ISSN 2029-7564 (online)
SOCIALINĖS TECHNOLOGIJOS
SOCIAL TECHNOLOGIES
2013, 3(2), p. 243–260.

DETERMINANTS OF IT-RELATED INNOVATION ACCEPTANCE AND USE BEHAVIOR: THEORETICAL INTEGRATION OF UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY AND ENTREPRENEURIAL POTENTIAL MODEL

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doi:10.13165/ST-13-3-2-01

Abstract

Purpose *– a great number of models investigate individual intention towards adopting and using information technology. However, the complex link between intention and behavior suggests that it may require more scrutiny (intention behavior gap). The link between the intention and behavior is most likely influenced by a number of factors, some controllable, others uncontrollable; therefore, external factors are likely to play a significant role. However, IS literature on the subject is extremely lacking. One of the popular theories in this context is the UTAUT model, which has certain limitations, especially when it concerns intention behavior gaps. Research on the entrepreneurship context identified precipitating events as a promising candidate to overcome such limitations. To address the gap in the UTAUT and*

ISSN 2029-7564 (online)
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improve the model, it is reviewed and empirically compared to the Entrepreneurial Potential Model (EPM) in order to allow us to develop a new model that integrates elements from the two models in order to capture the different factors of IT adoption behavior.

***Methodology** – a longitudinal survey approach is appropriate for this study, since this research design allows the researcher to test the overall fit of the integrative TADU model. The longitudinal study is appropriate to test the relationship between intention and use behavior and the effect of precipitating events on the time that intention is formed and behavior is performed. This is an ongoing research, and at this stage, the authors are mainly developing a theoretical argument and methodology that is currently in the process of being tested.*

***Results** – the new model mitigates the limitations arising from the UTAUT, particularly its predictive ability, and it also reduces the 'distal nature' between intention and use behavior.*

***Study limitation** – the paper represents work in progress and may some researcher criticize it in term of the predicted results.*

***Practical significance** – the TADU model is a useful tool for managers to assess the likelihood of success for new technology introductions and the possibility of actual use. It helps the manager understand the driver of technology acceptance and allows them to design interventions for users that are less inclined to use new technology. In addition, policy makers could facilitate and provide guidance in relation to the adoption and usage of IT innovation.*

***Originality/value judgment** – this study revises the UTAUT and the EPM in order to develop a more robust model, and identify new variables that affect the relationship between intentions and use behavior, while overcoming UTAUT's limitations. It improves the model by adding precipitating events as moderators that is able to measure the effect of external factors on the relationship between behavioral intention and usage behaviors. The new model is able to capture the causal flow between technological factors, environmental factors and individual factors in predicting intentional behavior.*

***Keywords:** – IT innovation, adoption, UTAUT, Entrepreneurial Potential Model, entrepreneurs, technology acceptance.*

***Research type**: conceptual paper.*

1. Introduction

The decision making process by an individual or an organization regarding the adoption of innovations has motivated a great deal of research across multiple disciplines (Straub, 2009; Moghavvemi *et al*., 2012). Researches have been conducted in the IT innovation field to understand the factors that may inhibit or facilitate its adoption and the diffusion of arising IT-based processes or products within the potential adopter (Fichman, 2004). This stream of research has culminated in the unified theory of acceptance and use of technology (UTAUT), which condensed previous adoption models (Chan *et al*., 2010). This theory is focused on the main individual-level factors that affect technology acceptance and identify the contingencies that would amplify or constrain the effect of these factors to further explain IT usage behavior (Venkatesh *et al*., 2003).

Although the UTAUT model is a robust model and is widely used in the field of IS to predict IS adoption and usage behavior, this theory has raised a few concerns among IS researchers (Moghavvemi *et al*., 2011). In a decision making process, intentions are formed prior to behavior, but the link between the two is complex and suggests that it may require more scrutiny (Krueger, 2007). Therefore, Venkatesh *et al*. (2008) investigated the UTAUT model and found that behavioral intention does not represent the external factors that can affect the performance of behavior. Secondly, behavioral intention has a weak predictive and explanatory ability to deal with uncertain and unforeseen events between the time the intention is formed and the behavior is performed. Lastly, the behavioral intention is weak in its ability to predict behaviors that are not completely within an individual's volitional control. So, even though intention is important, it is an insufficient prerequisite for a successful behavior (Wiedemann, 2009). This gap between intention and behavior is known as the '*intention-behavior gap'* (Sheeran, 2002).

Another concern about the UTAUT model is that Venkatesh *et al.* (2003) did not include attitude and self-efficacy as direct determinants of behavioral intention in the UTAUT model. Self-efficacy in the UTAUT model is considered as an indirect construct and measures specific self-efficacy, not an overall computer self-efficacy toward a particular technology (Venkatesh *et al*., 2003; Straub, 2009). Evidence showed that the perceived overall self-efficacy significantly contributes to the motivation and performance of an individual (Bandura and Locke, 2003; Bandura, 1997). In addition, the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) consider attitude as a direct determinant of intention. Although many researches have been conducted to improve the UTAUT model, some limitations still exist. Straub (2009) suggested that further validation and replication of the model is needed.

In recent years, there has been an increasing interest in the issue of entrepreneurship and innovation, both in academics and in practice. With respect to the importance of IT innovation, the Malaysian government started a policy to convince entrepreneurs to adopt and use IT products to encourage a new and more efficient way of completing tasks. Entrepreneurs conducted researches in the IT innovation field to understand the factor that may inhibit or facilitate IT adoption. However, with the limitations that the UTAUT has, applying this model to test the entrepreneurs' IT innovation adoption may not succeed in capturing the effect of external factors that influence an entrepreneur's intention to adopt and use IT innovation in their respective companies. Since entrepreneurs face different challenges, such as vulnerability to environmental factors (Gnyawali and Park, 2009), none can foresee what legal, financial or personal obstacles may arise when they want to adopt and use IT-related innovation in their daily business activities (Moghavvemi *et al*., 2011).

Therefore, there is a need to find the variables that will be able to capture the role of external factors that affects an entrepreneur's intention to adopt and use IT-related innovations, as well as factors that measure individual dimensions toward behavior intention. Literature review shows that in the context of entrepreneurship, Krueger and Brazeal (1994) developed the Entrepreneurial Potential Model to measure individual perceptions toward the intention to take action and the precipitating events as moderating

variables that is able to capture the role of external factors on the relationship between intention and behavior. This model will mitigate the limitations faced by the UTAUT model providing a better understanding of the IS adoption behavior. With respect to the entrepreneurial potential model's ability to circumvent UTAUT's limitation, this study integrated the UTAUT and entrepreneurial potential model to create a robust and parsimonious hybrid model, and provide a better understanding of the adoption behavior. With this integrative model, the limitations within the UTAUT model can be overcome, which will provide a comprehensive understanding of the determinants that affect the adoption and utilization of IT-related innovation among entrepreneurs. Using the integrated model and validating it in a new context will improve knowledge and shed additional light on individual technology acceptance. This proposed theoretical model is developed to provide a comprehensive understanding of the determinants that affect the adoption and utilization of IT-related innovation among entrepreneurs.

2. Background of the Study

2.1. A Unified Theory of Acceptance and Use of Technology

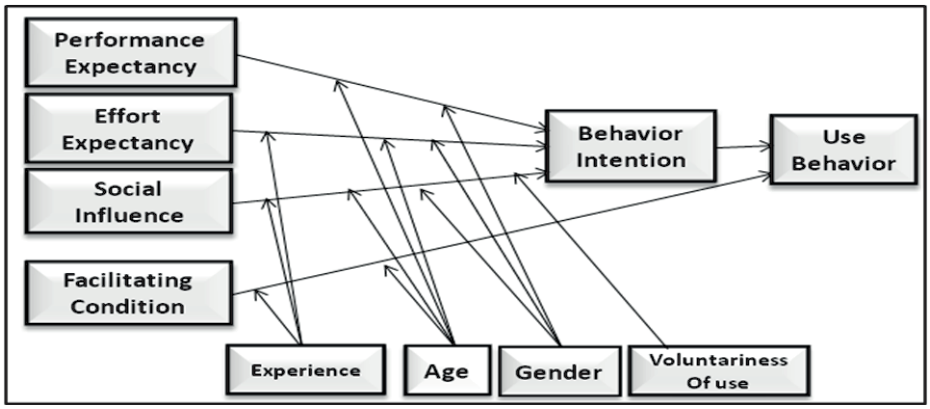
Research on IT acceptance and use has been carried out quite actively, and several models have been developed, mainly from information sciences literature, to predict individual technology acceptance (Straub, 2009). The Theory of Reason Action (TRA) (Fishbein and Ajzen, 1975) has been considered to be one of the most important and influential theories on human behavior. Based on the TRA, Davis *et al.* (1989) proposed the TAM. In 2000, Venkatesh and Davis introduced TAM2 by adding subjective norm to the TAM. The TRA and the TAM assume that when someone forms an intention to act, they will be free to act without limitations, but in reality, there are many factors, such as environmental or organizational limit, unforeseen events, time and abilities, that inhibit the act. However, the TRA does not consider the impact of control factors. Realizing the limitations of the TRA, Ajzen (1991) added the perceived behavioral control to the TRA and developed the Theory of Planned Behavior (TPB) to account for situations in which an individual lacks substantial control over the target behavior.

Venkatesh *et al.* (2003) conducted an empirical study to compare eight competing models and proposed the UTAUT after reviewing eight IT adoption theories to address the limitation of the previous model. The UTAUT postulates that four core constructs act as determinants of behavioral intention and usage behavior, with four moderators of the key relationships. The UTAUT construct includes performance expectancy, effort expectancy, social influence and facilitating conditions that determine behavioral intention or use behavior. Gender, age, experience and voluntariness of use have moderating effects on the acceptance of the IT. In the UTAUT model, they did not consider self-efficacy, attitude and anxiety to be direct determinants of intention. The attitude towards using technology has no direct influence on intentions.

2.2. Critiques on the UTAUT Model

Literature review shows that although the UTAUT is a robust and validated model in different contexts, there are some limitations to it. Based on the well-established theories in IS and social psychology, behavioral intention mediates the influence of various belief and external variables on behavior and is an important predictor of behavior; however, it has three limitations, the first being that behavioral intention is a reflection of an individual's internal schema of beliefs (Venkatesh *et al.,* 2008), and it does not represent the external factors that can affect the performance of a behavior, thus, the role of external variables that can potentially impede or facilitate the performance of a behavior is not fully captured by behavioral intention (it does not fully consider all possible external factors in facilitating condition construct as external factors). Secondly, behavioral intention has a weak predictive and explanatory ability to deal with uncertainty and unforeseen events between the time the intention is formed and the behavior is performed. In the face of new information, an individual belief and behavioral intention can and might change. According to Venkatesh *et al.* (2008), various internal and external stimuli can drastically change the provisional intention over time, rendering behavioral intention inaccurate, unstable and less predictive of behavior. Lastly, behavioral intention has a weak ability to predict behaviors that are not completely within an individual's volitional control (Venkatesh *et al.,* 2008). This is called the *intention-behavior gap*.

Self-efficacy and attitude are another limitation of the UTAUT model. Venkatesh *et al.* (2003) did not include **self-efficacy** as a direct determinant of behavioral intention in the UTAUT model, and it is considered as an indirect construct, measuring a specific self-efficacy, not an overall computer self-efficacy toward a particular technology (Straub, 2009). Inexperienced users view new technology (IT innovation) as complex, and the confidence in one's ability to handle them has a significant influence on their acceptance (Yuen *et al.,* 2010). A higher level of self-efficacy will lead to higher intentions to adopt and use innovation.



Source: adapted from Venkatesh et al. (2003).

Figure 1. A Unified Theory of Acceptance and Use of Technology (UTAUT)

With UTAUT's limitations, there is a need to find variables that are able to improve the model and measure the different dimensions of technology adoption and measure the effect of external factors on the model. Literature review shows that the Entrepreneurial Potential Model, which Krueger and Brazeal (1994) developed in the context of entrepreneurship, can be a promising model that mitigates all these limitations. The following part discusses the entrepreneurial theories and models that are able to improve the UTAUT model.

2.3. Prior Research on the Entrepreneurial Intention Model

A review of the entrepreneurial literature shows that the majority of intention models are largely focused on the pre-entrepreneurial event and argue that both individual and situational variables are important in order to determine entrepreneurial intentions (Shapero, 1982). Six models were developed in order to measure an entrepreneur's intention. They include the Entrepreneurial Event Model (Shapero, 1982), the TPB (Ajzen, 1991), the Entrepreneurial Attitude Orientation (Robinson *et al*., 1991), the Intentional Basic Model (Krueger and Carsrud, 1993), the EPM (Krueger and Brazeal, 1994) and the Davidsson model (Davidson, 1995).

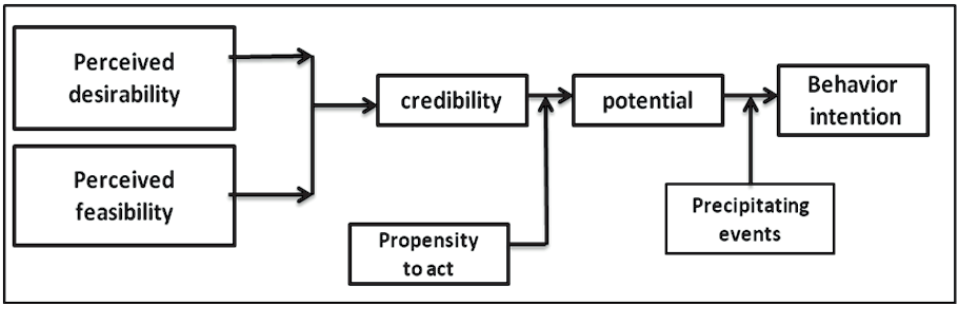
The first model was the *Entrepreneurial Event Model* (EEM), (Shapero, 1982). The premise of this model is that the decision to perform an entrepreneurial activity requires a pre-existing attitude of the activity being desirable and feasible, as well as the propensity to act on a present opportunity (Krueger, 1993). The Theory of Planned Behavior (TPB) introduced by Ajzen is part of the large family of intentional models. Ajzen's TPB and Shapero's Model of Entrepreneurial Event overlaps in certain parts and are largely consistent with each other (Kruger *et al*., 2000). Both models contain aspects of self-efficacy and the desirability of the behavior. Thus, in 1994, Krueger and Brazeal defined the Entrepreneurial Potential Model based on Shapero (1982) and Ajzen's (1991) models.

2.4. The Entrepreneurial Potential Model

This model is one of the latest robust models, since it is integrated from the two most relevant antecedant models, the TPB (Ajzen, 1991) and the EEM (Shapero, 1982). This model is defined on three critical constructs, which are the perceived desirability (attitude and social norms), perceived feasibility (self-efficacy) and credibility (Guerrero *et al*., 2008). Credibility requires the behavior to be both desirable and feasible, and these antecedents affect the intentions toward the behavior. This model explains that although the individual perceives the new venture creation as desirable and feasible, and subsequently credible, they have not finalized the intention to realize the new venture if the precipitating event is still lacking (Coduras *et al*., 2008).

The perceived desirability in this model has two components of the TPB, which are the attitude toward the act and social norms. Perceived desirability is defined as *the degree of attraction an individual perceives towards a specific behavior*, such as becoming an

entrepreneur. Perceived feasibility is the perception regarding their capacity to carry out a specific behavior (becoming entrepreneurs). It contains self-efficacy and perceived behavioral control. Krueger and Brazeal (1994) defined intention as an individual's willingness to pursue a given behavior and represent their commitment toward the target behavior. Krueger and Brazeal (1994) considered two moderating variables in the model to capture the effect of the external factors and volitional aspect of the behavior in the model, precipitating events and the propensity to act. They defined the propensity to act as a personal disposition to act on one's decisions, and it reflects volitional aspects of intentions (*I will do it*). Thus, it was conceptualized as a stable personality characteristic and was closely related to the locus of control. Krueger *et al.* (2000) defined precipitating events as certain exogenous variables that can serve to facilitate or 'precipitate' the realization of intention into behavior. Triggering events create sudden changes in a person's life and work conditions by changing one's needs. According to Shapero (1982), precipitating events come in different guises and are different in the eye of beholder, and this model explains the influence of precipitating events on the intention to perform the behavior (Figure 2). Prior research in the entrepreneurship context has used university students as a sample to investigate entrepreneur's behaviors. Therefore, they considered the potential construct in the model.



Source: Krueger and Brazeal, 1994

Figure 2. Entrepreneurial Potential Model

From the literature review, all of the the intention models are used to predict entrepreneurs' intention. Then, this study supports the present investigation based on Krueger and Brazeal's (1994) Entrepreneurial Potential Model.

3. Model Development

The UTAUT model does not measure the individual characteristic toward behavioral intention to adopt technology (attitude, self-efficacy), limitations that exist in the relationship between intentions and use behavior (*Intention behavior gap*) and EPM's ability to measure individual's dimension toward technology adoption and capture the effect of external factors. In order to mitigate the limitations, the authors developed a

new model. The current study develops a research model by integrating the UTAUT model and the Entrepreneurial Potential Model to predict the intention to use IT-related innovation by entrepreneurs in their business. Comparing the elements of their respective underlying theories, the TRA and the TPB, can draw the most obvious parallels between the two models. The Entrepreneurial Potential Model and the UTAUT model both focus on an individual's intention to take action. While the UTAUT tests pre-adoption and discusses the innovation characteristics, the Entrepreneurial Potential Model measures the pre-entrepreneurial events and argues that both individual and situational variables are important to determine entrepreneurial intentions. Both models are intentional models and are rooted in the TPB. The UTAUT model considers technological characteristics and environmental factors (performance expectancy, effort expectancy and facilitating condition) in predicting intentional behavior, whereas the EPM considers individual dimension and effects of external factors (perceived desirability and perceived feasibility, precipitating events, propensity to act).

By integrating these two models, the authors will be able to measure different dimensions, such as individual perception (perceived desirability, perceived feasibility and propensity to act), technological dimension (performance expectancy and effort expectancy) and environmental characteristics (facilitating conditions and precipitating events). The new model will be able to capture the effect of external factors on the relationship between behavior intention and use behavior. The precipitating events will moderate the relationship between intention and usage behavior and fill the intention behavior gap. Thus, precipitating events can capture the role of external variables that can potentially impede or facilitate behavior. Social influence in the UTAUT model is compatible with subjective norm from the perceived desirability in the Entrepreneurial Potential Model. Therefore, social influence was eliminated from the UTAUT model and was tested through perceived desirability, and through it, the authors also tested the attitude toward intention. Self-efficacy is comparable to perceived feasibility in the Entrepreneurial Potential Model. The basic UTAUT model consists of several constructs that are hypothesized to relate to the intention to use new technology. In turn, the intention to use will be able to predict technology use. Accordingly, following the above rationale, this study developed the following propositions (hypothesis), which can be seen in Figure 3.

3.1. Perceived Desirability

Perceived desirability was adopted from the Entrepreneurial Potential Model (Krueger and Brazeal, 1994) and is defined *as the degree of attraction an individual perceives towards a specific behavior*. They argued that the intentions are driven by perception and that the outcome of the behavior is personally and socially desirable (Krueger, 1998). This construct combined the attitude and objective norm, and is able to measure the effect of it in one construct. The entrepreneurs' desirability to adopt and use new technology affects their intention to adopt and use IT-related innovation in their companies. Therefore,

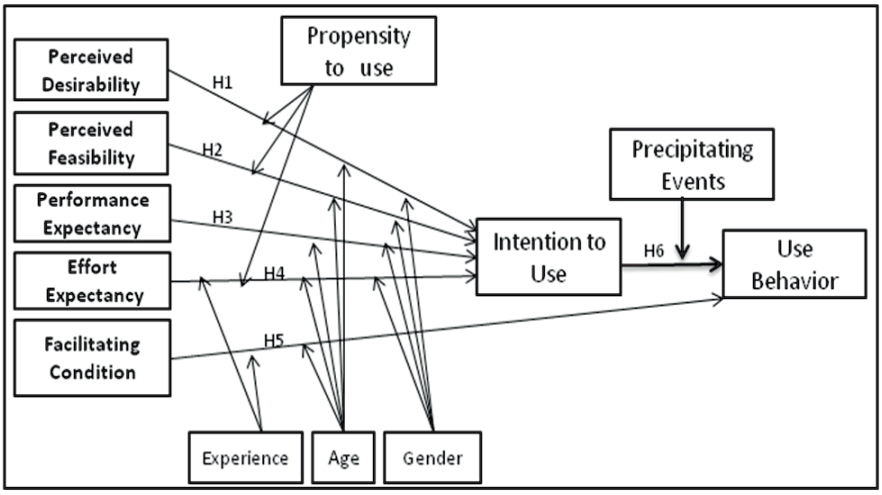


Figure 3. Technology Adoption Decision and Use model (TADU)

Proposition 1: Perceived desirability will have a significant positive effect on entrepreneur's intention to use IT-related innovation.

Proposition 1a: The influence of perceived desirability on intention to use will be moderated by age, gender, propensity to act, and experience and the effect will be stronger for men and younger aged people.

3.2. Perceived Feasibility

Perceived feasibility was adopted from the Entrepreneurial Potential Model (Krueger and Brazeal, 1994). It was originally derived from Bandura (1986, 1995), who argued that taking action requires consideration of not just outcome expectations (perceived desirability), but also perceived self-efficacy (feasibility). It reflects the perception of personal capability to do a particular job or set of tasks. In the Theory of Planned Behavior (TPB, DTPB), perceived behavioral control considers two points of view: the first from the effort requirement perspective and the individual's perception of the ease of completion of a task, which will influence the individual's opinion of their ability to complete it (Bandura 1977), and second, from the facilitating condition's (resource, technology) perspective, which is the perception that resources will be available to complete the task. A higher level of self-efficacy will lead to higher levels of behavioral intention and IT usage (Compeau and Higgins, 1995).

Perceived feasibility in the Entrepreneurial Potential Model is defined as the degree to which one feels personally capable of performing a task. Therefore, it is related to an individual's skill and ability. Facilitating conditions is the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system, with Brazeal *et al*. (2000) arguing that individuals with a high self-efficacy

exhibit a strong belief in their capabilities, choose challenging goals, spend significant amount of time in activities and persevere in the face of insurmountable obstacles. In this study, the authors defined it as the degree to which entrepreneurs perceive they are capable and have the skills necessary to use IT-related innovation in their job. Thus,

Proposition 2: Perceived feasibility will have a significant positive effect on entrepreneur's intention to use IT-related innovation.

Proposition 2a: The influence of perceived feasibility on intention to use will be moderated by age, gender, propensity to act, and experience and the effect will be stronger for men and younger aged people.

3.3. Performance Expectancy

Venkatesh *et al.* (2003) defines performance expectancy as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". In this study, performance expectancy is defined as the degree to which entrepreneurs' perceived using IT-related innovation is useful in their job and helps them attain benefits in their business. Therefore, it is expected that the performance expectancy will positively influence entrepreneurs' intention to use IT-related innovation, while the effect is different among different age and gender, propensity to act and experience. Thus,

Proposition 3: Performance expectancy will have a significant positive effect on entrepreneur's intention to use IT-related innovation.

Proposition 3a: The influence of performance expectancy on intention to use will be moderated by age, gender, propensity to act and experience.

3.4. Effort Expectancy

In the UTAUT model, effort expectancy refers to the ease associated with the use of the information system (IS). The UTAUT model posits that the effort necessary to learn and use new technology will affect its acceptance and usage, and it is stronger for women and older workers (Venkatesh *et al*., 2003). In this study, effort expectancy is defined as the degree to which entrepreneurs' perceived that using IT-related innovation would be easy to use. Thus, the authors of this study postulate that entrepreneurs would use IT-related innovation if the new technology is easy to use. Therefore,

Proposition 4: Effort expectancy will have a significant negative effect on entrepreneur's intention to use IT-related innovation.

Proposition 4a: The influence of effort expectancy on intention to use will be moderated by age, gender, propensity to act and experience.

3.5. Facilitating Conditions

In the UTAUT model, facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh *et al*., 2003). Based on previous studies, facilitating conditions significantly predicted technology use, but it did not predict the intention to use IT when effort expectancy is present in the model (Venkatesh *et al*., 2003). They argued that the effect of facilitating condition is stronger for elder workers in later stages of experience. In this study, facilitating conditions are defined as the degree to which entrepreneurs perceive that factors in the environment do support and facilitates the usage of IT-related innovation. Thus,

Proposition 5: Facilitating conditions will have a significant positive effect on entrepreneur's use of IT-related innovation.

Proposition 5a: The influence of facilitating conditions on usage will be moderated by age, and the effect will be stronger for older entrepreneurs.

3.6. Intention

In the current study, behavior intention is defined as the degree to which entrepreneurs formulate conscious plans to use IT-related innovation to improve their business, while in the entrepreneurship context, intention is defined as a person's willingness to pursue a given behavior and represent an individual's commitment toward a target behavior (Shapero, 1982; Krueger and Brazeal, 1994). Action is unlikely if intention is absent. Therefore, intention precedes action (Krueger, 2000). Thus,

Proposition 6: Entrepreneurs intention to use will have a significant positive effect on entrepreneur's usage of IT-related innovation.

3.7. Precipitating Events

Shapero (1982) posits, "How significant life events can cause a sizable increase in entrepreneurial activity and change individual perception of new circumstance". Precipitating events is an important factor in the Entrepreneurial Potential Model that captures the effect of external factors on entrepreneur's intention to take action, and is considered as a moderator on the link between intention and behavior (Krueger, 2000).

Precipitating events is defined as a certain exogenous variable that facilitates or 'precipitates' the realization of intention into behavior (Shapero, 1982; Krueger *et al*., 2000). This precipitating event could be divided as the appearance (or acquisition) of a perceived facilitating factor or the removal (or avoidance) of a perceived inhibiting factor (Krueger *et al*., 2000; Krueger and Brazeal, 1994; Schindehutte *et al*., 2000). Shapero (1982) distinguishes precipitating events based on the following: (1) Push vs. Pull factors, (2) Facilitators vs. Inhibitors. Schindehutte *et al*. (2000) identified 40 key triggers in the area of product development, technology management, research and development,

and other related fields. They divided entrepreneurial triggers into five key dimensions, which are subjected to an individual's perception: opportunity- driven vs. threat-driven, market pull vs. technology push, internal vs. external (to organization), top-down vs. bottom-up, systematic or deliberate search vs. chance or opportunism (Schindehutte *et al*., 2000; Moghavvemi and Mohd Salleh, 2011). Tangible barriers and the subtleness of cognitive barriers can be obstacles that prevent an intention from coming to fruition (Shapero, 1982; Kruger, 2000, 2008; Krueger and Brazeal, 1994). In this study, the authors posit how environmental and external factors and unforeseen events can change the entrepreneurs' intention to use IT-related innovation between the time the intention is formed and the behavior is performed (e.g., being offered a big contract, lose the market, financial resource, resource availability, cost, product, government policy, financial crisis, customer or new market, supplier, incentive loan, better opportunity available). Therefore,

Proposition 7: The influence of intention on usage will be moderated by precipitating events.

4. Method

The sampling frame was entrepreneurs involved in providing professional services in the Klang Valley within Malaysia. The questionnaire was developed based on the two original models and its various factors to determine the entrepreneurs' behavior intention toward technology adoption and use. The questions that measured performance expectancy, effort expectancy, facilitating conditions, intention to use and use behavior IT-related innovation constructs were adopted from Venkatesh *et al*. (2003). The questions measuring perceived desirability, perceived feasibility, propensity to act and precipitating events were adopted from Krueger *et al.* (2000). Likert scales (1-7) ranging from 'extremely agree' to 'extremely disagree' was used for all construct items, except for items that measure use behavior. The data were collected in two stages: in the first stage, the data collected were for the determinants of intention and the propensity to act, whereas in the second stage, the data collected were about use behavior and precipitating events that happen between the time the intention is formed and usage is performed. The Structural Equation Modelling (SEM) was the technique that was used for testing the integrative research model (TADU).

5. Conclusions

The present study aims to integrate two intentional models into a unified theoretical model that captures the essential element of both models and is able to measure environmental, technological and individual dimension of technology acceptance. The proposed theoretical model was developed to provide a comprehensive understanding

of the determinants that affect the adoption and utilization of innovative IS within entrepreneurs. This study uses the Unified Theory of Acceptance and Usage of Technology (UTAUT) (Venkatesh *et al*., 2003) as a base theory, and integrated it with the Entrepreneurial Potential Model (EPM) (Krueger and Brazeal, 1994) in order to explain the IT-related innovation adoption behavior. The argument for the integrative model of the UTAUT and the model of entrepreneurial potential includes the following facts:

1. Both the Entrepreneurial Potential Model and the UTAUT model are derived from the Theory of Planned Behavior (TPB) and focus on the intention to take action. The UTAUT model tests pre-adoption and use behavior and discusses the individual intention to adopt and use a new system, while the EPM tests pre-entrepreneurial intention. It would seem that both models consider predictor of intention in order to take action from a different perspective.

2. The UTAUT model tests technological (performance expectancy, effort expectancy) and environmental characteristics (facilitating conditions and social influence) toward intention and behavior, while the EPM tests individual (perceived desirability, perceived feasibility and propensity to act) and situational factors (precipitating events) toward intention and behavior.

3. The UTAUT model does not consider self-efficacy as direct determinant of intention (UTAUT limitation), but the EPM considers perceived feasibility (self-efficacy) as important determinants of intention. The perceived feasibility in the Entrepreneurial Potential Model is related to individual skills and abilities, and is derived from Bandura (1986, 1995), who argued that taking action requires consideration of not just outcome expectation (perceived desirability), but also perceived self-efficacy (feasibility). In the Theory of Planned Behavior (TPB), the perceived behavioral control considers two points of view: (1) as effort requirement perspective and individual's perception of the ease of completion of a task, which influence the individual's opinion of their ability to complete it (Bandura, 1977), and (2) as facilitating conditions (resource, technology), which is the perception that resources will be available to complete the task (Chan *et al*., 2010). Venkatesh *et al*. (2003) emphasized the facilitating conditions aspect in the UTAUT model, while Krueger and Brazeal (1994) emphasized self-efficacy dimensions (perceived feasibility).

4. The UTAUT model does not consider attitude as a direct determinant of intention, but the EPM integrated it with social influence and tested it on perceived desirability. Krueger and Brazeal (1994) measured individual desirability in the EPM (e.g., attractiveness of start using IT innovation) to take action (Krueger and Brazeal, 1994).

5. The UTAUT model contains limitation in the relationship between intention and behavior (intention behavior gap). It is not able to capture the influence of external factors in the relationship between intentions and use behavior; in contrast, the EPM focuses on the effect of precipitating events on behavioral intention to take action and posited that this variable is able to capture the effect of external factors in the relationship between intention and behavior.

With this rationale, integrating these two models will provide a robust and parsimonious model that captures the causal flow between technological factors, environmental factors and individual factors in predicting intentional behavior. Therefore, combining these two models enables a coherent and consistent explanation for interpreting and understanding the innovative IS adoption behavior by entrepreneurs that possess both organizational and individual perceptions and attitude.

The authors recommend perceived feasibility and perceived desirability to be included in the UTAUT model in order to test individual dimensions of attitude and self-efficacy. These two constructs are salient to the individual planned behavior, thus, the inclusion of these two constructs to the IS adoption model provides a robust model that has the ability to measure different dimensions toward technology adoption and use.

Concerning the UTAUT's limitation, the precipitating events was added as a moderator between intention and usage behavior to capture the role of external factors that can potentially impede or facilitate the performance of behavior. The inclusion of precipitating events would further assist in understanding why those who have the intention to use IT-related innovation would actively use them, while others would have the intention to use, but have not translated into actual use.

The authors suggested that during the time the intention to adopt IT-related innovation is formed and the decision to use IT-related innovation is performed, if the events that occur in the environment or work situation is positive and is in a normal degree, the use behavior of innovation increases, and it will have a positive effect on usage behavior. However, if precipitating events is negative and changes the environmental and work conditions in a negative way, the intention to use IT-related innovations will also change, and entrepreneurs will not be interested in using it in their companies. The new model is able to measure individual, technological and environmental dimension toward technology adoption and use, and is able to capture the effect of external factors on the behavior intention and use behavior. Finally, this study investigates the effect of the propensity to act on the individual intention to take action. Understanding the impact of volitional aspect of the behavior (propensity to act) on an entrepreneur's intention to use IS innovation is another important issue, which very few studies have examined in the context of technology acceptance.

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Appendix A

Variables Measurement Items	Sources
Performance expectancy I find the IT-related innovation to be useful in my business. Using the IT-related innovations enables me to accomplish tasks more quickly. Using IT-related innovation increases my productivity. Using IT-related innovation increases my chances of getting more benefit in my business. Using IT-related innovation gives me competitiveness power in my business.	Venkatesh *et al*. (2003)
Perceived desirability Using IT-related innovation in my business is much more desirable for me. I would enjoy the personal satisfaction of using IT-related innovation in my business. Using IT-related innovation would increase quality of work in my business. Using IT-related innovation in my business is an attractive idea. I am very enthusiastic to use IT-related innovation in my business. The success of my business lies in the use of IT-related innovation. Using IT-related innovation would result in a more relax working environment in my business.	Krueger (1993) Krueger and Brazeal (1994)
Perceived feasibility I am able to use the IT-related innovation even if there is no one around to show me how to use it. I would feel comfortable using IT-related innovation in my business. I have the skills and capabilities required to use IT-related innovation. I am confident I can put in the effort needed to use new IT-related innovation in my business. It would be very practical for me to use new IT-related innovation in my business. It would be very feasible for me to use IT-related innovation in my business.	Krueger (1993) Krueger and Brazeal (1994)
Propensity to act I will learn to operate IT-related innovation in my business. I will use IT-related innovation to achieve more opportunities in my business. I will use IT-related innovation because I cherish the feeling of a useful service. I will use IT-related innovation that enables me to run my business successfully.	Krueger (1993) Krueger and Brazeal (1994)
Use behavior On average, in an ordinary day, ***how long*** do you use IT-related innovation (new Purchase) in your business?	Venkatesh *et al*. (2008)

On average, ***how frequently*** do you normally use IT-related innovation in your business? On average, how much time do you spend on newly purchased IT-related innovation in your business during one day?	
Effort expectancy My interaction with IT-related innovation would be clear and understandable. It would be easy for me to become skilful at using IT-related innovation in my business. Learning to operate IT-related innovation is easy for me. I would find IT-related innovation easy to use.	Venkatesh *et al*. (2003)
Facilitating conditions I have resource necessary to use IT-related innovation in my business. I have the knowledge necessary to use IT-related innovation. There is an external/internal support group available for assistance with IT-related innovation difficulties. New innovation is not compatible with other IT systems I use. There are special allocations (i.e. loan, intensive) from government for using IT-related innovation for entrepreneurs.	Venkatesh *et al*. (2003)
Intention to use I predict I would use IT-related innovation if it is available in the future. My personal philosophy is to do whatever it takes using IT-related innovation in the future. I have very seriously thought of using IT-related innovation in my business in the next 2 months if it is available. I plan to use the current IT-related innovation in my work in the next year. I intent to use similar IT-related innovation technology in the future.	Venkatesh *et al.* (2003)
Precipitating events If you experience any changes in your work situation (e.g., being offered a big contract, declining profit, availability of financial resource, new investment, rising cost, new product), how much have these changes influenced your decision in using IT-related innovation? If you experience any change in your work environment (e.g., government policy, financial crisis, customer or new market, supplier request, industry or market change, declining market share), how much have these changes influenced your decision in using IT-related innovation? If you decided to change your work situation due to recent opportunity or lack of opportunity (e.g., competitive nature of environment, competitor threat or action, strategic growth target, perception of increasing risk, attract new customer, international opportunities), how much have these assessments influenced your decision in using IT-related innovation? If you experience any technical change in your work environment (e.g., availability of IT innovation, technological change, new technology in accounting practice, availability of on line system), how much have these changes influenced your decision in using IT-related innovation?	Summers (1998) Kruger and Brazeal (1994) Schindehutte *et al.* (2000)

IT PAREMTŲ INOVACIJŲ PRIIMTINUMO DETERMINANTĖS IR NAUDOJIMO ELGSENA: TEORINĖ UNIFIKUOTOS ĮSISAVINIMO TEORIJOS INTEGRACIJA, TECHNOLOGIJŲ NAUDOJIMO IR VERSLUMO POTENCIALO MODELIS

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Santrauka. *Daug modelių tiria individualius ketinimus diegti ir naudoti informacines technologijas. Tačiau sudėtingas ryšys tarp ketinimų ir elgsenos rodo, kad šioje srityje reikalinga išsamesnė analizė (atotrūkis tarp siekiamybės ir elgesio). Ryšys tarp ketinimų ir elgesio tikėtina yra paveiktas daugelio veiksnių, dalis iš jų kontroliuojami, dalis nekontroliuojami, todėl išoriniai veiksniai, manytina, turi svarbią reikšmę. Literatūros šia tematika yra nedaug. Viena populiariausių teorijų yra Unifikuota technologijų įsisavinimo ir naudijimo teorija (UTĮNT, angl. UTAUT), kuri turi tam tikrus apribojimus, ypač kai kalbama apie atotrūkį tarp ketinimų ir elgesio. Siekiant paveikti ketinimų ir elgsenos atotrūkį UTĮNT ir taip patobulinti modelį jis analizuojamas ir lyginamas su Verslumo galimybių modeliu (VGM). Palyginimas leidžia išvystyti naują modelį, kuris integruoja dviejų modelių elementus siekiant akcentuoti skirtingus veiksnius, darančius poveikį informacinės sistemos taikymo elgsenai. Naujasis modelis sumažina UTĮNT ridotumus, ypač nuspėjamumo galimybes, taip pat susilpnina ryšio tarp ketinimų ir elgesio ,,distalinę prigimtį". Naujasis hibridinis modelis yra vadybininkams naudingas įrankis vertinant naujų technologijų diegimo sėkmės tikėtinumą ir realaus naudojimo galimumą. Modelis padeda vadovams suprasti technologijų priėmimo tvarkykles ir leidžia jiems kurti intervencijas vartotojams, kurie yra mažiau linkę į naujų technologijų naudojimą. Be to, politikos formuotojai galėtų palengvinti šį procesą pateikdami informacinių technologijų inovacijų priėmimo ir naudojimo gaires.*

Raktiniai žodžiai**:** *IT inovacijos, priėmimas, UTĮNT, verslumo potencialas, modelis, verslininkai.*