Journal of Theoretical and Applied Information Technology
31st March 2015. Vol.73 No.3
© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

IMPROVING SERVICES THROUGH ADOPTION OF CLOUD COMPUTING AT PT XYZ In INDONESIA

BACHTIAR H. SIMAMORA, M.SC., PH.D., JULIRZAL SARMEDY, S.KOM.

Performance Excellence Research Interest Group Leader, Bina Nusantara University
Jl Kebon Jeruk Raya 27, Jakarta 11480, Indonesia, bsimamora@binus.edu
Dell Authorized Distributor, Adhisakti Solusi Komputindo
Jl Cideng Barat 36 BCD, Jakarta 10150, Indonesia, jaleysystem@yahoo.com

ABSTRACT

PT. XYZ as Indonesian institution is responsible for managing social insurance programs of civil servants. With branch offices and business partners who are geographically dispersed throughout Indonesia, information technology is very important to support the business processes. Cloud computing is a model of information technology services that could potentially increase the effectiveness and efficiency of PT. XYZ information system. This study examines the phenomenon exists at PT. XYZ in order to adopt cloud computing in the information system, by using the framework of Technology-Organization-Environment, Diffusion of Innovation theory, and Partial Least Square method. Organizational factor is the most dominant for PT. XYZ to adopt cloud computing. Referring to these findings, then performed a SWOT analysis and TOWS matrix, which in this study recommends the implementation of a strategy model of cloud computing services that are private and gradually in process.

Keywords: *Cloud Computing, Technology-Organization-Environment Framework, Diffusion of Innovation Theory, Partial Least Square;*

1. INTRODUCTION

Indonesian Internet Service Providers Association (APJII) records of Internet users in Indonesia continues to grow gradually for each year. In 2012, Internet users in Indonesia reached 63 million people [1]. And is predicted to continue to increase significantly by 2015, from these data it is clear that there is a growing Internet technology in Indonesia. The growth of the Internet technology is of course also helped encourage the development of other information technology extensively, especially cloud computing services which is relies on the Internet. According to Adi Kusma, as president director of Biznet Networks, cloud computing is a potential solution when Indonesian economy crisis [3]. Of survey ever conducted on 150 IT decision makers of large and medium enterprises in Indonesia, 45% of whom stated that cloud computing services is the first priority in 2013 [2].

IS/IT infrastructure development is one of the discourse strategies, policies, and working programs of top level mangement at PT. XYZ as a state institution,

IS/IT is a critical component in its business processes. Referring to the duties and responsibilities of

the IT Division of PT. XYZ, to assess the innovation of new technologies and systems that analyze and technology by way of outsourcing, cloud computing services can certainly be the potential and challenges for PT. XYZ in strategic planning of IS/IT based on company needs.

Until now PT. XYZ still not adopting cloud computing services. However, with more observation, cloud computing services will realize the potential for existing tasks. A lot of alignment between the benefits of cloud computing with IT department task, to solve the problems of IS / IT at PT. XYZ, such as assessing new information technology innovation, outsourcing, long-term plan, collaboration, and change management.

From the technical aspect, there were no new elements of this type of technology in cloud computing. However, its capacity can provide cost reduction, rapid scalability, and flexibility, has the potential to stimulate the economy as a revolutionary [4]. Research conducted in Korea

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

reveals the fact that the organization, adoption of cloud computing is influenced by several factors such as organization character, the process of decision making within an organization, implementation phase, competitive effects, services availability, economic factors (price), and managerial support.

In Indonesia, the ministry of communication and informatics count the cloud computing trend on the agenda "Indonesian Communication and Information Technology White Paper 2010" [5]. Mentioned that the driver of cloud computing trend is saving the customer investment, need for efficiency, and increased reliability through the elastic resource availability, reduce the threat of single-point-of-failure, and increased utilization.

However, despite such promising benefits of cloud computing services, the availability of fast internet, the level of awareness and knowledge of cloud computing benefit is still a barrier factor [6].

To make decision to implement an information system, is influenced by several factors. There are several theoretical models that can be used to assess the factors that influence and how far it is influenced. Models such as TAM (Technology Acceptance Model), TPB (Theory of Planned Behaviour), DOI (Diffusion of Innovation), and TOE (Technology Organization Environment), are the most popular theory and framework used by previous research. TOE and DOI is the most relevant theory to examine the factors that affect the success of the implementation of IS / IT at firm level, compared with TAM and TPB which more suitable on the individual perspective [7]. By those theory, observation, and concern, therefore several research questions arise as follows:

- What factors affect the PT. XYZ in adopting cloud computing services in the context of technology?
- What factors affect the PT. XYZ in adopting cloud computing services in the context of the organization?
- 3. What factors affect the PT. XYZ in adopting cloud computing services in the context of the environment?

While the main purpose of this research is to study what factor is influencing PT. XYZ to adopt cloud computing by using TOE framework bound with DOI theory. And at the end, hopefully this research can give some recommendation with SWOT and TOWS matrix analysis.

2. LITERATURE REVIEW

Technologies contained in cloud computing is not something new. The concept of cloud computing has long been put forward by a scientist named John McCarthy in 1960, who said that the future of computing will be available and maintained as a public service [8].

Cloud computing

Here is the final draft of the NIST definition of cloud computing, issued in September 2011 [9]:

> *"Cloud computing is a model for enabling a ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (eg, networks, servers, storage, applications, and services) that can be provisioned and released Rapidly with minimal management effort or service provider interaction. This cloud models is composed of five essential characteristics, three service models, and four deployment models."*

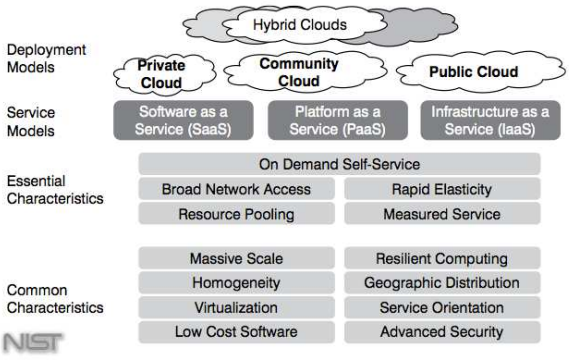

Figure 1. Cloud Computing Framework. (Williams, 2010)

Cloud computing consist of five main characters as follows: on-demand self-service, broad network access, resources pooling, rapid elasticity, and measured service. There are three type of services, such as software as a service, platform as a service, and infrastructure as a service. Cloud computing can be implemented by four models, private cloud, community cloud, public cloud, and hybrid cloud.

The benefits of cloud computing services can be viewed from four different sides [10]: financial, technology, operasional, and environment. Despite to its benefits, cloud

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

computing also has a drawback such as security, control, cost, openness, compliance, and service-level agreements.

Diffusion of Innovation Theory

In many previous studies, DOI is one very popular theory to uncover an individual factor in adopting a technological innovation [11]. Roger identified five factors or attributes that influence a person to adopt a technology:

- Relative advantage
  The benefits of a technological innovation to reduce costs and increase operational benefits (Lian et al, 2013). With cloud services, companies can reduce the cost to pay experts to do the installation, maintenance, and update or upgrade information systems [12].
- Complexity
  The new technology will cause problems or difficulties because the necessary expertise to implement [13].
- Compatibility
  The new technology is expected to correspond with someone who is already accustomed to the activity undertaken, so it does not cause a significant change [14].
- Triability
  A technological innovation will be assessed on the level of ease for someone to do the test [15].
- Observability
  Success in adopting an innovation is influenced by a person's communication technology towards each other. The influence could be positive or negative [16].

From the five attributes mentioned above, some studies have also found that the element of trust or confidence is an indicator that is influential in the decision to adopt a technology [17]. To take decisions in adopting cloud computing technology innovation, human factors as a leader (CIO) within an organization also affect significantly [18].

TOE framework

Empirically, the TOE framework has been widely used and tested in numerous studies in the field of information technology [19]. DOI theory and TOE very related and identical to each other. In theory DOI, adoption of a technological innovation assessed by looking at the internal and external factors of the technology concerned. Through the TOE framework, Tornatzsky and Fleischer added that the technology factor is also associated with the external factors of the technology itself, such as business, industry, competitors, and government [20]. Explained that for the organization in the context of the TOE framework, there are several reflective indicators:

- Size
  The size of a large or small an Organization also influence the decision to adopt a technological innovation. Small companies are more likely to adopt a technology, where large companies are more likely to not make changes [21].
- Top management support
  The owner of a company or the leaders at the level of directors and managerial very influential to other members within organization [22].
- Innovativeness
  There are two characters on an innovative leader. In this case consists of two types of CEO, the CEO is looking for a solution that was reasonably well understood and tested, and more CEOs have the willingness to faster innovation mangadopsi information systems [23].
- Prior technology experience
  Successful implementation of cloud computing in an organization is influenced by the skill of workers and management perceptions and understanding, so as to produce a strategic decision, a creative and innovative environment [24].
- Observability
  Successful implementation of cloud computing in an organization is influenced by the skill of workers and management Perceptions and understanding, so as to produce a strategic decision, a creative and innovative environment [24].

Based on the results of previous studies, environment factors are described with some indicators as follows:

- Competitive pressure
  Competitive pressures force companies to be more innovative in order to survive in the business world. According to the theory's Five Forces (Porter), two of which are: Rivalry among companies and the threat of substitution. Cloud computing is a paradigm that is most popular in the field of IT to achieve competitive advantage [25].
- Industry
  Adoption of information systems innovations are influenced by the type of industry in which the company operates and how to manage these types of industry information [26].
- Market scope

Journal of Theoretical and Applied Information Technology
31st March 2015. Vol.73 No.3
© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

By adopting cloud computing, is expected to reduce the external costs and make the company does not rely on geographic location [27].

- Supplier computing support
  Successful implementation of technology innovation is supported by the availability of infrastructure available.
- Government policy
  Regulatory policy, governance, and compliance can make businesses reluctant to adopt cloud computing because of the lack of legislation governing the ownership and data privacy, as well as auditing and reporting of data access rights [28].

SWOT/TOWS matrix analysis

In his dissertation, Shimba states to begin adopting cloud computing services must begin with the analysis phase [29]. From the results of his research, adoption of cloud computing strategy consists of five phases, namely analysis, planning, adoption, migration, and management. This strategy was later called ROCCA (Roadmap for Cloud Computing Adoption) and developed into a framework called the RAF (Rocca Achievement Framework). Later, this framework ranging widely used as a research reference.

SWOT analysis is a relevant tool to develop strategies in the decision-making process [30]. In general SWOT analysis related to cloud computing can be seen from the characteristics of the technology itself, associated benefits and drawbacks, as well as the potential benefits and risks that affect users [31]. To develop strategies based on existing data, the TOWS matrix analysis is one approach for researchers to produce a strategy for a company or organization. Basically this is the use of TOWS matrix strength to create opportunities, minimize weaknesses, and avoid external threats [32].

Research model and hypothesis

Grounded from prior research, this study develop the model based on TOE framework and DOI theory. After build the model, there are three hypothesis to be confirmed:

H1: Technology factor affecting PT. XYZ significantly to adopt cloud computing.
H2: Technology factor affecting PT. XYZ significantly to adopt cloud computing.
H3: Technology factor affecting PT. XYZ significantly to adopt cloud computing.

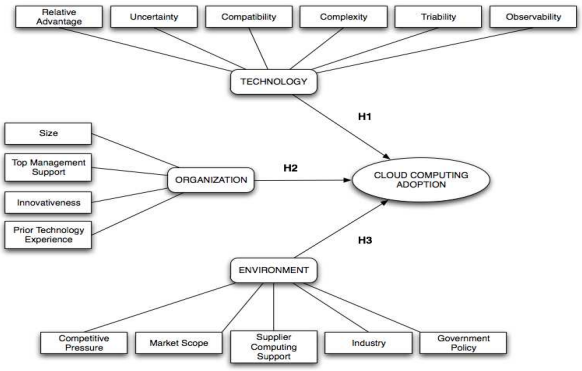

Figure 2. Research Model.

3. METHOD

The purpose of this study is to test the hypothesis, by looking at the relationship factors that exist within an organization currently [33]. The study was conducted at the headquarters of PT. XYZ on Jl. Lt. Suprapto No. 45, Cempaka Putih, Central Jakarta, in the period for approximately three months. Beginning in mid of May to August 2014 [34].

This quantitative research, using statistical science to manage the data associated with hypothesis. The population in this study is the organization of PT. XYZ overall. The sampling technique used in this study is a nonprobability sampling namely purposive sampling [35]. Due to avoid some bias the results of the study, the sample is determined to a group of people who have sufficient knowledge in the field of IS / IT.

There are three independent variable in this research:

a. Technology (X_1): technology factor which is affecting PT. XYZ to adopt cloud computing.
b. Organization (X_1): organization factor which is affecting PT. XYZ to adopt cloud computing.
c. Environment (X_3): environment factor which is affecting PT. XYZ to adopt cloud computing.

And one dependent variabel:

a. Cloud (Y): the intention PT. XYZ to adopt cloud computing.

The collected data will be processed using statistical methods based Structural Equation Modeling Component or better known as Partial Least Squares method and use SmartPLS program version 3.1.3. SEM is the second generation of multivariate as Principle Component Analysis, Factor Analysis, and Discriminant Analysis. In some studies, SEM is widely used because it is able to do path analysis with latent variables and

Journal of Theoretical and Applied Information Technology
31st March 2015. Vol.73 No.3
© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

has high flexibility for connecting between theory and data [36].

4. RESULTS AND DISCUSSION

Samples were taken from all employees in the Information Technology Division amounted to approximately 45 people. From the 45 questionnaires distributed, the successful respondent data collected as many as 38 people. With a total sample is then confirm that the most appropriate method to be used is the Partial Least Squares [37].

In the conceptualization models, need to design two sub-models, namely [38]:

- The design of a structural model (inner model), the relationship or the effect of exogenous variables on endogenous variables.
- The design of the measurement model (outer model), the relationship between the indicator variables. This relationship can be either reflective or formative.

Samples were taken from all employees in the Information Technology Division amounted to approximately 45 people. From the 45 questionnaires distributed, the successful respondent data collected as many as 38 people. With a total sample is then confirm that the most appropriate method to be used is the Partial Least Squares [37].

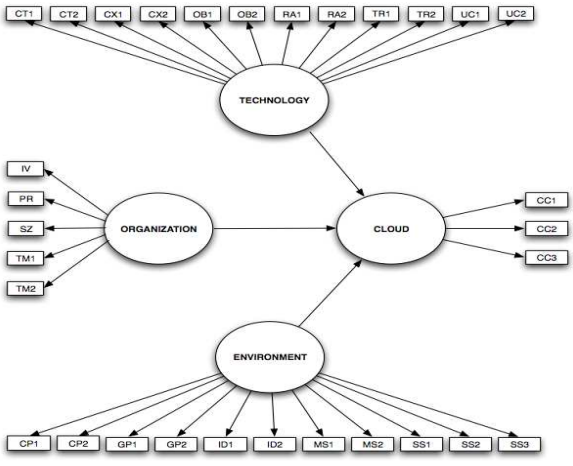

Figure 3. Conceptual model.

Inner model is constructed by three exogenous variables (Technology, Organization, and Environment), affecting to one endogenous variable (Cloud). Outer model is constructed by each indicator as described in table 1, 2, 3, and 4.

By using SmartPLS program, three options available methods of analysis algorithms that can be used. Path or structural weighting PLS analysis algorithm scheme suggested by Wold is using a path or structural weighting method [39]. Data analysis using bootstrap resampling method.

Table 1. Outer model of Technology variable.

Variable	Indicator	Code
Technology	Relative advantage	RA1
		RA2
	Uncertainty	UC1
		UC2
	Compatibility	CT1
		CT2
	Complexity	CX1
		CX2
	Triability	TR1
		TR2
	Observability	OB1
		OB2

Table 2. Outer model of Organization variable.

Variable	Indicator	Code
Organization	Size	SZ
	Top management support	TM1
		TM2
	Innovativeness	IV
	Prior technology experience	PR

Table 3. Outer model of Environment variable.

Variable	Indicator	Code
Environment	Competitive pressure	CP1
		CP2
	Industry	ID1
		ID2
	Market scope	MS1
		MS2
	Supplier computing support	SS1
		SS2

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

		SS3
	Government policy	GP1
		GP2

Table 4. Outer model of Cloud variable.

Variable	Indicator	Code
Cloud	Adoption	CC1
		CC2
		CC3

Measurement model evaluation

Model evaluation is done by assessing the PLS outer and inner model of the model. Measurement or outer model evaluation is done by assessing the model validity and reliability. Outer models with reflective indicators evaluated by finding the value of convergent validity, discriminant validity, Cronbach's alpha and composite reliability.

Figure 4 is the first attempt of PLS calculation. Some indicator is removed due to insufficient to fulfill the threshold of Rule of Thumb (loading factor > 0,6). The result can be seen in figure 5.

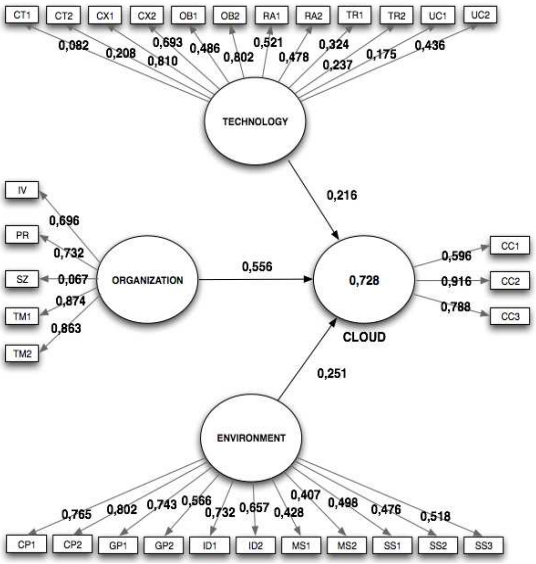

Figure 4. First Attempt PLS Calculation.

Convergent validity can be done as well by finding the average variance extracted value. Referring to Rule of Thumb, convergent validity is met if the AVE values greater than 0.5. Table 6 shows that the measurement model by AVE is valid for all those variables.

In the model, for each manifest variables should not be correlated. To test this principle it is necessary to test discriminant validity by finding the value of cross loading or square root. Square root of the value of each variable is greater than the value of the correlation [40]. Thus, all the variables in this model is valid.

In addition to testing the validity, reliability test should also be done. This test is done to prove the accuracy, consistency, and precision instrument to measure the construct or variable [39]. Reliability test is done by finding the value of Cronbach's alpha (must greater than 0,7).

Results of Cronbach's alpha values stated for all reliability indicators have values above 0.7. Thus stated that reliable models.

Other than Cronbach's alpha, composite reliability testing can use for testing reliability (must greater than 0,7). In PLS with SmartPLS program, Cronbach's alpha values will give a lower value of the composite indicator of reliability in reliability testing [39].

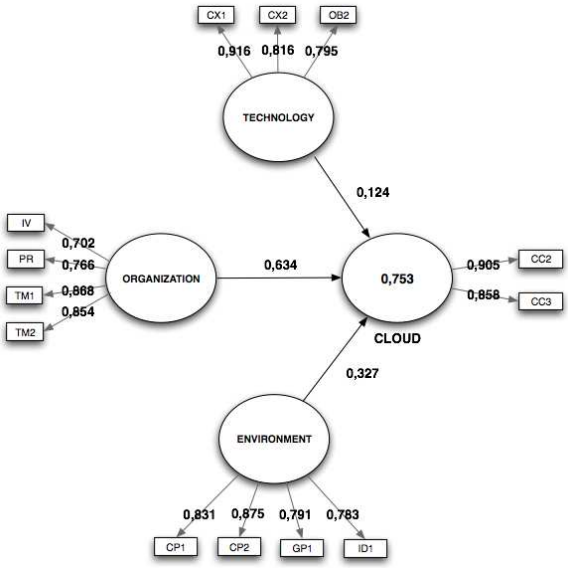

Figure 5. Convergent Validity.

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 5. Convergent Validity (Loading Factor).

Latent Variable	Indicator	Outer Loading	Convergent Validity Supported
Technology	Complexity 1	0,916	Yes
	Complexity 2	0,816	Yes
	Obervability 2	0,795	Yes
Organization	Innovativeness	0,702	Yes
	Top Management Support 1	0,868	Yes
	Top Management Support 2	0,854	Yes
	Prior Technology Experience	0,766	Yes
Environment	Competitive Pressure 1	0,831	Yes
	Competitive Pressure 2	0,875	Yes
	Government Policy 1	0,791	Yes
	Industry	0,783	Yes
Cloud	Adoption 2	0,905	Yes
	Adoption 3	0,858	Yes

Table 6. Convergent validity (AVE).

Latent Variable	AVE	Convergent Validity Supported
Technology	0,712	Yes
Organization	0,641	Yes
Environment	0,674	Yes
Cloud	0,777	Yes

Table 7. Discriminant validity.

Square Root	Cloud	Technology	Organization	Environment
Cloud	0,882			
Technology	0,627	0,821		
Organization	0,770	0,339	0,800	
Environment	0,475	0,678	0,202	0,844

Table 8. Reliability (Cronbach's Alpha).

Latent Variable	Cronbach's Alpha	Reliability
Technology	0,881	Yes
Organization	0,876	Yes
Environment	0,892	Yes
Cloud	0,875	Yes

Table 9. Reliability (Composite Reliability).

Latent Variable	Composite Reliability	Indicator Reliable Consistently
Technology	0,881	Yes
Organization	0,876	Yes
Environment	0,892	Yes
Cloud	0,875	Yes

Structural model evaluation

Evaluation of structural models or inner models can be done by testing the value of R-Squares, effect size, predictive relevance and significance. This value is also called the inner workings of the model, the predictive power of structural models. Changes in the value of R-Square explained the effect of exogenous variables on endogenous variables.

The coefficient of determination (R2) of Cloud as endogenous latent variable of 0.753. Under the Rule of Thumb, indicating that strong models. Thus can be explained the same time that the factors Technology, Organization, and Environment, is a variant of the substantive nature of Cloud 75.3% (Table 10).

Effect size or value of the F-Square is interpreted as a large or small effect or latent predictor variables in structural models (table 11).

Predictive relevance is one aspect that can be studied in the inner models. Predictive relevance or Q-Square is also called predictive relevance reuse. This technique is obtained by the procedure in the program bindfolding SmartPLS.

Table 10. R-Square.

Latent Variable	SSO	SSE	1- (SSE/SSO)
Technology	76.000	36.715	0.517
Organization	152.000	152.000	
Environment	152.000	152.000	
Cloud	114.000	114.000	

Table 11. Effect Size.

Latent Variable	Effect Size	Result
Technology	0,034	Moderatelly affecting to Cloud
Organization	1.440	Very strong affecting to Cloud
Environment	0,216	Moderatelly affecting to Cloud

Predictive relevance value is 0,517 or greater than 0. It means model has strong predictive relevance.

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Hypothesis can be tested using resampling bootstrapping. Bootstrapping will give the value of T-Statistic from each relation of exogenous to endogenous variable.

Table 12. Bootstrapping Result.

Inner Model Path Coefficient	Standard Error	T-Statistic
Technology -> Cloud	0,126	0,985
Organization -> Cloud	0,072	8.828
Environment -> Cloud	0,120	2.731

From the result of bootstrapping above, hypothesis can be tested with these rules:
- Significance (two-tailed) level 10% is 1,65.
- Significance (two-tailed) level 5% is 1,96.
- Significance (two-tailed) level 1% is 2,58.

Table 13. Results Of Hypothesis Testing.

Hipotesis	R^2	T-Value	Supported
H1	0,753	0,985	No
H2		8,828**	Yes
H3		2,731**	Yes
**Significance at P < 0,05, **Significance at P < 0,01*			

Reffering to table 13, therefore:
- H1: Technology factor does not affecting PT. XYZ to adopt cloud computing.
- H2: Organization factor affecting significantlly PT. XYZ to adopt cloud computing.
- H3: Environment factor affecting significantlly PT. XYZ to adopt cloud computing.

5. CONCLUSIONS

From the analysis using Structural Equation Modeling - Partial Least Square, it can be concluded as follows:
- Organization is the most influencing factor for PT. XYZ to adopt cloud computing.
- From the organizational factors, the most driving factor for PT. XYZ to adopt cloud computing is the support from top management, organization innovativeness level, and the provision of skills possessed.
- Factors environment ranks is the second influencing factor for PT. XYZ to adopt cloud computing. Competitive pressure, type of industry, and government policy, is a strong indicator of these factors.
- Character of cloud computing technology does not affect the trend of the PT. XYZ to adopt cloud computing.

Reffering to these finding, by using SWOT and TOWS matrix analysis, this research give two main recommendation for PT. XYZ:
- To do implementation of private cloud computing.
- Gradually adopting cloud computing, start from non critical business process application.

6. ACKNOWLEDGMENT

Researchers would like to thank IT Division of PT. XYZ which has supported this research, so that research can be done well. Hopefully, this study can provide more benefits for all.

REFERENCES

[1] Asosiasi Penyelenggara Jasa Internet Indonesia (2012), Indonesia Internet Users, http://www.apjii.or.id/v2/read/page/halaman-data/9/statistik.html, 19 April 2014.
[2] Biznet Networks (2014), Cloud Computing Potensi Bisnis Saat Krisis, http://www.biznetnetworks.com/en/company/press-releases/, 19 April 2014.
[3] Frost & Sulivan (2013), "The Rise of Cloud Computing in Indonesia (2013)", http://www.frost.com/sublib/display-market-insight.do?id=284156497, April 2014.
[4] Bayrak, E., Conley, J. P., Wilkie, S., 2011, "The Economics of Cloud Computing", The Korean Economic Review, Volume 27, Number 2, Winter 2011, 203-230.
[5] Kementrian Komunikasi Dan Informatika Republik Indonesia (2010), "KOMUNIKASI DAN INFORMATIKA INDONESIA WHITEPAPER 2010", http://publikasi.kominfo.go.id/handle/54323613/109, Mei 2014.
[6] Frost & Sulivan (2011), "State of Cloud Computing in the Public Sector – A Strategic analysis of the business case and overview of initiatives across Asia Pacific", Mei 2014.
[7] Oliveira T., Martins M.F., "Literature Review of Information Technology Adoption Models at Firm Level" The Electronic Journal Information Systems Evaluation Volume 14 Issue 1 2011, (pp110- 121), ISSN 1566-6379.
[8] Hamdaqa, M., Tahvildari, L., 2012, "Cloud Computing Uncovered: A Research Landscape", ADVANCES IN COMPUTERS, VOL. 86, ISSN: 0065-2458, Software Technologies Applied Research (STAR) Group,

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

University of Waterloo, Waterloo, Ontario, Canada.

[9] National of Standards and Technology (2011), "The NIST Definition of Cloud Computing (SP 800-145)", http://csrc.nist.gov/publications/PubsSPs.html #800-145, April 2014.

[10] Williams, Mark I. 2010, "A quick start guide to cloud computing: moving your business into the cloud", United Kingdom: Kogan Page Limited.

[11] Al-Jabri & Sohail, "MOBILE BANKING ADOPTION: APPLICATION OF DIFFUSION OF INNOVATION THEORY", Journal of Electronic Commerce Research, VOL 13, NO 4, 2012.

[12] Abdollahzadegan, Azam and Che Hussin, Ab Razak and Moshfegh Gohary, Marjan and Amini, Mahyar, The Organizational Critical Success Factors for Adopting Cloud Computing in SMEs (August 2013). Journal of Information Systems Research and Innovation (JISRI), Volume 4, Issue 1, pp. 67-74. Available at SSRN: http://ssrn.com/abstract=2333028.

[13] J. Ranald. I. Lumsden, Anabel, Gutierrez, (2013), "Understanding The Determinants Of Cloud Computing Adoption Within The UK", European, Mediterranean & Middle Eastern Conference on Information Systems (EMCIS), 2013, 17-18 October, Windsor, United Kingdom, http://www.iseing.org/emcis/emcis2013/EMCISWebsite/Accepted%20Papers/11%20Cloud%20Computing%20and%20Visualisation/emcis2013_submission_37.pdf.

[14] Erisman, R.M (2013). SaaS Adoption Factors among SMEs in Indonesian Manufacturing Industry. Unpublished master's thesis, Delft University of Technology.

[15] Morgan, L., Conboy, K.: Factors Affecting the Adoption of Cloud Computing an Exploratory Study. In: Proceedings of the 21st European Conference on Information Systems, pp. 1–13 (2013).

[16] Yeboah--Boateng, Ezer Osei; Essandoh, Kofi Asare / Factors Influencing the Adoption of Cloud Computing by Small and Medium Enterprises (SMEs) in Developing Economies. In: International Journal of Emerging Science and Engineering (IJESE), Vol. 2, No. 4, 4, 02.2014, p. 13-20.

[17] Chong A.Y., Ooi K., Lin B., Raman M., 2009, "Factors affecting the adoption level of c-commerce: an empirical study", Journal of Computer Information Systems.

[18] Lian, J.W., Yen, D.C., Wang, Y.T., An exploratory study to understand the critical factors affecting the decision to adopt cloud computing in Taiwan hospital. International Journal of Information Management Available online 2013.

[19] Mangula, Ivonne Sartika; van de Weerd, Inge; and Brinkkemper, Sjaak, "THE ADOPTION OF SOFTWARE-AS-SERVICE: AN INDONESIAN CASE STUDY" (2014). PACIS 2014 Proceedings. Paper 385. http://aisel.aisnet.org/pacis2014/385.

[20] Jamaludin, N., Ahmad, H., and Ramayah, T. (2012). "Profitability vs Sustainability: Preliminary Findings on Green Innovation Adoption in Information Technology Usage," Proceedings of The 3rd International Conference on Technology and Operations Management: Sustaining Competitiveness through Green Technology Management, Bandung–Indonesia (July 4-6), pp. 67-74. ISBN: 978-979-15458-4-6.

[21] Makena, John Ngugi., 2013, "FACTORS THAT AFFECT CLOUD COMPUTING ADOPTION BY SMALL AND MEDIUM ENTERPRISES IN KENYA." International Journal of Computer Applications Technology and Research 2, no. 5: 517-meta.

[22] Wan Nur Syahida Wan Ismail, Azwadi Ali, "Conceptual Model For Examining The Factors That Influence The Likehood Of Computerised Accounting Information System (CAIS) Adoption Among Malaysian SMES", International Journal of Information Technology and Business Management pp 122- 151 Vol 015. No. 1 – 2013.

[23] Thong, James Y.L., "An Integrated Model of Information Systems Adoption in Small Businesses", (January 1, 1999). Journal of Management Information Systems, Vol. 15, No. 4, pp. 187-214, Spring 1999. Available at SSRN: http://ssrn.com/abstract=1977980.

[24] Borgman, H.P., Bahli, B., Heier, H., Schewski, F: Cloudrise: Exploring Cloud Computing Adoption and Governance with the TOE Framework. In: Proceedings of the 46th Hawaii International Conference on System Sciences, pp. 4425–4435. IEEE (2013).

[25] Tehrani, Shima Ramezani, "Factors Influencing the Adoption of Cloud Computing by Small and Medium-Sized Enterprises (SMEs)" (2013). Theses and dissertations.

© 2005 - 2015 JATIT & LLS. All rights reserved·
ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Paper 1179, Human Interface and the Management of Information. Information and Knowledge in Applications and Services, pp.631-642, 2014-01-01, Springer International Publishing: http://link.springer.com/chapter/10.1007%2F978-3-319-07863-2_60.

[26] Yazn Alshamaila, Savvas Papagiannidis, Feng Li, (2013) "Cloud computing adoption by SMEs in the north east of England: A multi-perspective framework", Journal of Enterprise Information Management, Vol. 26 Iss: 3, pp.250 - 275. Available at www.emeraldinsight.com/1741-0398.htm.

[27] Kevin Zhu, Kenneth L. Kraemer, Sean Xu, 2006, "The Process of Innovation Assimilation by Firms in Different Countries: A Technology Diffusion Perspective on E-Business", MANAGEMENT SCIENCE, Vol. 52, No. 10, October 2006, pp. 1557–1576.

[28] Nkhoma, M., Dang, D: Contributing factors of cloud computing adoption: a technology-organisation-environment framework approach. International Journal of Information Systems and Engineering (IJISE) 1(1), 38–49 (2013).

[29] Shimba, F., "Cloud Computing: Strategies for Cloud Computing Adoption." Masters Dissertation. Dublin, Dublin Institute of Technology, 2010.

[30] Hadidi, R., Exploring the use of SWOT analysis in the adoption of Cloud Computing services for small and medium-sized enterprises (SMEs)", European Journal of Management, Sept, 2010 Source Volume: 10 Source Issue: 3. http://www.freepatentsonline.com/article/European-Journal-Management/260256392.html.

[31] Dogo E.M., Salami A., Salman S.I., "Feasibility Analysis of Critical Factors Affecting Cloud Computing in Nigeria", International Journal of Cloud Computing and Services Science (IJ-CLOSER), Vol.2, No.4, August 2013, pp. 276~287.

[32] Nugraha A., Aldianto L., "STRATEGIC DEVELOPMENT OF TOP BUAH SEGAR: SWOT AND TOWS MATRIX ANALYSIS", Journal of Business and Management, Vol.1, No.2, 2012: 101-107.

[33] Sekaran, U. and Bougie, R., 2010, "Research Methods for Business: A Skill Building Approach", John Wiley & Sons.

[34] PT. XYZ (PERSERO), http://www.XYZ.com, Mei 2014.

[35] Sugiyono, 2013, "Metode Penelitian Bisnis (Pendekatan kuantitatif, kualitatif, dan R&D)", ISBN: 978-979-8433-24-5, Bandung: Alfabeta.

[36] Ghozali, Imam, 2006,"Structural Equation Modeling Metoda Alternatif Dengan Partial Least Square (PLS)", Badan Penerbit UNDIP, Semarang.

[37] Pudjianto, Boni Wahyu and Hangjung, Zo, Factors Affecting E-Government Assimilation in Developing Countries (December 8, 2009). 4th Communication Policy Research, South Conference, Negombo, Sri Lanka. Available at SSRN: http://ssrn.com/abstract=1553651.

[38] Rozandy R.A., Santoso I., Putri S.A., 2012, "ANALISIS VARIABEL – VARIABEL YANG MEMPENGARUHI TINGKAT ADOPSI TEKNOLOGI DENGAN METODE PARTIAL LEAST SQUARE (STUDI KASUS PADA SENTRA INDUSTRI TAHU DESA SENDANG, KEC. BANYAKAN, KEDIRI)", Jurnal Industria Vol 1 No 3 hal 147 – 158.

[39] Ghozali I., Latan H., 2012, "Partial Least Square Konsep, Teknik, Dan Aplikasi Menggunakan Program SmartPLS 2.0 M3", Badan Penerbit UNDIP, Semarang.

[40] Wong K.K, 2013, "Partial Least Squares Structural Equation Modeling (PLS-SEM) Techniques Using SmartPLS", Marketing Bulletin, 2013, 24, Technical Note 1, http://marketing-bulletin.massey.ac.nz.