THE ACCEPTANCE OF COMPULSORY USE OF IPAD MINI: “ORIGINAL” UTAUT PERSPECTIVE

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ABSTRACT

Faculty of Economics, Atma Jaya Yogyakarta University (FEUJY) since 2015 has decided that new undergraduate students have to purchase iPad Mini and e-books as part of intake package. This study is looking at the acceptance of compulsory iPad Mini usage and purchase for supporting academic activities when the students are required to purchase instead of voluntary. This study used the “original” UTAUT model by using Self-Efficacy and Computer Anxiety variables and dropping Voluntariness moderating variable. A survey was employed to gather data from class intake of 2015 and 2016 FEUJY undergraduate students. The result of the survey was analysed using PLS-SEM. The result shown that the original UTAUT model could explain the acceptance of iPad Mini and consistent with findings of previous study on the same population with some different result.

KEYWORDS

UTAUT, iPad Mini, Acceptance, Compulsory

1. INTRODUCTION

The use of technology for teaching and learning has been common for quite sometimes. Different technologies such as personal computers and laptop, computer projectors, multimedia devices, computer networks, the Internet, etc. have been used to enhanced, supplement, and even provide a new mode of learning such in case of online classroom. Recent development in mobile device, electronic content (including e-books), and e-learning platforms has also been adopted quite extensively and intensively. Few research into the use and development of technology in the classroom has been made such as Brill and Galloway (2007), Mandl, Kohane, McFaden .(2014), Raaij and Schepers (2008), Halonen, Acton, Golden and Conboy, (2009) among others.

Faculty of Economics, Atma Jaya Yogyakarta University (FEUJY) in Indonesia has been requiring new undergraduate students to purchase a set of English language textbooks (mostly from US publishers and authors) when they enrolled in the university. The books are intended for five first-year subjects for all undergraduate students from three departments within FEUJY (namely accounting, management, and economics). The subjects are Introduction to Business, Introduction to Accounting, Introduction to Information Systems, Business Mathematics, and Introduction to Economic Theory. This practice has been implemented since early 2000's. Since 2015, FEUJY changed the policy and adopting e-books to replace physical books. Along with the change, FEUJY also made it compulsory for undergraduate students to buy Apple iPad Mini Wifi 16 GB (iPad Mini) for delivering the e-books. The policy means an increase in the fee paid by new undergraduate students to cover both e-books and iPad Mini, whereas previously new undergraduate students only had to pay for printed textbooks.

The compulsory iPad Mini policy is not accepted by all, some lecturers especially those who teach Introductory Financial Accounting subject complained that the usage of iPad Mini disrupt the way they usually deliver the lectures and tutorials. Some complaints also emerged from the applicants who had been accepted at FEUJY but withdrew their applications due to higher cost of admission. The additional cost of iPad Mini is about US\$ 365 on top of admission fee and other fees (Pramudita 2017).

A follow up research (Sarosa 2017) on the same population as Pramudita (2017) was conducted in the middle 2017 using UTAUT (Venkatesh et al. 2003; Venkatesh, Thong & Xu 2016). The result was that the UTAUT could explain the acceptance of involuntary iPad Mini used among two groups of first year students at FEUJY (Sarosa 2017). The result also showed that the moderating variables of Gender and Experience

are not supported by the findings. Age as moderating variable was eliminated considering the fact that the participants were from the intake of 2015 and 2016. They are only having less than 2 years of age difference among them. The age difference was deemed as not significant enough to show any impact. Voluntariness of Use as moderating variable was eliminated due to the fact the use of iPad Mini was and is mandatory for new students at FEUAJY.

This research was conducted with few reasons. First reason is based on the R^2 of the previous result using UTAUT was quite low. The result of UTAUT model with moderating variables Gender and Experience only showing that Behaviour Intention (BI) have 26.2% R^2 (Sarosa 2017). Therefore 73.8% of Use is explained by other variables which are not included in the UTAUT Model. UTAUT was claimed to have been able to explain up to 70% of the variance in intention to use technology (Venkatesh et al. 2003). The claim of 70% was criticised by Raaij and Schepers (2008) by arguing that is only achieved when moderating key relationships with up to four variables. In previous study, the moderating variables used was only two.

This study tries to use additional variables with the UTAUT, which are Attitude Toward Using, Self-Efficacy, and Anxiety. The additional variables are expected able to explain factors influencing the acceptance and use of iPad Mini.

2. ACCEPTANCE OF MOBILE LEARNING TECHNOLOGY

Unified Theory of Acceptance and Use of Technology (UTAUT) formulated by has been used extensively for information technology acceptance such as (Akbar 2013; Kohnke, Cole & Bush 2014; Marchewka, Liu & Kostiwa 2016)

This section would provide theoretical basis for the use of UTAUT and the use of mobile device (tablet) for learning in university environment. The discussion started with the use of mobile technology for teaching and learning. The second part is discussing the UTAUT and justification on using “original” model. This section would be ended by the development of hypotheses.

Using mobile technology for teaching and learning

The use of information and communication technology for learning has been studied quiet extensively. For example, Yuen, Law, and Wong (2003) found that ICT innovation adopted by schools in Hong Kong has been affected by schools’ objectives, perception of ICT’s role in education as well as the understanding of teaching and learning and the part played by teachers and students. The impact of ICT adoption toward first year university students has been studied and the findings showed that familiarity with ICT is one of the keys to successful adoption (Verhoeven, Heerwegh, & De Wit, 2010). Akbar (2013) confirmed that familiarity with ICT is influencing the success of adoption of ICT for students.

As part of adopting ICT into teaching and learning, various elements have been adopted such as e-learning systems, Learning Management Systems (LMS), and even mobile learning. Mobile learning is defined as the delivery of learning to students anytime and anywhere through the use of wireless Internet and mobile devices such as computer tablet (Wang, Wu, & Wang, 2009). Siau, Lim, and Shen (2001) explained some of the limitation of using mobile devices such as small screen size, resolutions, underperformed compared to personal computers, battery life, and graphical limitation. Arguably some of the limitations of mobile device currently has been overcome (for example battery life, screen size, and screen resolutions), yet the performance of computer tablet such as iPad Mini is still far away from the personal computers. For example, a scan of Apple App Store in iPad Mini could not find the equivalent of statistical package such as SPSS for tablet. Looking at the common usage tablet among FEUAJY students, the use of iPad Mini for teaching and learning is currently limited to information gathering (including e-books and web browsing) and communications and collaborations (email, chat, instant messaging, social media). For serious data analysis and report writing, students still need a personal computer (desktop or laptop).

Limited capability and capacity of iPad Mini along with relatively expensive price (therefore low price to performance ratio compared to some laptop) make the decision to adopt seemed problematic. The price of iPad Mini is equivalent with some laptop having Intel Core i3 processors, 4 GB RAM, and 1 TB storage. A laptop has lower mobility score compared to iPad Mini but have much bigger raw computing power. Pramudita (2017) started his study into the net benefit of using iPad Mini among FEUAJY students based on the premises of iPad Mini has higher price tag and lower raw computing power. Pramudita (2017) investigate the use of e-books and iPad Mini using DeLone and McLean Information Systems Success Model (W. H. DeLone & McLean, 2003; Halonen et al., 2009). DeLone and McLean model assess the success of an information systems (in this case the e-books and iPad Mini) by the proxy of net benefit. Net Benefit is influenced by Use and User Satisfaction which in turn influenced by Systems Quality, Information Quality,

and Service Quality (W. H. DeLone & McLean, 2003). Pramudita conducted a survey to 253 students of the 2015 and 2016 classes. The results are Information Quality influenced both Use and User Satisfaction, Systems Quality influenced both Use and User Satisfaction, Service Quality influenced User Satisfaction, Service Quality did not influence Use, Use influenced User Satisfaction and Net Benefit, and User Satisfaction influenced Net Benefit.

DeLone and McLean model only look at the actual use, user satisfaction, and net benefit of an information systems to judge the success. It does not look into the acceptance of the information systems itself. This article reports the findings of study into the acceptance of iPad Mini by FEUAJY undergraduate students from the class of 2015 and 2016. The study is deemed necessary to look into the acceptance of FEUAJY policy where new undergraduate students have to pay additional fee on top of other entrance fees for buying iPad Mini. The study use the unified theory of acceptance and use of technology (UTAUT) originally proposed by Venkatesh, Morris, G. Davis, and F. Davis (2003).

2.1 UTAUT

UTAUT was originally proposed by Venkatesh, Morris, G. Davis, and F. Davis (2003) as refinement and improvement of various previous user acceptance of technology models. The UTAUT model can be seen in Figure 1 below.

Figure 1. The original model of Unified Theory of User Acceptance of Technology or UTAUT (Venkatesh et al., 2003)

The acceptance of a technology is shown by the use of the technology (U). U is influenced by Behavioural Intention (BI) and Facilitating Conditions (FC). BI itself is influenced by Performance Expectancy (PE), Effort Expectancy (EE), and Social Influence (SI). UTAUT also use moderating variables for the relationship between variables. Gender (G) is moderating variable for PE, EE, and SI influences toward BI. Age (A) is moderating variable for PE, EE, and SI influences toward BI and FC influence toward U. Experience (E) is moderating variable for EE, SI influences toward BI and FC influence toward U. Voluntariness of Use (VU) is moderating variable for SI influence toward BI.

UTAUT is an integration of eight different models of technology acceptance theory (Venkatesh et al., 2003). UTAUT use four core constructs to explain and predict user acceptance of a new technology: PE (equivalent to perceived usefulness), EE (equivalent to perceived ease of use), FC, and SI (Raaij & Schepers, 2008). UTAUT has been extensively used for various research such as to investigate mobile banking adoption (Tan & Lau, 2016), investigating students' acceptance of technology in Qatar (Akbar, 2013), acceptance of course management software (Marchewka, Liu, & Kostiwa, 2016), and acceptance of hospital information systems (Sharifian, Askarian, Nematollahi, & Farhadi, 2014) among others.

In the previous study (Sarosa 2017), the UTAUT model was slightly modified by eliminating Age and Voluntariness of Use, which can be seen on Fig 2. Age as moderating variable is eliminated due the fact that the participants were from the class of 2015 and 2016. They are only having less than 2 years age difference. The age difference is deemed as not significant enough to show any difference. Voluntariness of Use as moderating variable is eliminated due to the fact the use of iPad Mini is mandatory for new students at FEUAJY. Therefore, the moderating variables are only Gender (G) and Experience (E) in using or owning

tablet computers and not only iPad Mini (Brill & Galloway, 2007; Mandl et al., 2014; Venkatesh et al., 2003).

The result of UTAUT model with moderating variables Gender and Experience only showing that Behaviour Intention (BI) have 26.2% R^2 (Sarosa 2017). Therefore 73.8% of Use is explained by other variables which are not included in the original UTAUT Model used in this research. The UTAUT was claimed to have been able to explain up to 70% of the variance in intention to use technology (Venkatesh et al. 2003). The claim of 70% was criticised by Raaij and Schepers (2008) by arguing that is only achieved when moderating key relationships with up to four variables. In previous study (Sarosa 2017), the moderating variables used was only two.

In the original UTAUT article (Venkatesh et al. 2003), there are three additional variables in UTAUT that were excluded from the final version of UTAUT. The variables are Attitude Toward Using (ATU), Self-Efficacy (SE), and Computer Anxiety (ANX) (Akbar 2013; Venkatesh et al. 2003). The three variables were dropped since it was deemed as did not have any direct effect on intention to use the technology. In this study, we tried to see if ATU, SE, ANX has any effect toward either Behaviour Intention (BI) to use iPad Mini.

We have the data from previous study that include three moderating variables, which are Gender, Experience, and Age. We exclude Age since we deemed it was not much difference between the users since they were only 2 years apart. In this study we include Age as moderating variables as suggested by Raaij and Schepers (2008). The model used in this study could be seen in Figure 2 below.

Figure 2. The original model of Unified Theory of User Acceptance of Technology or UTAUT (Venkatesh et al., 2003)

2.2 Hypotheses Development

The original UTAUT model consist of seven constructs. There are:

Table 1. “Original” UTAUT Constructs (Akbar 2013; Venkatesh et al. 2003)

Construct	Definition
Performance Expectancy (PE)	The degree to which an individual believes that using the system will help him or her to attain gains in learning performance.
Effort Expectancy (EE)	The degree of ease associated with the use of the system.
Attitude towards using technology (ATU)	An individual's overall affective reaction to using a system.
Social Influence (SI)	The degree to which an individual perceives that important others believe he or she should use the new system.
Facilitating Conditions (FC)	The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.
Computer self-efficacy (SE)	Judgment of one's ability to use a technology to accomplish a particular job or task. (adapted from the Social Cognitive Theory)
Computer anxiety (ANX)	Evoking anxious or emotional reactions when it comes to performing a behaviour (i.e. using the technology)

PE is the extent of a student believes that the task performance would be improved by using particular technology (Venkatesh et al., 2003). In this study, PE is measured by asking students their perception on how the iPad Mini would help them in their lectures/classes, finishing their assignments faster, increasing their productivity, and as the result gaining better marks (Akbar 2013; Marchewka, Liu & Kostiwa 2016; Venkatesh et al. 2003). Therefore:

H1 PE would influence BI to use iPad Mini and would be moderated by Age or A (H1a) and Gender or G (H1b)

EE is the extent of effort needed by a student to use iPad Mini for their academic activities (Tan & Lau 2016; Venkatesh et al. 2003). Therefore:

H2 EE would influence BI to use iPad Mini and would be moderated by A (H2a), G (H2b), and Experience or E (H2c)

SI is the degree of perception of a student on how the other students, lecturers, faculty, and other people think that the students should use the iPad Mini (Akbar 2013; Brennan & Johnson 2000; Venkatesh et al. 2003). SI is the subjective norm that might influence the intention of use a particular technology (Tan & Lau 2016). Therefore:

H3 SI perception would influence BI to use iPad Mini and would be moderated by A (H3a), G (H3b), and E (H3c)

FC is the degree to which a student believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh et al. 2003). In this study, FC is measured by looking at resources to support students in using iPad Mini, iPad Mini compatibility with the other gadgets owned by students, students' knowledge, and technical support provided by the faculty and vendor (Akbar 2013). Therefore

H4 FC would influence Use of iPad Mini (U) and would be moderated by A (H4a) and E (H4b)

SE is defined as judgment of one's ability to use a technology (e.g., computer) to accomplish a particular job or task (Compeau & Higgins 1995a, 1995b; Venkatesh et al. 2003). Therefore

H5 SE would influence BI to use iPad Mini

ANX is defined as evoking anxious or emotional reactions when it comes to performing a behaviour (Bandura 1986; Bozionelos 1996; Fagan, Neill & Wooldridge 2003; Hong et al. 2012; Venkatesh 2000). Therefore

H6 ANX would influence BI to use iPad Mini in a negative way

ATU is defined as an individual's overall affective reaction to using a system (Akbar 2013; Venkatesh et al. 2003). Therefore

H7 ATU would influence BI to use iPad Mini

BI would influence the use of technology (Marchewka, Liu & Kostiwa 2016; Raaij & Schepers 2008; Venkatesh et al. 2003). Therefore

H8 BI would influence Use of iPad Mini (U)

3. RESEARCH METHOD

The survey was developed based on the "original" UTAUT model (Akbar 2013; Venkatesh et al. 2003) and modifying it by eliminating Voluntariness questions. The survey used Likert Scale with range of 1 to 5, where 1 is represents strongly disagree and 5 represents strongly agree. The population of FEUAJY students who have to purchase iPad Mini is 1400 from the intake year 2015 and 2016. We prepared a survey questionnaire adopted from the "original" UTAUT. The survey was conducted in the second half of 2016-2017 academic year. We distributed the questionnaires to Introduction to Financial Accounting 2 classes for class of 2016 and Information Systems Management Classes for class of 2015. As many as 450 questionnaires were distributed. We were asking the lecturer for each class to distribute the questionnaires to their students and also to gather the responses. We received 371 filled questionnaires, but further examination revealed that only 349 were usable. The respondents' profile could be seen in table 2.

For data analysis, we used Structural Equation Modelling or SEM using Partial Least Square or PLS (Kline, 2011; Westland, 2015). We utilised SmartPLS software by SmartPLS version 3 (Ringle, 2015).

Data Analysis

For SEM, the analysis using SmartPLS version 3 started by examining Outer Model (Kline 2011; Ringle 2015; Westland 2015). Outer Model Output for SmartPLS consist of evaluating Convergent Validity, Discriminant Validity, Composite Reliability, Average Variance Extracted (AVE), and Cronbach's Alpha.

Table 2. Respondents' Profile

		Number	Percentage
Gender	<i>Male</i>	120	35%
	<i>Female</i>	229	66%
Previous tablet ownership	<i>Yes</i>	131	38%
	<i>No</i>	218	62%
Department	<i>Accounting</i>	161	46%
	<i>Management</i>	103	30%
	<i>Economics</i>	6	2%
	<i>No Answer</i>	79	22%

As a rule of thumbs Convergence Validity value should be greater than 0.7, AVE greater than 0.5, and Cronbach Alpha should be greater than 0.6. Therefore, we decided to delete Q14 and Q18 which has Outer Loading value less than 0.7. All variables shown Cronbach Alpha greater than 0.6, therefore we decided to keep all the variables.

We tested the hypothesis by using SmartPLS's Bootstrapping. The result can be seen in table 3 below.

Table 3. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Age -> Behaviour Intention	-0,040	-0,022	0,092	0,431	0,667
Age -> Use	0,028	0,030	0,071	0,398	0,691
Anxiety -> Behaviour Intention	-0,126	-0,123	0,043	2,943	0,003
Attitude Toward Using -> Behaviour Intention	0,292	0,290	0,071	4,118	0,000
Behaviour Intention -> Use	0,515	0,522	0,047	10,907	0,000
Effort Expectation -> Behaviour Intention	0,131	0,129	0,061	2,156	0,031
Experience -> Behaviour Intention	0,023	0,023	0,045	0,508	0,612
Experience -> Use	0,000	0,000	0,045	0,006	0,995
Facilitating Conditions -> Use	0,143	0,149	0,055	2,619	0,009
Gender -> Behaviour Intention	0,059	0,057	0,046	1,275	0,202
Gender -> Use	0,057	0,054	0,043	1,304	0,192
Moderating Effect 1 -> Behaviour Intention	-0,024	-0,010	0,255	0,096	0,924
Moderating Effect 10 -> Behaviour Intention	-0,002	0,001	0,056	0,044	0,965
Moderating Effect 2 -> Behaviour Intention	-0,055	-0,072	0,175	0,311	0,756
Moderating Effect 3 -> Behaviour Intention	-0,003	-0,004	0,087	0,037	0,970
Moderating Effect 4 -> Use	-0,165	-0,152	0,096	1,718	0,086
Moderating Effect 5 -> Behaviour Intention	0,019	0,011	0,045	0,420	0,674
Moderating Effect 6 -> Behaviour Intention	-0,031	-0,031	0,049	0,638	0,523
Moderating Effect 7 -> Use	0,017	0,022	0,047	0,365	0,715
Moderating Effect 8 -> Behaviour Intention	-0,018	-0,016	0,059	0,304	0,761
Moderating Effect 9 -> Behaviour Intention	-0,071	-0,063	0,056	1,273	0,203
Performance Expectation -> Behaviour Intention	0,034	0,036	0,078	0,433	0,665
Self Efficacy -> Behaviour Intention	0,156	0,158	0,055	2,832	0,005
Social Influence -> Behaviour Intention	0,060	0,057	0,062	0,964	0,335

By looking at the result we can determined the result of hypotheses testing. A hypothesis would be supported if the original sample value is in the same way as the hypothesis and T Statistics value greater than 1.64 (two tailed test) and P Values less than 0.05 (Kline 2011; Ringle 2015; Westland 2015). The hypotheses testing result are:

- Based on data analysis result, the supported hypotheses are H2, H4, H5, H6, H7, and H8.
- Based on data analysis result, hypotheses H1 and H3 are not supported
- All moderating variables hypotheses are not supported by result of data analysis.

Table 4 showing the result of Adjusted R Square which shows the ability of the independent variables to explain dependent variables.

Table 4. Adjusted R²

	R Square	R Square Adjusted
Behaviour Intention	0,396	0,337
Use	0,369	0,349

The result of original UTAUT model with moderating variables Age, Gender, and Experience only showing that BI have 39.6% R², therefore 60.4% of Use is explained by other variables which are not included in the original UTAUT Model used in this research.

4. CONCLUSION AND FURTHER WORKS

The hypotheses testing for original UTAUT model to test the acceptance of involuntary iPad Mini used among two group of first year students at FEUAIJY has shown that the “original” UTAUT model can explain the acceptance. The hypotheses testing also showed that the moderating variables of Age, Gender, and Experience are not supported by the findings. The result is consistent with the previous research (Sarosa 2017).

The difference this time is PE and SI are not supported by findings, while SE, ANX, and ATU are supported by findings. Performance Expectation is not supported probably because the students do not see any difference in learning performance and result in the classroom with the use of iPad Mini. The conclusion is made based on comparison of students result in classes that used iPad Mini and classes that did not use iPad Mini. Social Influence is not supported probably because the compulsory nature of iPad Mini. Some lecturers, especially where e-books and other learning technology were used extensively, required the students to bring and use iPad Mini in classroom. Self-Efficacy is found to be influencing the behaviour intention to use iPad Mini unlike the original UTAUT (Akbar 2013; Venkatesh et al. 2003). It is likely due to the popularity of smartphone among participants. All the students surveyed have at least one smartphone, either Android or iOS. From interview with them, mostly said it was not difficult to use iPad Mini due to similarity in usage with their smartphone, especially those who own iOS devices. Anxiety is also influencing behaviour intention in negative way. It means the higher level of anxiety the more difficulties faced by user in utilising technology. This is consistent with previous studies in Computer Anxiety (Fagan, Neill & Wooldridge 2003; Hong et al. 2012). Attitude Toward Using is influencing behaviour intention. The result is actually consistent with the original TRA and TPB where ATU originated (Ajzen 1991; Fishbein & Ajzen 1975).

Overall, the result of this study is complementing and consistent with the result from Pramudita's (2017) and Author's study (2017). The same population has been tested using two different tools, which are DeLone and McLean IS success model (DeLone & McLean 2003; Halonen et al. 2009; Pramudita 2017) and the original UTAUT (Akbar 2013; Raaij & Schepers 2008; Venkatesh et al. 2003). Both studies shown that iPad Mini is accepted and perceived as success (by providing Net Benefit) to FEUAIJY students.

For future works, we are planning to address low R². Our result is higher (39.6%) than the previous study (26.2%). An increase of 13.4%. Although many would argue that low R² is not a problem, we are intrigued by the phenomenon. From interview conducted to the students who participated in the study, some showing some indications that they were influenced by the reputation of Apple Inc. and its product like the iPad Mini. There were also indications that iPad Mini was seen as a life style gadget rather than productivity tool. We are currently devising a study to enhanced UTAUT with life style and brand influence in the next study as suggested by Venkatesh et al. (2016).

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