Faculty of Technology Management and Technopreneurship

EXAMINING A TECHNOLOGY ACCEPTANCE MODEL OF INTENTION TO USE INTERNET BY ACADEMICS WITHIN INDONESIA HIGHER LEARNING INSTITUTION

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DECLARATION

I declare that this thesis entitled "Examining a Technology Acceptance Model of Intention to Use Internet by Academics within Indonesia Higher Learning Institution" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature :

Name : Haris Sriwindono

Date : 12 April 2017

APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Doctor of Philosophy.

Signature :

Supervisor Name : Prof. Dr. Salleh bin Yahya

Date :

DEDICATION

To my beloved wife: Melania Suweni Muntini

&

My beloved children: Dismas Persada D.P. and Gabriela Amanda G.A.

ABSTRACT

A variety of information technology acceptance model had been proposed with different sets of determinants and most of them have been developed in the U.S. It is therefore questioned whether the models of technology acceptance that have been developed in the U.S. can be used in other countries, especially in Indonesia. It is also questioned whether there might be other determinants such as cultural dimension that also play important roles in this specific environment (Veiga et al., 2001; Bagchi et al.,2003). However, the role of cultural dimensions on internet acceptance research currently lacks a comprehensive conceptual framework for explaining the intention of internet usage especially in Indonesia. To fill this gap, this study extends the Unified Theory of Acceptance and Use of Technology Model (UTAUT) (Venkatesh et el., 2003) by adding a set of cultural constructs that are derived from Hofstede's national culture dimensions as the antecedents. The constructs of UTAUT used in this research were Attitude (ATT), Self Eficacy (SEF), Anxiety (ANX), Perceived ease of Use (PEOU), Perceived Usefulness (PU) and Social Influence (SI) and Compatibility (COM), while Hofstede's dimensions used in this research were Individualism (IDV), Power Distance (PDI), User Avoidance (UAI) and Long Term Orientation (LTO). Questionnaire survey method was used to collect primary data from academics within Private Universities in Indonesia. The survey yielded 401 usable questionnaires. Statistical analysis methods and Structural Equation Modeling with SmartPLS version 2.0 were used to analyse data. The findings indicate that the Perceived Usefulness (PU) and Social Influence (SI) are the most significant determinant of intention to use internet, while ATT, SEF and ANX are not. It is indicate that individual context not influence the intention to use. PEOU and COM has no effect on the intention, it means that the difficulties and compatibility using the internet have no effect on the intention. Meanwhile Individualism (IDV) is a variable that most influence on this model because IDV affect the SEF, ANX, PEOU and PU, followed by Power Distance (PDI) affecting the SEF and SI. Then LTO effect on PU and COM. While User Avoidance (UAI) only affect the SEF, and UAI did not affect the PEOU as originally hypothesized. In general, it can be said that the cultural dimensions are quite important in the acceptance of internet. Findings should assist organizations to understand the influence of cultural dimensions on internet technology acceptance and can be used as consideration when implementing internet in a higher learning institution in Indonesia. Finally, suggestions for future research were also provided for practitioners and academicians.

ABSTRAK

Pelbagai model penerimaan teknologi maklumat telah dicadangkan dengan set penentu dan kebanyakan mereka telah dibangunkan di Amerika Syarikat. Oleh itu, dipersoalkan sama ada model penerimaan teknologi yang telah dibangunkan di Amerika Syarikat boleh digunakan di negara-negara lain, terutama di Indonesia. Ia juga dipersoalkan sama ada penentu lain seperti dimensi budaya yang juga memainkan peranan penting dalam persekitaran tertentu (Veiga et al, 2001;. Bagchi et al., 2003). Walau bagaimanapun, penyelidikan peranan dimensi budaya terhadap penerimaan internet pada masa ini tidak mempunyai rangka kerja konseptual yang menyeluruh bagi menjelaskan niat untuk menggunakan internet terutama di Indonesia. Untuk mengisi jurang ini, kajian ini memanjangkan Teori Bersepadu Penerimaan dan Penggunaan Teknologi (UTAUT) (Venkatesh et el., 2003) dengan menambah satu set konstruk budaya yang berasal dari dimensi kebudayaan daripada Hofstede sebagai latar belakang. Konstruk UTAUT yang digunakan dalam kajian ini ialah Sikap (ATT), Kepercayaan diri (SEF), Keresahan (ANX), Persepsi Kemudahan Penggunaan (PEOU), Persepsi Kebergunaan (PU) dan Pengaruh Sosial (SI) dan Keserasian (COM), manakala dimensi Hofstede yang digunakan dalam kajian ini adalah Individualisme (IDV), Jarak Kuasa (PDI), Pengelakan Pengguna (UAI) dan Orientasi Jangka Panjang (LTO). Kaedah tinjauan soal selidik telah digunakan untuk mengumpulkan data primer daripada ahli akademik dalam Universiti Swasta di Indonesia. Kaji selidik ini menghasilkan 401 soal selidik yang boleh digunakan. Kaedah analisis statistik dan Structural Equation Modeling dengan SmartPLS versi 2.0 telah digunakan untuk menganalisis data. Temuan kajian menunjukkan bahawa Persepsi Kebergunaan (PU) dan Pengaruh Sosial (SI) adalah penentu yang paling penting terhadap niat untuk menggunakan internet, manakala ATT, SEF dan ANX tidak berkesan. Ia menunjukkan bahawa konteks individu tidak mempengaruhi niat untuk menggunakan internet. Dan juga PEOU dan COM mempunyai kesan ke atas niat, ia bermakna bahawa kesukaran dan keserasian menggunakan internet mempunyai kesan ke atas niat. Sementara itu Individualisme (IDV) adalah variabel yang paling mempengaruhi model ini kerana IDV menjejaskan SEF, ANX, PEOU dan PU, diikuti oleh Jarak Kuasa (PDI) yang menjejaskan SEF dan SI. Kemudian LTO berkesan pada PU dan COM. Sementara itu Pengelakan Pengguna (UAI) hanya memberi kesan kepada SEF dan UAI, tetapi tidak menjejaskan PEOU seperti pada hipotesis asal. Secara umum, ia boleh dikatakan bahawa dimensi budaya agak penting dalam penerimaan internet. Penemuan boleh membantu organisasi untuk memahami pengaruh dimensi budaya pada penerimaan teknologi internet dan boleh digunakan sebagai pertimbangan apabila melaksanakan internet di institusi pengajian tinggi di Indonesia. Akhir sekali, cadangan kajian lanjutan juga disediakan bagi pengamal dan ahli akademik.

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LIST OF ABBREVIATIONS

APDIP	-	Asia Pasific Development Information Program
ASEAN	-	Association of Southeast Asian Nation
ATB	-	Attitude Toward the Behaviour
ATT	-	Attitude
ANX	-	Anxiety
AVE	-	Average Variance Extracted
BI	-	Behavioural Intention
CA	-	Cronbach Alpha
CB	-	Covariance Based
COM	-	Compatibility
CR	-	Composite Reliability
DIKTI	-	Direktorat Pendidikan Tinggi
DTPB	-	Decomposed Theory of Planned Behaviour
FC	-	Facilitating Condition
GDP	-	Gross Domestic Product
HELTS	-	Higher Education Long Term Strategies
ICT	-	Information and Communication Technology
IDT	-	Innovation Diffusion Theory
IDV	-	Individualism
INHERENT	-	Indonesia Higher Education Network
INT	-	Intention
IS	-	Information System
IT	-	Information Technology
KEMENDIKBUD	-	Kementrian Pendidikan dan Kebudayaan
KOPERTIS	-	Koordinator Perguruan Tinggi Swasta
LV	-	Latent Variable

LTO	-	Long Term Orientation
MAS	-	Masculinity
MSC	-	Malaysia Super Coridor
N/A	-	Not Available
NECTEC	-	National Electronic and Computer Technology
NGO	-	Non Government Organization
OM	-	Operation Management
PDI	-	Power Distance Index
PIC	-	Person in Charge
PLS	-	Partial Least Square
PBC	-	Perceived Behavioural Control
PEOU	-	Perceived Ease of Use
PU	-	Perceived Usefulness
RENSTRA	-	Rencana Strategis
SCT	-	Social Cognitive Theory
SEF	-	Self Efficacy
SEM	-	Structural Equation Modeling
SI	-	Social Influence
SN	-	Subjetive Norm
TAM	-	Technology Acceptance Model
TCP/IP	-	Transmission Control Protocol/Internet Protocol
TPB	-	Theory of Planned Behaviour
TRA	-	Theory Reasoned Action
UAI	-	User Avoidance
UNDP	-	United Nation Development Program
UTAUT	-	Unified Theory of Acceptance and Use of Technology

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CHAPTER 1

INTRODUCTION

1.1 Research Background

In the last two decades, Information and Communication Technology (ICT) has been widely used in various fields and its effects are tremendous. ICT is a strength that is able to change various aspects of life of the current community. One of the challenges currently faced by developing countries is to prepare their community and government for the era of globalization, information and communication revolution. Policy makers, government officials, business executives, NGO activists, academics, and ordinary citizens should be more concerned about the strong competitiveness in the information era. Even The United Nation Development Program - Asia Pacific Development Information Program (UNDP-APDIP) believe that by applying ICT, a state then can meet a wide range of challenges in the information era. Using ICT, they can increase their social, political and economic into higher levels (Zorayda, 2003). ICT plays an important role in supporting the competitive advantage of an organization. The use of ICT is necessary for business organizations since it can improve business performance, streamline operations, improve stakeholder relations, support better decision making, and increase market share and revenue (Baltzan, Phillip and Haag, 2009). Turban, Rainer, Potter (2005) state that ICT serves as a facilitator for any activities and processes within an organization. Hence, it is significantly important for professionals to learn about ICT occupied in their respective organization, which certainly conforms to their respective specialties. Palvia, Palvia and Sigli (1992) state that quite a few organizations including higher education institutions are aware that the use of ICT

does not merely serve as a computational tool but also as a strategic tool to achieve growth and prosperity. Furthermore, Petrides (2000) argues that ICT already plays an important role in organizations, especially in higher education institutions where they will always strive to maintain and improve their quality, efficiency and effectiveness.

Internet as an important aspect in the world of ICT in the present and future is believed to be a totally useful technology to communicate and find information for individuals, organizations and even countries. The Internet refers to interconnected networks (Tatnall, Paull, Burgess, and Davey, 2003) that can help connect millions of computers (gadgets) and millions of users around the world by providing a variety of interesting and important services at low cost (Davison, Burgess, and Tatnall, 2004). For developing countries that give priority to economic growth and social welfare, the Internet management can no longer be ignored. The Internet is also important for governments, especially in developing countries, where there is a statement that weak and uneven economic growth is due to the failure of the government. In the United States, industries supported by Internet-based advertising have created more than 3 million jobs (Hamilton, 2009). The World Bank has found that an increase by 10 percent in the Internet penetration leads to an increase by 1.7 percent in GDP (Freund and Weinhold, 2002). The Internet creates increased productivity through platforms such as cloud computing, allows the smallest startups to challenge global business, and allows access to be distributed to investments through “crowd sourcing” (Massiello and Slatter, 2012).

Although the Internet has become extremely popular in the world, its penetration in Indonesia remains relatively low at 30.5 % of the population by 255,993,674 in 2015 (http://www.internetworldstats.com). While the internet penetration rate in some other countries in Asia are presented in Table 1.1.

Table 1.1 Internet Penetration Rate in 2015

Country	Population	Internet Users	Penetration
Indonesia	255,993,674	78,000,000	30.50%
Malaysia	30,513,848	20,596,847	67.50%
Philippines	109,615,913	47,134,843	43.00%
Singapore	5,674,472	4,653,067	82.00%
Thailand	67,976,405	38,000,000	55.90%
Vietnam	94,348,835	47,300,000	50.10%

The cabinet of Joko Widodo (President of Indonesia) is advised to further develop Indonesia's Internet industry as enhanced Internet connectivity across the vast archipelago will result in higher economic growth. Internet has become such a vital communication channel in governance, business and private lives that a direct link to economic growth is detectable. The report on Indonesia Investment (Semuel, 2014) has shown, that every ten percent growth in number of internet users in Indonesia, the economy expands by an additional 1.2-1.4 %. While Inasari (2013) states 1 % increase in broadband penetration can reduce the rate of unemployment to 4.82 %.

In higher education, the use of ICT in higher education institutions is measured using webometrics. Webometrics Ranking mostly uses the factor of the "life" of a certain university in the world of the Internet, including the accessibility and visibility of the university's websites, electronic publications, openness of the access to research findings, connectivity with the world of industries and its international activities. From webometrics reports published annually, it can be seen that the number of universities in Indonesia put in a rank below 1000 worldwide remains very few, i.e. in 2011 (4 universities) and in 2012 (10 universities), in 2013 (10 universities), in 2014 (drop to 3 universities), in 2015 (4 universities). This means that the use of ICT in higher education institutions in

Indonesia has not been able to help improve rankings in accordance with the criteria suggested by webometrics. In other words, in higher education in Indonesia, electronic publications, electronic learning sources, and high quality publications had been placed in college websites that can be referred by another scholar, were still lack. It also shows that the use of internet in higher education in Indonesia is still limited. The report on Kompas (Yusron, 2014) has shown that the use of internet by universities in Indonesia is still limited, the average broadband connection access campus in Indonesia amounted to 30 Mbps. Meanwhile, in the United States and Europe reach 100-500 Mbps.

In short, it has been widely recognized by many countries that the Internet plays a role in improving people's welfare. Many countries also have policies to improve ICT infrastructure and the use of the Internet, for example, Malaysia with its the Malaysia Super Corridor (MSC), Singapore with its Intelligent Island, Taiwan with its Hinet, the Philippines with its Smart Philippines, and Thailand with its NECTEC2001.

So does Indonesia, Indonesian government has several plans and policies such as NUSANTARA21 and INHERENT to support and enhance the use of the Internet at schools and in higher institutions. However, the Internet penetration rate is still low compared to other Asian countries. It is clear that problems related to the acceptance of information technology especially internet in Indonesia occur.

The issue on how to increase the acceptance of Internet in general has become a concern for the Indonesian government. The Indonesian government through the ministry of national education has sought an increase in the use of ICT in higher education through the Indonesian Higher Education Directorate (DIKTI) by launching the policies of Higher Education Long Term Strategies (HELTS 2003-2010). One of the policies is to provide funding (grants) in the form of Indonesian Higher Education Network (INHERENT) project from 2006 to 2009 to support and improve the utilization of the Internet in Higher

Education. However, as shown in the above Webometrics ranking, this effort did not have any other significant impacts other than the establishment of the computer network infrastructure itself. The low rate of internet penetration indicates that there is something wrong with the acceptance of internet. When the Internet infrastructure has already been established, but the penetration remains low, therefore there are few things to note (Kripanont, 2007), namely (1) how to motivate people to use the Internet, (2) how to motivate people who have been using the internet to use it more frequently, and (3) how to motivate people who have experienced in using the Internet to utilize the Internet in their respective field of work.

In universities, it is important for lecturers to use ICT to perform their work more frequently given that today's students have gained knowledge/lessons on ICT at the previous level in accordance with the primary and secondary education curriculum. The understanding on how to promote to the lecturers in order that they use the Internet more frequently can be done using the model of technology acceptance. The technology acceptance model is used as a theoretical basis to investigate the main determinants that influence professionals/individuals in the use of the Internet. The technology acceptance model is expected to have power in explaining the use of technology and to provide a useful tool for top management of universities to understand factors determining the technology usage behavior. Also, it is expected that the model can be used to help lecturers to gain more knowledge and experience related to the use of the Internet, which definitely will help to prepare them to face any changes in the process of teaching and learning. This in turn will affect the students graduating from the universities. They will have more experience on the use of the Internet at the university level and it is expected that they will utilize their experience using the internet at work. As a result, it is also expected to increase

the Internet penetration rate of the country and thus will help the country to cope with rapid environmental changes in this information age (Kripanont, 2007).

Many studies in the field of technology acceptance are conducted in many developed countries such as the USA and Canada, making the appropriate application of many resulted technology acceptance models limited to the countries themselves. Meanwhile, research on the internet acceptance model in Indonesia is still rare even there is no one model produced into account the cultural dimension in Indonesia (Priyantono, 2010; Sriwindono and Yahya, 2012). Some researchers underline that it is true that a proposed model may not be suitable when applied in another region or country (Veiga et al., 2001). Ticehurst and Veal (2001) stated that culture can also affect the acceptance of technology. According to previous discussion, although there is rapidly increasing in internet penetration in the world but still low in Indonesia. That means there are factors that can affect acceptance of internet, beside existing factors such as usefulness, ease of use, subjective norm and etc. While essential research has been directed toward understanding the adoption and diffusion of IT (Prescott and Conger, 1995), there have been a few researchers which were conducted to explore the effect of culture in the acceptance and dispersion of new information technologies (Raman and Wei, 1992). Reserch on the impact of culture on internet acceptance provides a useful viewpoint (Cooper 1994; Kydd and Jones, 1988) but ethnic or national culture research undoubtedly has a special character. Differences in technology acceptance might arise due to cultural differences. Thus, this cultural factor is actually worth to consider in exploring the information technology or internet acceptance model (Straub et al., 1997).

If it is possible to propose a model that fits the situations in Indonesia, then factors influencing the process of internet acceptance in Indonesia can be revealed. Eventually, it can be implemented in a variety of region in Indonesia, especially in terms of acceptance