartner, 2009 and Pyke, 2009), so that technology is increasingly in demand and adapted by various parties. It underlies the main purpose of this article, which is to focus on discussing the topic of adopting cloud computing technology, specifically from the consumer side.

Based on previous research such as the Diffusion of Innovation Framework (Rogers, 1995) and the Technology Acceptance Model (Davis, 1989), this article can provide evidence that consumers are also users of cloud computing technology, either based on interest or just use only. The implication is that businesses can consider the technology to be applied to their business as a tool to attract consumers, as well as to be used as a breakthrough to increase competitive advantage in business. In addition, the study also offers an explanation of the evidence on constructs that are determinants of interest and use of cloud computing technologies.

RESEARCH

METHODS

The approach used in this study is the positivism approach with the type of quantitative research. Data analysis techniques will be performed using

Structural Equation Modeling-Partial Least Square (SEM-PLS) with WarpPLS 5.0 program. The population in this study are students in Malang. The sample of research taken with cluster sampling technique includes students of Faculty of Economics at the best university in Malang City, which is Universitas Brawijaya Malang, Universitas Negeri Malang dan Universitas Muhammadiyah Malang based on the ranking of 30 best universities in Indonesia by Kemeristek Dikti (Ministry Research Technology and Higher Education Republic of Indonesia) in 2016 (Kementerian Riset Teknologi dan Pendidikan Tinggi Republik Indonesia, 2016). The selection of university for research sample is done by cluster sampling technique because the technique is suitable to be used if the object to be researched or the source of research data is quite wide (Sugiyono, 2011).

Students are selected as research objects because they include the highest consumer using internet-based technology (PIP College, 2002, Novianto, 2013, and Firmansyah and Noorlaily, 2006). In addition, cloud computing technology service base is generally very affordable, or even costly, so that the students are also more acting as consumers who take advantage of facilities on the technology services. Malang City was chosen as a research location because of its predicate as international education city (Rahma, 2016).

Questionnaires were distributed based on conventional techniques, and as many as 166 questionnaires were collected. the pilot test was conducted to 48 respondents from various backgrounds of science and also a profession which majority existed among students and faculty before the questionnaires

Table 1 Model Evaluation Results

Construct	AVEs	Composite Reliability	Cronbach Alpha
Use of cloud computing technology (PE)	0,691	0,870	0,777
Interest in using cloud computing technology (MI)	0,807	0,926	0,880
Compatibility of cloud computing technology (KOM)	0,795	0,921	0,870
Usage of cloud computing technology (KEG)	0,872	0,953	0,926
Ease of use of cloud computing technology (KEM)	0,848	0,943	0,910
Security of cloud computing technology (KEA)	0,752	0,900	0,830
User impression cloud computing technology (KES)	0,799	0,922	0,873

were distributed, with questionnaires disseminated through internet help. From the results of the pilot test can be concluded that the entire construct along with the instrument questionnaire covered therein has been included in the category of valid and reliable.

RESULTS

Test Model Measurement (Outer Model) and Structural Model Test (Inner Model)

From the test results contained in Table 1, obtained the number AVEs that have been above the number 0.50. The Loadings coefficients in Table 2 also have values greater than 0.70 and are significant with p-value <0.0005 (below 0.05), so it can be said to meet the criteria of convergent validity

(Hartono, 2009). The criteria of discriminant validity are also met because the highest Loadings coefficients have accumulated in each of the defined constructs (see Table 2). Based on the evidence, the proposed research model is generally valid. Instrument or measurement items in this study are also considered reliable. This can be seen from the Composite Reliability number exceeding 0.70 and Cronbach Alpha has exceeded 0.60 (see Table 1).

The result of the Q-squared coefficient of the endogenous variable (dependent) obtained for the construct of Interest Using Cloud Computing Technology (MI) is 0.613, and the Use of cloud computing technology construct (PE) is 0.554. The two Q-squared coefficients are worth more than 0. It can be concluded that the estimation of the endogenous

Table 2 Output Loadings Results

		KOM	KEG	KEM	KEA	KES	BI	PE
Compatibility of cloud computing technology (KOM)	KOM1	(0.835)	0.213	0.022	0.100	-0.139	0.127	-0.161
	KOM2	(0.933)	-0.051	-0.124	-0.033	0.009	-0.074	-0.013
	KOM3	(0.904)	-0.144	0.107	-0.058	0.119	-0.041	0.162
Usage of cloud computing technology (KEG)	KEG2	0.045	(0.928)	0.108	0.090	-0.031	-0.146	-0.049
	KEG3	-0.039	(0.935)	-0.044	-0.070	0.066	0.060	0.015
	KEG4	-0.006	(0.938)	-0.063	-0.019	-0.035	0.084	0.034
Ease of use of cloud computing technology (KEM)	KEM1	-0.092	-0.004	(0.924)	-0.067	-0.066	0.043	0.000
	KEM2	-0.039	0.023	(0.934)	0.019	0.022	-0.080	0.088
	KEM4	0.135	-0.019	(0.904)	0.049	0.045	0.039	-0.092
Security of cloud computing technology (KEA)	KEA2	0.068	0.073	0.097	(0.746)	-0.157	-0.182	0.080
	KEA3	-0.035	-0.006	-0.034	(0.927)	0.020	0.071	-0.036
	KEA4	-0.020	-0.053	-0.044	(0.917)	0.108	0.077	-0.029
User impression cloud computing technology (KES)	KES1	-0.053	0.056	0.069	0.020	(0.890)	0.039	-0.092
	KES2	0.004	0.079	-0.024	0.022	(0.931)	-0.044	0.045
	KES3	0.051	-0.144	-0.046	-0.044	(0.858)	0.008	0.047
Interest in using cloud computing technology (MI)	MI1	0.022	-0.047	-0.022	-0.051	0.010	(0.867)	0.255
	MI2	0.066	0.078	0.121	-0.031	0.039	(0.920)	-0.231
	MI3	-0.088	-0.034	-0.101	0.080	-0.049	(0.907)	-0.009
Use of cloud computing technology (PE)	PE1	-0.346	0.201	-0.073	0.016	-0.088	-0.112	(0.818)
	PE2	0.079	0.069	-0.015	0.088	-0.050	0.085	(0.828)
	PE3	0.256	-0.261	0.085	-0.101	0.134	0.025	(0.849)

(dependent) variable on the exogenous (independent) variable on the research model has good predictive validity (Sholihin and Ratmono, 2013). The number of R-squared constructs of Interest in using cloud computing technology (MI) is 0.606 (60.6%) and Use of cloud computing technology (PE) is 0.663 (66.3%), ie 39.4% and 33.7% of the second variance of the construct is influenced by other exogenous variables not proposed in this study.

The Goodness of Fit of the proposed research model was measured using Tenenhaus GoF criteria, with the Fit and Quality Indices value being 0.710 (including the large category for exceeding 0.36). The P-value value of APC is 0.0015, ARS is <0.0005 and AARS is <0.0005. All three have been below the defined level of significance, which is 0.05. Also obtained the AVIF value of 1.844 and AFVIF value of 2.267. Both are ideal because of the amount of ≤ 3 , 3. These results prove that the models in this study include fit and quality.

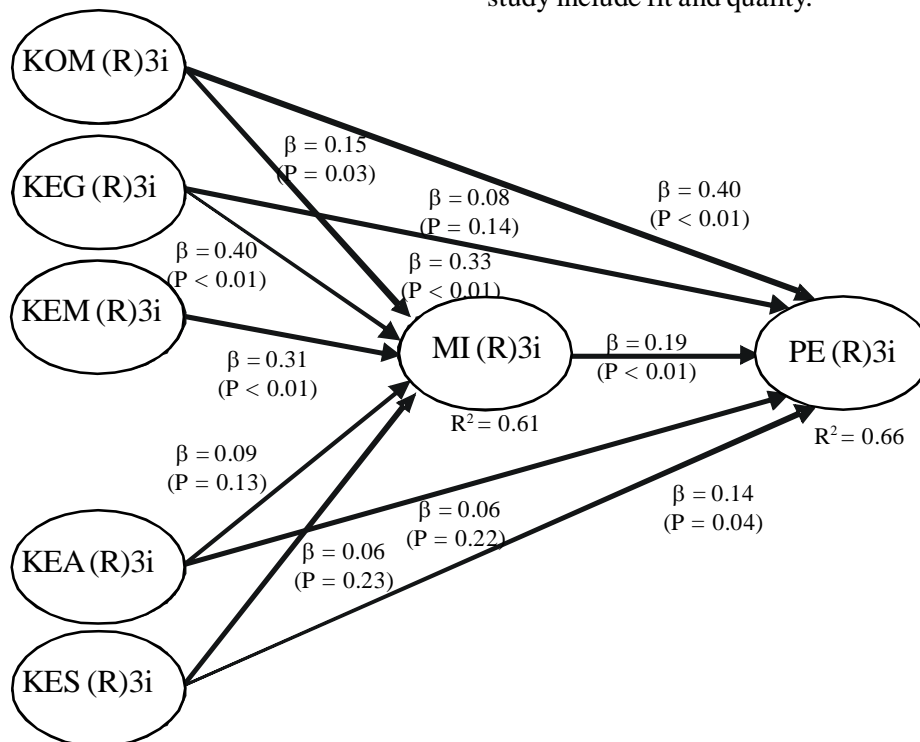


Figure 1 Results of Research with Mediation Variables

Hypothesis testing

Tests conducted in this study using p-value parameters and beta coefficient (β). The significant level in the selected study was 5%. In addition, the hypothesis taken is a hypothesis that indicates a positive direction, so that the p-value on the test output need to be divided first two before the conclusion of acceptance of the hypothesis. For mediation testing, we used a strategy of causal steps initiated by Baron and Kenny (1986). Based on the

conditions set forth in the strategy, there must be a significant relationship between exogenous variables with mediation variables and between mediation variables and endogenous variables. The test is performed by including a mediation variable. Another requirement is that there is a significant relationship between exogenous variables and endogenous variables. To find out, testing is done without any mediation variables. Figure 1 shows a significant positive relationship between exogenous variables of

KOM, KEG, and KEM with mediation variables MI. In addition, there was also a significant relationship between MI mediation variables and endogenous variables of PE. By testing separately, it is also known that there is a significant positive relationship between exogenous variables of KOM, KEM, and KES with endogenous variables of PE (see Figure 2). Thus, mediation testing can be done only on exogenous variables of KOM and KEM.

Furthermore, the researcher can further analyze the full or partial mediation effect of the KOM and KEM constructs that have been eligible for

mediation testing. Sholihin and Ratmono (2013) in the literature provide an explanation of the method of mediation analysis by Baron and Kenny (1986), that if p-value coefficients before and after the inclusion of mediation variables remain significant and beta coefficient value down, it can be concluded that the relationship occurred is a partial mediation relationship. Table 3 will detail the details of the p-value coefficients as a basis for the analysis of partial or non-partial mediation relationships of the constructs.

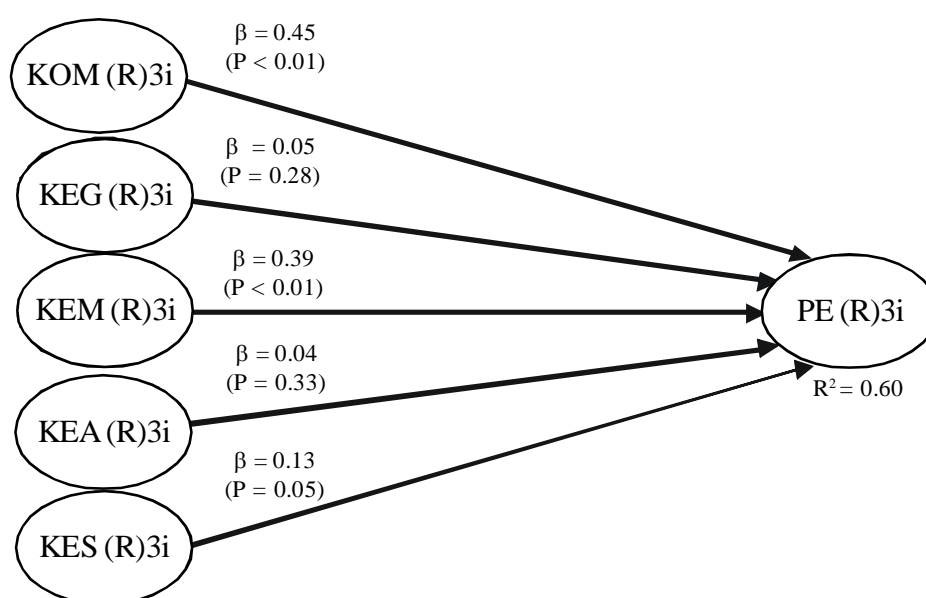


Figure 2 Results of Research without Mediation Variables

Table 3 Mediation Relationship Test Results

Item	β without Mediation Variables (c)	β with Mediation Variables (c'')	P-value without Mediation Variables	P-value with Mediation Variable	Information
KOM \rightarrow PE	0,447*	0,400*	<0,0005	<0,0005	Partial Mediation
KEM \rightarrow PE	0,390*	0,328*	<0,0005	<0,0005	Partial Mediation

Type:

(*) = significant at the 0.05 level

P-value has been divided by two based on the hypothesis making criteria

DISCUSSION

This study proved that Compatibility of cloud computing technology (KOM) has a positive effect on Interest in using cloud computing technology (MI). The finding of such evidence is similar to that contained in the DoI Framework theory (Rogers 1995) and is consistent with some earlier literature, such as the study by Sabi et al. (2016), Alhammadi, Stanier and Eardley (2015) and Alkhater, Wills, and Walters (2014). Knowledge of compatibility as a factor connected with the interest and use of cloud computing technology according to its users can be a consideration for business people who want to adopt this technology to study more about the compatibility or suitability of the form of cloud computing as what suits the scope and type of their consumers, so its function can be more optimal. Once it is well known, the consumer interest will also be greater.

The positive relationship between compatibility and interest can be a reference for developers of cloud computing technology to better customize and build features based on their users' needs and scope of work. The compatibility and suitability of the technology are believed to help the user's work, so the design details and the advantages of each feature need to be programmed as well as possible. The usability factor of cloud computing (KEG) technology has been shown to have a positive relationship to Interest in using cloud computing technology (MI). The benefits of cloud computing that can increase along with the user's interest can also have implications for the business. Businesspeople will be able to improve their performance financially and non-financially if they adopt the technology. The addition of cloud computing services in the company will be able to create the impression of high-technology and modern businessmen who use it, due to the usefulness of these technologies. It can also attract interest from existing business customers. In addition, it is important from the developers of cloud computing to be able to innovate and create the features that users really need, so users will find that the features are used to them and interest in them will also increase.

In the theory of DoI Framework (Rogers, 1995) and TAM (Davis, 1989), it is also expressed that the use of (relative advantage or perceived usefulness) is influential in predicting the adaptation interest of an innovation or technology. This is consistent with the results of the tests in this study. In addition, the results are also consistent with previous research by Sabi et. al. (2016), Won (2009), Lin and Chen (2012), Alkhater, Wills and Walters (2014), Low, Chen and Wu (2011), Windarta (2011) and Thakur and Srivastava (2014). This research has also been able to provide evidence that the higher the ease of use of cloud computing (KEM), the higher the user interest (MI). Such evidence may have implications for developers and users of this technology. Businesses as a beneficiary of this technology can also choose a developer/provider of cloud computing that has a platform or display concept that is easiest to use. This could be a driver for their customers to be interested and more interested in being a customer.

Developers can compete to provide cloud computing services with simpler features. This is due to the fact that some respondents, especially in respondents who are in the age range over 35 years who do not understand the technology, despite having the ability to access and use the internet in a long time. The results of this study can be a motivation for developers of cloud computing to develop services that increasingly easy to use so as to attract the interest of some potential users who are still not familiar with these technologies. Previous studies by Davis (1989), Alkhater, Wills and Walters (2014), Nkhoma and Dang (2013) and Windarta (2011) support the finding of a positive relationship of ease of use with individual interest. Similar results were also obtained from studies using negative terms of ease of use (ie complexity) such as studies conducted by Rogers (1995), Sabiet. al. (2016) and Lin and Chen (2012).

This study also examines the relationship of security factors in cloud computing (KEA) technology with Interest in using cloud computing technology (MI). Based on the test results, proved that there is no relationship between the two. The idea in de-

veloping the hypothesis is basically derived from a study by Sabiet. al. (2016), Alhammadi, Stanier and Eardley (2015), Stieninger and Nedbal (2014), Alkhater, Wills and Walters (2014) and Thakur and Srivastava (2014). However, the results of this fourth hypothesis testing support research conducted by Nkhoma and Dang (2013).

Previously, Alkhater, Wills, and Walters (2014) acknowledged that security and other factors such as privacy as well as user confidence in cloud computing technology were classified as the most attention factor of their respondents. One of the respondents also emphasized his concerns on this factor and revealed that this is the reason for not adopting cloud computing. In different contexts, the respondents in this study are students, based on the main reason that cloud computing technology is also widely used by students for little or no cost, as well as some empirical evidence that students are the biggest beneficiaries of technology and the internet. The results of existing research are possible as a result of respondents' tendency to utilize facilities in cloud computing to manage data that is not confidential or confidential, so they are not too concerned about the security aspects of the technology. The use of student side as the respondents of this research can be different from the cloud computing user side in the form of corporation, which is possible to take into account the security aspect in order to maintain certain data belonging to their company. From these arguments, it should be emphasized that the interest of students (as respondents of this research) to cloud computing is not viewed from the perspective of security technology.

The existence of research results in this hypothesis raises a practical implication in the form of emphasis on compatibility aspects, usability and ease of use of cloud computing to be more calculated than the security aspect to predict or be explanatory in terms of interest in the adoption of these technologies. Nevertheless, the security factor also remains to be ignored in the provision of cloud computing from the point of view of developers or developers who use it. On the other hand, this research succeeded in providing evidence of a lack of connection between User impression cloud computing

technology (KES) to Interest in using cloud computing technology (MI). Previously, Windarta (2011) has also found similar conclusions. In the study, it is explained that such results are the result of the use of a form of technology that tends to be regarded as ordinary or does not create a certain impression by some individuals because experience in using the computer among the research respondents is already quite good.

The basis for testing mediation relationships in this study is derived from previous studies (Sabi et al., 2016; Setyawan, 2015; Wibowo, 2008), which have provided support for the use of technology has a positive and significant influence on the construct of technology use. However, these studies treat interest as the only dependent variable. Among the five proposed mediation relationships (see Figure 1), two of them are supported: (a) Compatibility of cloud computing technology (KOM) indirectly affect the use of cloud computing technology (PE) through Interest in using cloud computing technology (MI), and (b) Ease of use of cloud computing technology (KEM) has an indirect effect on the use of cloud computing technology (PE) through Interest in using cloud computing technology (MI). These results indicate that there is a behavior in the use of previously planned technology (because it is preceded by interest). This is proof that business consumers are a beneficiary of cloud computing facilities as well, though they remain only in the context of compatibility and ease of use of technology alone. From the perspective of the use of cloud computing (KEG), the respondents did not show any behavior in the form of the use of the technology and only limited to the interest of it. The possible reason for this result is that respondents who feel that the usefulness of the features available by cloud computing can still be replaced by other forms of technology, such as in the form of memory card hardware, flash disk, compact disc and the like.

This study also confirms that there is no relationship between Security of cloud computing technology (KEA) with interest behavior (MI) and also Use of cloud computing technology (PE). As explained earlier, the results of existing research are possible as a result of respondents' tendency in uti-

lizing facilities in cloud computing to manage data that is not confidential or confidential.

From the perspective of the use of cloud computing technology (KES), respondents indicate the existence of the behavior of the use of technology (PE) is unplanned, in other words, respondents or the community tend to utilize cloud computing without preceded the behavior of interest in it. This can be possible because of the ability of computer use of the majority of respondents or people who tend to be good, so the use of a form of technology as if it does not create a certain impression for them (Windarta, 2011).

Adoption of technology is basically also potential to be done with the demands or will without the user's interest. An example is a business organization that also applies cloud computing technology because its competitors have used the technology to attract their customers, thus making the technology as an attraction and excellence products and services provided to consumers. In addition to the demands of the competition, there are also other reasons such as one's obligation to use cloud computing technology to perform certain actions, such as corporate demands on all devices in the cloud utilize to distribute large files to multiple places in a short time.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study provides empirical evidence that consumers are users of cloud computing technology. Such use may be indirect / planned with interest or otherwise. Factors that affect the interest and use of cloud computing. Compatibility factor (KOM) and ease of use of cloud computing (KEM) have been shown to increase the use of (MI) with mediated interest (MI) to use the technology. In addition, each of the utility factors (KEG) and user-impression (KES) factors have also been shown to have a direct relationship to interest (MI) and the use of cloud computing (PE) technology. The results of this study have implications for business players to consider cloud computing to be applied as a

consumer puller as well as an enhancer competitive advantage in business. This can be exemplified by the policy of adopting cloud computing to support the marketing activities of a particular company's products. Some of the factors that have been described can also be considered for the optimum adoption of this technology so that business activities can increase rapidly.

Recommendations

The next researcher is expected to overcome the problem of the acquisition of research data by respondents with age range above 35 years or with doctoral education level (S3) experienced in this research. Data from respondents with demographic characters are expected to further increase the coverage of consumer views about a technology, including cloud computing technology.

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