

A Review Unified Theories of Acceptance and Use of Technology (UTAUT): Technology Empowering and Acceptance in Malaysia

Fairus Binti Abu

Faculty of Technology Management and Technopreneurship
Universiti Teknikal Malaysia Melaka

Juhaini Binti Jabar

Faculty of Technology Management and Technopreneurship
Universiti Teknikal Malaysia Melaka

Ahmad Rozelan bin Yunus

Faculty of Technology Management and Technopreneurship
Universiti Teknikal Malaysia Melaka

Abstract

Adoption and acceptance technology have been studied several decade ago. Unified theory of acceptance and use of technology (UTAUT) proposed by Vankatesh (2003) is the updated theory researcher use in order to exploring and investigate the behavior of individual towards use and acceptance technology. The original article has already been cited by a large number of studies and hence it appears to have become a popular theoretical choice within the field of information system adoption likewise Malaysia. This paper will explore citation UTAUT theory in Malaysia studies. This Literature review is based on articles relating to UTAUT model studies in Malaysia being identified and observed to have been published in journals from databases EBSCOhost , Emerald, Proquest ,Science Direct and IEEE Explore between the year 2010-2013.

Keywords: *Unified theory of acceptance and use of technology (UTAUT), technology acceptance in Malaysia*

INTRODUCTION

Technologies that facilitate collaboration via electronic have become an important component of day to day life. Thus several studies have examined the adoption of collaboration technologies such as voice mail, email group support system, services and so on. Given that adoption of collaboration technologies is not progressing as fast or as broadly as expected, it seems a different approach needed. New system or new technologies acceptances require input both the managerial or organizational level and the individual level. It is important to understand not only the end user beliefs, attitudes and intentions, but the management strategies, policies and actions which have significant effect on the successful acceptance of a technology. Furthermore, for driver of an innovation or technology supplier, the acceptance of technology is only successful when both the individuals and organizations accept the innovation and also targeted adopters show the commitment by continuing to use the technology over times [1]. The purpose of this study is identified and discusses the trend of UTAUT theory in the culture of Malaysia

and discusses the finding of their study in different field.

According to Roger, adoption of the decision to make full use of an innovation is the best course of action. The decision to or not to adopt an innovation can be a one-time event, but the adoption process is not single event and the route that leads one's decision does not take, place in a vacuum [2]. If new technologies are available, further questions would be [3] what organizational process facilitates the adoption of innovation and why is some organization able to adopt more innovation compared to others and [2] how to motivate more individual to adopt or use the new technologies in their work. [4]

Furthermore, the acceptance and use of new technologies has been studied extensively over the last two decades. Technology acceptance differs in the fact that it focuses on the actual behavior of the user and aspects influencing it. The research has resulted in a number of different theoretical models from the perspectives of information system, psychology and sociology. A "review and synthesis" of major model was necessary to progress toward a unified view of user acceptance. [3]

TECHNOLOGY ACCEPTANCE THEORY

There are a few theories that examine the behavior of individual adoption of technology that focus on people's intention to appoint in a certain behavior. One of the most theory have been use to explain technology adoption is theory reasoned action (TRA) that introduced by Fishbein and Ajzen. According to [5] assume that beliefs or perception about the characteristics the target system are antecedent to behavioral intent to adopt and use the system. . TRA has been used in variety of predict the technology

acceptance model of various technologies. Although TRA is widely applied in different field of study but it seems that the power prediction of TRA narrowed to which it is applied under the context of voluntary behavior since the original objective of developing TRA are aimed to explain voluntary behavior [6]. The other theory is Technology Acceptance Model where "TAM is an adoption of TRA specifically tailored for modeling user of information systems" [7]. TAM is suitable for examining perceptions, attitudes, and intentions before implementation as well as after .TAM has proven to be useful theoretical model in helping to understand and explain use behavior in IS implementation. However, some weakness has appeared in this model capable to predicting technology adoption success between 30% [8] and also criticism of TAM is the lack of consideration of individual differences as identified in Agarwal & Prasad [9]. This model ignores cultural factors such as prior experience, gender and age. So that, researcher should find another model that can deliver a higher prediction of success.

UNIFIED THEORY ACCPETANCE AND USE OF TECHNOLOGY (UTAUT)

In a further effort to improve the models of technology acceptance, Vankatesh, Davis and Morris have proposed the unified theory of acceptance and use of technology (UTAUT) [3]. UTAUT explained about 70 % of the variance in behavioral intention to use a technology and about 50 % of the variance in technology use [10] UTAUT has four key constructs which are performance expectancy, effort expectancy, social influence and facilitating conditions. Performance expectancy is define as 'the degree to which an individual believes that using the system will help him or her to attain gains in job

performance whereas Effort expectancy is define as ‘the degree of ease associated with the use of system’. Social influence is define as ‘the degree to which an individual perceives that important others believe he or she should use the new system and facilitating conditions define as’ the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system’[3].

UTAUT theories not only have four main key construct but also there are three additional constructs which are anxiety, perceived credibility and attitude toward using. This construct are theorized not to be direct determinants of intention [3]. Gender, age, experience and volunteriness of use

are posited to mediate the impact of the four key constructs on usage intention and behavior [3]. These items were put in place to ensure that no single construct has a unfair of weight placed on it [11]. Table 1 show the UTAUT construct was develop from 8 models which are Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU) and Innovation Diffusion Theory (IDT). There are three broad type of extension/ integration examined UTAUT in new contexts, such as new technologies (e.g, collaborative technology, health information systems [12], new user populations (e.g, healthcare professional, consumers) and new cultural settings [13].

both two constructs appeared to be significant direct determinants of intention in SCT. Anxiety is defined as the evoking of anxious or emotional reactions regarding a behavior [14], whereas self-efficacy defined as ‘the degree to which individual beliefs that he or she has the ability to perform specific task’. Anxiety and Self efficacy have been modeled as indirect determinants of intention fully mediate by perceived ease of use [3].

The strongest impact of UTAUT factors is moderate by age, gender, volunteriness of use and experience. Age is difference have shown to exist to exist in technology acceptance [3]. From the previous research found that differences in attitudes were caused by age with the older participants having more positive attitudes towards technology and indicate that they less confidence in the technology rather than younger [15]. Age in this model more effected to performance expectancy and effort expectancy while gender state that performance expectancy and task –oriented accomplishment was

TABLE 1: Basic Construct and UTAUT Model Constructs

Constructs	Model	UTAUT Constructs
Performance Expectancy	TAM,TAM2, C-TAM, TPB,MM, MPCU,IDT, SCT	Perceived Usefulness Extrinsic Motivation Job-fit Relative Advantage Outcomes Expectation
Effort Expectancy	TAM,TAM2,MPCU,IDT	Perceived Ease of Use Complexity Ease of Use
Social Influence	TRA, TAM2, C-TAM, TPB, MPCU, IDT	Subjective Norm Social Factors Image
Facilitating conditions	MPCU	Facilitating Conditions
Behavioral Intention	TRA, C-TAM, TPB,MM	Attitude towards Behavior Intrinsic Motivation
Use Behavior	MPCU, SCT	Affect toward Use Affect

Sources: Vankatesh, Moris, Davis & Davis (2003)

Additionally, this two constructs does not include in UTAUT model as direct determinants and

more prominent towards men whereas looking on effort expectancy women is more significant rather than men in intention to use the technology. Other than that, voluntariness of use defined as the degree to which use of the innovation perceive as being voluntary. The author found support the predictive validity of these innovation characteristic in different studies [16].

UTAUT PRACTISE IN MALAYSIA

Tables 2, provide a detailed list of researches in Malaysia conducted under different setting and subject of study. For each study, it provides the title of the paper, the author, objective of the study and the result of the study. The studies have been arranged thematically and chronologically starting with education, banking and information system.

Internet Banking:

TOPIC	AUTHOR	OBJECTIVE	RESULT
Internet Banking Adoption in Kuala Lumpur	Yeoh Sok Foon Benjamin Chan Yin Fah	To investigate the factors and predictors of internet banking adoption among Malaysian To determine the demographic difference between internet banking adopters and non-adopters	Performance Expectancy, effort Expectancy, Social Influence and Facilitating Condition and trust positively impact on behavioral intention
User Acceptance of Internet Banking service in Malaysia	Yee Yen Yuen P.H.P. Yeow	To discover the factors that encourage and discourage the adoption of IBS	Performance Expectancy is positively impact on behavioral Intention

Education:

TOPIC	AUTHOR	OBJECTIVE	RESULT
Student Perception towards implementation of Computer Graphics Technology in Class via UTAUT	Norsila binti Shamsudin	To see how deep student's involvement as well as their acceptance towards used in Computer graphics and image processing subjects.	Negative relationship between usage behavior and effort expectancy Positive relationship between usage behavior and performance Expectancy.
The history of UTAUT model and its impact on ICT acceptance and usage by academics	N.D. Oye. N. A. Lahad. N. Ab. Rahim	To measure the most influential factors for the acceptance and usage of ICT by ADSU academics staff To identify the greatest barriers to using ICT by ADSU academic staff	Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Condition positively impact on acceptance and use of ICT by the ADSU academic staff.
Assessing Educators' Acceptance of Virtual Reality (VR) in the classroom using the UTAUT	Niwala Haswita Hussin Jafreezal Jaafar Alan G.Downe	To investigate and provide a preliminary analysis of a framework that predicts level of technology acceptance in a post-secondary institution in Perak, Malaysia	PE is not significant predictor of the behavioral intention of the educators. EE and SI is significant and give positively impact towards behavioral intention and
Level of acceptance and factors influencing student's intention to use UCSI University's E-mail System	Mohammed Yamin Yvonne Lee	To explore the level of acceptance of the newly implemented student e-mail system at UCSI University To discover relationship between influencing factors and student's intention to use the email system	Performance Expectancy, Effort Expectancy, Attitude, Social Influence, Facilitating condition and self-Efficacy positively correlated with behavioral intention.

Information Communication System

TOPIC	AUTHOR	OBJECTIVE	RESULT
User acceptance of e-government: integrating risk and trust dimension with UTAUT model	Ayankunle Adegbite Taiwo Ahmad Kamil Mahmood Alan G. Downe	To investigate factors affecting citizens' intention to adopt e-government services	Performance Expectation. Peer Influence, Trust belief and risk taken propensity significantly impact on behavioral intention to adopt e-government
Examining User Acceptance of E-syariah Portal Among Syariah Users in Malaysia	Mornizan Yahya, Feridah Nadzar Baharom Abdul Rahman	To determine the factors that influence the intention to use and actual usage of e-Syariah Portal by Syariah users in Malaysia	Performance expectancy, effort expectancy, social influence, information quality and system quality found to be significant and positively related to intention to use e-syariah Portal
Malaysian authors' acceptance to self-archive in institutional repositories towards a unified view	Feria Wirba Singeh A.Abrizah Noor Harun Abdul karim	To evaluate Malaysia author's readiness to self-archive in open access repositories	The four construct of UTAUT showed insignificant relationship with behavioral intention. Most of studied reviewed on the application of the UTAUT model particular computer or internet technology.
User Behavioral Intention toward Using Smart Parking System	Amin Kianpisheh Norlia Mustaffa Janet Mei Yean See Pantea Keikhosrokiani	To assess the user's acceptance level and demand towards SPS To find out important factors which can affect user acceptance toward using SPS	Performance expectancy, Subjective Norm, Perceived Usefulness and Perceived ease of Use shows positive behavioral intention towards using SPS. Perceived usefulness most influence on behavioral intention

CONCLUSION

Result from several studies in Malaysia based on Table 2 UTAUT theory shows that, majority of the study consistent with the original statement of the authors UTAUT Vankatesh et al (2003). The effect of Performance Expectancy, Effort Expectancy and Social Influence on behavioral Intention are consistent even though the results come from different field of study. Additionally, the majority of Malaysia study on this theory is concentrate on information system where this theory is applicable and synonym with but it was still lacking in terms of other type of technology to be tested on UTAUT theory. In conclusion, most researchers UTAUT theory should be exploring not only information system but also in other type of technology.

REFERENCE

- [1] Rogers, E.M. "Diffusion of Innovation (5th ed.). New York: Free Press, 2003.
- [2] Straub Evan T. "Understanding Technology Adoption: Theory and Future Directions for Informal Learning", American Educational Research Association, Vol. 79, No.2, pp. 625-649, June 2009
- [3] Morris, M. G., Hall, M., Davis, G. B., Davis, F. D., & Walton, S. M. (2003). User Acceptance Of Information Technology : Toward A Unified View 1, 27(3), 425-478.
- [4] Damanpour, F, Wischnevsky, J.D. " Innovation in Organization Distinguishing Innovation-Generating from Innovation-Adopting Organizations, Journal of Engineering Technology Management, vol 23, pp. 269-291, 2006
- [5] Fishbein, M., and Ajzen, I, "Belief, attitude, intention and behavior: an introduction to theory and research", Addison Wesley, Reading, 1975.
- [6] Hale, J, L, Householder, B. J., and Greene, K, L., "The theory of reasoned action". In Dillard, J.P., and Pfau, M. (Eds), The Persuasion Handbook: Development in Theory and Practice. Sage, Thousand Oaks, 2003.
- [7] Davis, F.D. (1989). "Perceived Usefulness, Perceived Ease of Use and User Acceptance in Information Technology". MIS Quarterly, 13 (3), pp. 319-340.

- [8] Meister, D. and Compeau, D.C. "Infusion of Innovation Adoption: An Individual Perspective," in Proceedings of ASAC conference, 2002, pp. 23-33.
- [9] Agarwal, R., & Prasad, J. (1997). "The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies". *Decision Sciences*, 28(3), pp. 557-582
- [10] Vankatesh V, Thong Y.L James, Chan K.Y. Frank, Hu Jen-Hwa Paul and Brown Susan A., " Extending the two stage information systems continuance model: incorporating UTAUT predictors and the role of context.," *Infor System J*, vol 21, pp. 527-555, 2011
- [11] Cetron J.F, "Wireless acceptance in A University setting Using the Unified Theory of acceptance and Use of Technology, 2007
- [12] Chang, H.H and Wang, I.C. " An Investigation of user communication behavior in computer mediated enviroments, *Computers in Human Behavior*, Vol.24 (5), pp. 2336-2356, 2008
- [13] Gupta, B. Dasgupta, S. and Gupta , A. " Adoption of ICT a government organization in a developing country: An empirical study, *Journal of Strategic Information Systems*, Vol 17 (2), pp. 140-154, 2008
- [14] Compueau, D.R., and Higgins C.A. "Computer self efficacy: Development of a measure and initial test, *MIS Quaterly*, vol 19(2), pp.189-211. 1995
- [15] Dyck, J.L. and Smither, J.A. " Age difference in computer anxiety: The role of computer experience, gender and education, *Journal of Educational computing Research*. vol 10 (3), pp. 239-248, 1994
- [16] Plouffe,Ch.,Vandenbosh,M. Hulland, J., " Intermediating technologies and multi-group adoption: A comparison of consumer and merchant adoption intentions toward a new electronic payment system". *Journal of Product Innovation Management*, vol 18 (2), pp. 65-81, 2001