Room 3 (Pala): Technology, Knowledge and Green Management
3.1 Room 3 (Pala): Technology Management I

The Integration of Unified Theory Acceptance Use Technology (UTAUT) and End User Computing Satisfaction (EUCS) to Evaluate Information System (IS)

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Abstract

Many studies in the field of Information System (IS) evaluate the acceptance and satisfaction of using IS among the end user separately. Although the acceptance and satisfaction are different streams, the integration of acceptance and satisfaction theories is still limited. Because of that, this paper attempts to propose a research framework by consolidating the acceptance theory (Unified Theory Acceptance Use Technology; UTAUT) with the satisfaction theory (End User Computing Satisfaction). The method of this paper is based on literature review in order to develop the model for evaluating the acceptance and satisfaction of end user in using IS. Thus, the proposed research framework is set forward as the basis to future empirical study for evaluating the integration of acceptance and satisfaction of IS among the end user in many scopes and types of IS.

Keywords:Integration, Information System, Acceptance, Satisfaction, UTAUT, EUCS.

1. Introduction

The evaluation of satisfaction in using IS is important as well as the evaluation of acceptance in using IS among the end users. The scope of technology acceptance is not same as the scope of technology satisfaction. Naturally, there are two main streams or methods to understand the success and effectiveness of IS (Roca, Chiu & Martinez, 2006; Wixom & Todd, 2005) which is user satisfaction (e.g. Bailey & Pearson, 1983; Doll &Torkzadeh, 1988; DeLone and McLean, 1992; Ives et.al. 1983; Melone, 1990; Seddon, 1997) and technology acceptance (e.g. Davis, 1989; Venkatesh et al., 2003). However, the development of these two main streams are rarely integrated for better understanding of IS (Ong, Day & Hsu, 2009). The technology acceptance is a strong predictor of behaviours and ability to link attitude and beliefs to behaviour meanwhile the strength of user satisfaction is in its ability to link information design attributes (Au, Ngai & Cheng, 2002; Lai & Pires, 2010; Wixom & Todd, 2005). According to Seddon (1997), it is suggested to integrate these two approaches for better understanding of the factors influence the use of IS. In depth and better understanding on the acceptance of IS, many studies expose that the integration of models, instruments and theories are very useful (Lee, Kozar & Larsen, 2003). In brief, the End User Computing Satisfaction (EUCS) is more focusing on the characteristic and design of the IS and less towards the users' behavioural belief (Au, Ngai & Cheng, 2002). As quoted by Pikkarainen et al. (2006), the EUCS is in the field of management information systems (MIS) and dissimilar from social and cognitive psychology area (Theory Reasoned Action; TRA) (Doll & Torkzadeh, 1991).Wixom and Todd (2005) state that user satisfaction instruments evaluate object-based beliefs (e.g. information quality, system quality) and object-based attitudes (e.g. information satisfaction, system satisfaction) meanwhile the TRA, Technology Acceptance Model (TAM) and UTAUT are used for measuring the users' behavioural beliefs (e.g. usefulness and ease of use in TAM, performance expectancy and effort expectancy in UTAUT).

Numerous studies regarding the acceptance of Information System (IS) in various scopes but the studies regarding the acceptance and satisfaction is still at infancy. Because of that, this paper proposed a conceptual model for the acceptance and satisfaction by integrating UTAUT and EUCS. The model can be applied to find the answers to the following research questions: i. Does Performance Expectancy has an effect on the satisfaction to use IS? ii. Does Effort Expectancy have an effect on the satisfaction to use IS? iii. Do Social Influence have an effect on the satisfaction to use IS? iv. Do Facilitating Conditions have an effect on the satisfaction to use IS?

2. Underpinning Theories

This study proposes to integrate the UTAUT and the EUCS. The UTAUT has been used in a lot of previous studies to evaluate many types of IS acceptance among the users. For instance, the ERP (Keong, Ramayah, Kurnia & Chiun, 2012), web 2.0 tools (Tulaboev, 2013; Yoo & Huang, 2011), Facebook (Lallmahomed et al., 2013), social media (Gruzd et al., 2012; Mandal & Mcqueen, 2012; Salim, 2012), Learning Management System (Fidani & Idrizi, 2012), Social Networking Site (Ismail, 2010), Blog (Pardamean & Susanto, 2012) and etc.

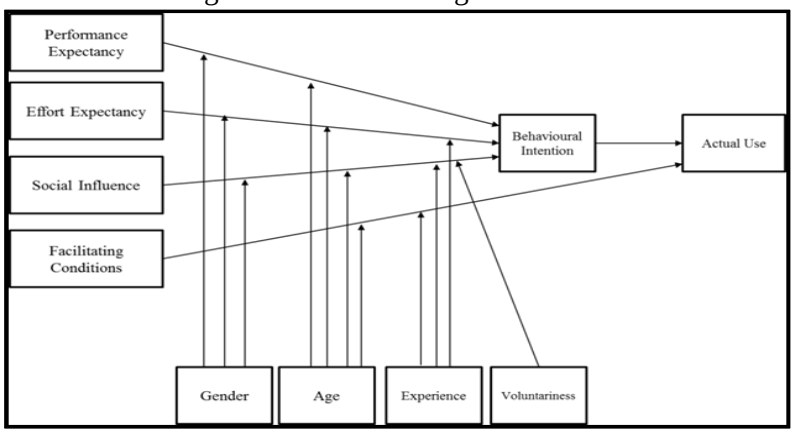
Similarity to the EUCS is developed by Doll and Torkzadeh (1988) has also been widely adapted as the instrument to evaluate the users' satisfaction towards many types of IS. For example, internet marketing website (Cheung & Lee, 2005; Wang, Tang & Tang, 2001), social software (Zhang, Zhang, Qian & Zhang, 2009), hospital information system (Aggelidis & Chatzoglou, 2012), accounting information system (Fong & Ho, 2014; Ilias & Razak, 2011; Ilias, Razak, Rahman & Yasoa, 2009; Ismail, Mohd-Saleh & Kundari, 2012), internet banking (Pikkarainen, Pikkarainen, Karjaluoto & Pahnila, 2006; Marakarkandy & Yajnik, 2013), business intelligence systems (Hou, 2012) and etc.

2.1Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT is formed to evaluate the behavioural intention and the actual use of IS (Venkatesh, Morris, Davis & Davis, 2003).Venkatesh, Morris, Davis and Davis developed UTAUT in 2003 by analyzing and reviewing eight theories/ models which are the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), the Theory of Planned Behaviour (TPB), the Combination of Technology Acceptance Model and the Theory Planned Behaviour (C-TAM-TPB), the Model of PC Utilization (MPCU), the Innovation Diffusion Theory (IDT) and last but not least the Social Cognitive Theory (SCT). This model contains four independent variables in order to access the acceptance of information technology, namely, 1) Performance Expectancy 2) Effort Expectancy 3) Social Influence 4) Facilitating Conditions. Meanwhile, four moderator variables, i.e., 1) Gender 2) Age 3) Experience 4) Social Influence and 4) Voluntariness changes the strength of relationship between Independent Variables and Dependent Variable.

Based on Figure 1, gender moderates the relationship between Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) with Behavioural Intention (BI) and Actual Use of using IS. Next, Age moderates the relationship between PE, EE, SI, FC with BI and Actual Use of using IS. Experience becomes a moderator variable towards the relationship between EE, SI, FC with BI and Actual Use of using IS.Lastly, only voluntary becomes a moderator variable towards the relationship between SI and BI and Actual Use of using IS. These moderator variables increase the predictive validity of all models when excluding SCT and MM (Venkatesh et al., 2003).This model enables to explain 70% users' behaviour compares 40% users' behaviour towards the acceptance of using IS (Venkatesh et al., 2003). In term of validity, the study is conducted by Oshlyansky, Cairns and Thimbleby (2007) in 12 countries clearly reveal that this model can be used cross-culturally and beyond it country and the language of origin. They conclude that UTAUT is a good to be used to predict the acceptance of IS among the users and suggest that this model should be tested in various scopes in order to validate the relationship between variables. Figure 1 shows the modelling of UTAUT.

Figure 1: The Modelling of UTAUT.



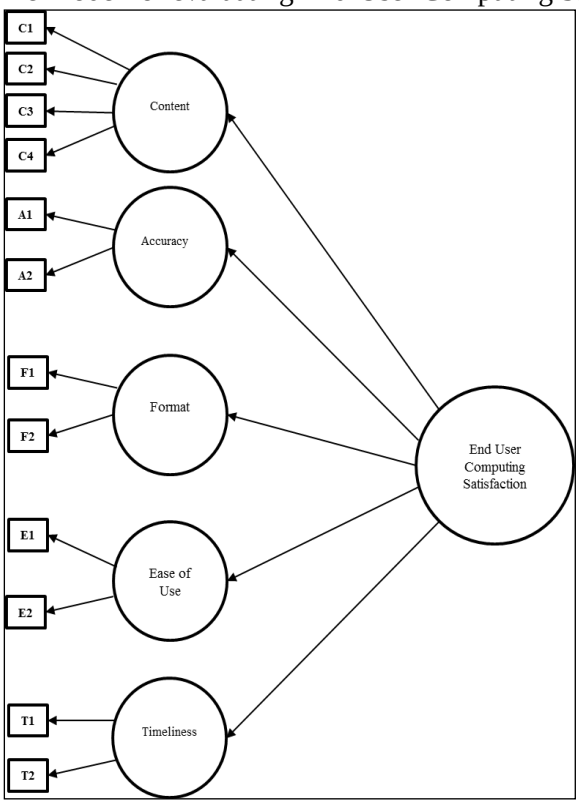
2.2End-User Computing Satisfaction (EUCS)

The benchmark of IS effectives is based on the user satisfaction in using the particular IS (Bailey & Pearson, 1993).There are many models for measuring EUCS and one of these models was developed by Doll and Torkzadeh (1988).

Doll and Torkzadeh (1988) described EUCS as *"the affective attitude towards a specific computer application by someone who interacts with the application directly."* (p.261). As quoted by Doll and Torkzadeh (1991), the main aim of the study is not for improving satisfaction (downstream) but to extent of end-user satisfaction (upstream) (Pikkarainen, Pikkarainen, Karjaluoto & Pahnila, 2006). Besides, their EUCSmodel is developed in order to overcome the weaknesses of EUCS model by Ives et.al (1983) (Doll & Torkzadeh, 1988). Doll and Torkzadeh (1988) claimed that firstly, EUCS model was developed by Ives et al. (1983) isonly suitable to be used for measuring the general user's satisfaction and not specific applications. Secondly, previous instrument do not included one vital factor i.e. ease of use. Thirdly, the Electronic Data Processing (EDP) staff and service items besides user involvement/knowledge items were not really fit for EUC environments.

According to Cheng and Lee (2005), the EUCS model by Doll and Torkzadeh is the one of the best user satisfaction models and widely cited in many literature.It has been pervasively used and cross-validated in many studies (Aggelidis & Chatzoglou, 2012). A study is undertaken by Deng, Doll, Al-Gahtani, Larsen, Pearson and Raghunathan (2008) approved that this model can be applied as a tool to measure the user's satisfaction in using the IS traverse across the cultures. This study uses a sample from western countries (USA and Europe) and non-western countries (Saudi Arabia, Taiwan and India) and the result revealed that only "ease of use" dimension has shown different significant relationship. Figure shows the EUCS model .This model contains 5 dimensions namely content (4 items), accuracy (2 items), format (2 items), ease of use (2 items) and timeliness (2 items) which were used to evaluate the user's satisfaction towards specific application. In the point of fact, up to now, numerous journals and articles use this EUCS model to evaluate the satisfaction of using IS among the users. Figure 2 shows the EUCS model is developed by Doll and Torkzadeh (1988).

Figure 2: The Model for evaluating End-User Computing Satisfaction



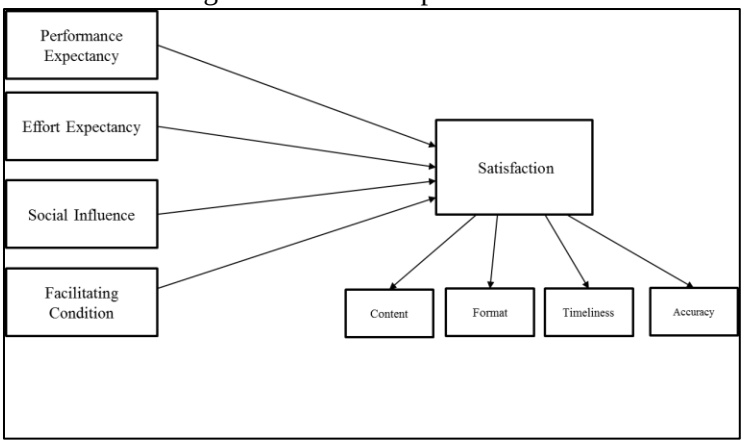
3. Proposed Research Framework

The proposed research framework is developed to determine the satisfaction of using IS among the end users. The four main constructs (Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions) have an effect on the EUCS as dependent variable. Only four from five dimensions in EUCS are retained i.e. content, accuracy, format and timeliness since 'ease of use' dimension same as 'effort expectancy' element in UTAUT. According to Sun and Zhang (2006), the moderating variable plays an important role in increasing the predictive validity of many modification models surpasses the original model. Although it is might true that all moderators in UTAUT plays an important role in adopting IS (Sharma, Ganpati & Kumar, 2013) but this present model does not retain any moderator variables as same as the origin model and it became the limitation for further research. Figure 3 shows the conceptual model in this study. Thus, the model is constructed in order to answer the following questions: i. Does Performance Expectancy has an effect on the satisfaction to use IS? ii. Does Effort Expectancy have an effect on the satisfaction to use IS? iii. Do Social Influence have an effect on the satisfaction to use IS? iv. Do Facilitating Conditions have an effect on the satisfaction to use IS?This study predicts that the nature of influence between all exogenous constructs (performance expectancy, effort expectancy, social in and facilitating conditions) on satisfaction as endogenous variable in using IS based on literature review. Meanwhile, the satisfaction as second order construct and all the dimensions of satisfaction become first order construct. Naturally, the measurement model of this study is identified as the reflective measurement model. Meanwhile, the second and first order constructs are reflectively measured constructs itself.

According to Chan et al (2010), many studies reveal that the performance expectancy and effort expectancy are the two factors that positively stimulate both the users' acceptance and satisfaction in using technology. Ling and Islam (2015) conducted the acceptance and satisfaction of 215 Malaysia users

in using online banking. The result shows that the PE and FC are positively associated with satisfaction. A study is undertaken by Napitupulu and Patria (2013) evaluate the acceptance and satisfaction of using e-Electronic Medical Recorder (EMR) among 188 users revealed that PE, EE and FC are positively related with satisfaction. Chan, Thong, Venkatesh, Brown, Hu and Tan (2010) examined the satisfaction of using card e-Government in the mandatory situation among the 1, 179 respondents. The result shows that there are positive significant relationships between PE, EE, and FC with Satisfaction. However, there is an insignificant relationship between SI and Satisfaction. Based on the current study, it can be concluded that PE, EE and FC are the important factors that influence the users in using the information system.

Figure 3: The Conceptual Model



4. Conclusion

The present model is developed and limited based on the literature review. The previous studies regarding the acceptance and satisfaction in accepting the IS among the user is still limited. Due to this limitation, hopefully, it will stimulate the researcher's interest to propose research framework to evaluate the acceptance and satisfaction in accepting the IS among the users. It is suggested to test this model in many types and scopes of IS in order to validate the usability of this model in solving or searching the answers regarding the acceptance and satisfaction among the end users.

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