

# ASSESSING INDIVIDUAL PERFORMANCE ON INFORMATION TECHNOLOGY ADOPTION: A NEW MODEL

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## ABSTRACT

*This paper aims to propose a new model in assessing individual performance on information technology adoption. The new model to assess individual performance was derived from two different theories: decomposed theory of planned behavior and task-technology fit theory. Although many researchers have tried to expand these theories, some of their efforts might lack of theoretical assumptions. To overcome this problem and enhance the coherence of the integration, I used a theory from social science literature, particularly from Blumer's theory of symbolic interactionism. This theory indicates, as Blumer himself noted, "The symbolic interactionist approach rests upon the premise that human action takes place always in a situation that confronts the actor and that the actor acts on the basis on defining this situation that confronts him." Symbolic interactionism may have theoretical strengths on the basis that reality is understood as a social production; interaction is symbolic; humans have the capacity to engage in self-reflexive behavior; interactionism regards society as ongoing process; and social and physical environments set limits on behavior, but do not determine behavior. In this essence, normally, humans use technologies not for the sake of technologies but for supporting their primary tasks, being job related or entertainment oriented. Thus, there is an interaction between human and his/her technology. In this paper, I suggest some propositions that can be tested later using experimental research design or longitudinal survey research.*

**JEL:** M15

**KEYWORDS:** Individual Performance, Human-technology Interaction, Decomposed Theory of Planned Behavior, Task-technology Fit Theory

## INTRODUCTION

The interaction between information technology and individual performance has been an ongoing concern in Information System (IS) research. Since information technology adoption is related with human, researchers use psychology theory to predict human behavior on that regard: Theory of Reasoned Action/TRA (Fishbein and Ajzen 1975), Theory of Planned Behavior/TPB (Ajzen 1985, 1991), Technology Acceptance Model/TAM (Davis, 1989), and recently, Decomposed Theory of Planned Behavior/DTPB (Taylor and Todd 1995, Hsu and Chiu 2004, Koeder et al. 2011). As to predict individual performance, IS researcher uses the concept of "fit" to investigate the interaction of task and system characteristics and their effects on information system usage and task performance: Task-Technology-Fit/TTF theory (Goodhue and Thompson 1995, Dishaw et al. 2002, Klopping and McKinney 2004, McGill and Hobbs 2006, Usoro et al. 2010).

This paper proposes a new model of the linkage between information technology adoption and individual performance by drawing on insight from these two streams of research (user behavior as predictors of system usage and task-technology-fit as predictors of performance). The core content of this new model, called Human-Task-Technology Interaction and Performance Model (HTTIP), is the deposition that for information technology has a positive impact on individual performance, not only the technology must be accepted and used, but also the technology must be a good fit with the task it supports.

To develop a new model, I focus on the DTBP (Taylor and Todd 1995) and TTF (Goodhue and Thompson 1995). The DTBP has advantages over other acceptance models in that it identifies specific prominent beliefs that may influence information technology usage. The model has better predictive power compared to the initial TPB and TAM. Likewise, the TTF theory defines a model that has been used to explain information system utilization. Goodhue and Thompson's (1995) research describes the relationship between the task requirements of the user and the functionality of the system and their impact on utilization. Performance impacts will occur when the technology meets the users' needs and provides features that support the fit of the requirements of the task. In their research, Goodhue and Thompson suggest that utilization ideally be measured as the proportion of times users choose to utilize or use system. Hence, to enhance the coherence of integration of these two models (DTPB and TTF), I employ a theory from social science literature, particularly Blumer's theory of symbolic interactionism. The paper will proceed as follows: I will provide literature review that describes theory of information technology acceptance; task technology fit theory, and theory of symbolic interactionism. Based upon these theories I will propose a new model of information technology acceptance and performance (human-task-technology-interaction and performance model) and finally the paper ends with a conclusion.

## LITERATURE REVIEW

Two-board stream of research on information technology adoption have dominated the investigation of the linkage between information system and individual performance. First are researchers that based their research on theory of behavior (Fishbein and Ajzen 1975, Ajzen 1985, 1991, Davis 1989, 1993, Taylor and Todd 1995, Hsu and Chiu 2004, Muthusamy et al. 2010, Koeder et al. 2011). Second that based on the importance of fit between technology and task, that individual must perform (Venkatraman 1989, Goodhue and Thompson 1995, Dishaw et al. 2002, Klopping and McKinney 2004, McGill and Hobbs 2006, Usoro et al. 2010). In this literature review section, I investigate various theories of information technology acceptance, task-technology-fit theory, and theory of symbolic interactionism (Blumer 1969, Dillon and Morris 1996, Tan et al., 2003, Zang and Li 2004) to develop a new model to assess individual performance on information technology adoption.

### Underpinning Theory of Acceptance

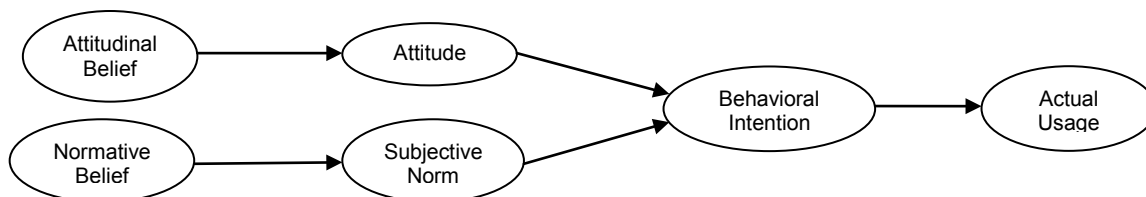
Researchers and practitioners have a strong interest in understanding why human accept information technology so that better methods for designing, evaluating, and predicting how users will respond to new technology can be constructed. Lack of user acceptance is a significant obstacle to the success of new IS. Some facts indicate that users are often unwilling to use information system when if it used, it will troublesome or the outcome will not reached his/her expectation. Therefore, user acceptance has viewed as the important factor in determining the success or failure of any information system project (Davis 1993).

Several underpinning theories have been developed to examine and understand the factors effecting acceptance of information technology application in organization. Although each model has a different insight towards the acceptance process and each theory has different construct, there are some similarities in them. For example, while TRA includes usage behavior, behavior intention, attitude, and subjective norms, TPB uses the same construct as TRA with additional construct of perceived behavior control. Meanwhile, TAM includes different antecedent of behavior intention, such as external variables, perceived ease of use, perceived usefulness, and attitude. DTPB as an extension of TPB, includes some construct from Diffusion of Innovative theory (DOI): usage behavior, behavior intention, attitude, subjective norms, perceived behavior control, perceived ease of use, perceived usefulness, attitude,

compatibility, peers influence, superior influence, self-efficacy, resource facilitating conditions, and technology facilitating conditions.

*Theory of Reasoned Action* : TRA was proposed by Fishbein and Ajzen (1975) and was a well-established model in social psychology research that can explain nearly any human behavior. This theory suggests that person's performance of specific behavior (e.g. use of technology) is determined by his/her intention to perform the behavior and behavioral intention is jointly influenced by his/her attitude and subjective norm with relative weights that estimated by regression (Figure 1). Attitude is equated by the salient belief about the consequences of performing the behavior and the affective evaluation of those consequences. Beliefs are defined by the person's subjective view that performing a given behavior will result to a given consequences. Subjective norms are determined by normative beliefs and motivation to comply with perceived norms.

Figure 1: Theory of Reasoned Action (Fishbein and Ajzen 1975)



*This figure shows the construct of TRA and explains that actual usage influenced by behavioral intention and behavioral intention both influenced by attitude and subjective norm, the antecedent of attitude is attitudinal belief, while subjective norm is normative belief.*

A meta-analysis of TRA, performed by Sheppard et al. (1988), showed that TRA carried out well in the predictions of human behavior and intention towards information technology. TRA also offered strong predictive utility in a situations such as non-voluntary behavior and even when used to investigate intentions even before the individual had all the information necessary to form a completely confident intention (Dillon and Morris 1996).

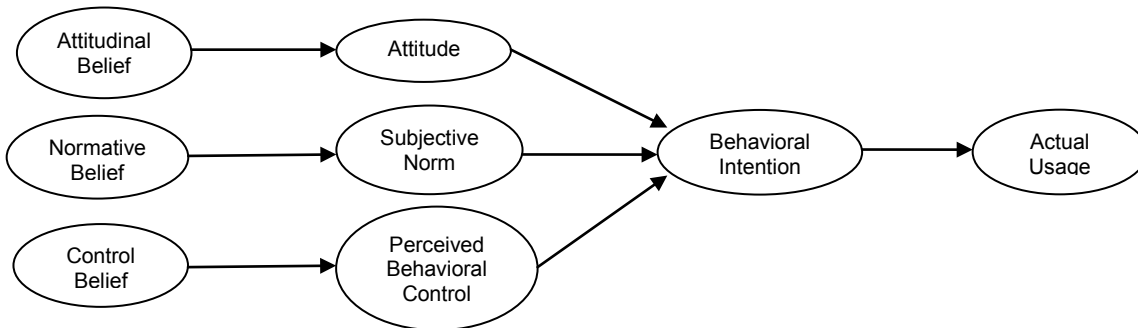
Besides that, Sheppard et al. (1988) pointed out three problems of TRA. First, one must differentiate between behavior and intention. This could be a problem because avidity factors in addition to one, that is intention, determined how the behavior is performed. Second, there is no provision in the model for considering whether the probability of failing to perform is due to ones behavior or due to ones intention. Third, irrational decision, habitual actions or any behavior that is not consciously considered cannot be explained.

*Theory of Planned Behavior*: TPB was developed from the TRA by adding an additional construct, namely perceived behavioral control (PBC) to consider situations where an individual control or lack of the necessary resources to perform the target behavior (Ajzen 1991) as seen in Figure 2. PBC is determined by the availability of skills, resources, and opportunities. Since TPB consider the behavioral control, TPB assumed to be more general than the TRA.

Taylor and Todd (1995) pointed out that TPB is not without criticism. The relationship between the belief structure and the determinant of intention: attitude, subjective norm, and perceived behavior control are not essentially well understood. Although TPB introduced one variable, perceived behavior control, as an answer to all uncontrollable elements of behavior, the beliefs set and construct may be difficult to employ the TPB and may not be consistently related to attitude, subjective norms, and perceived behavioral

control. Furthermore, Taylor and Todd (1995) suggest that TPB model still requires individuals to be motivated to perform certain behavior.

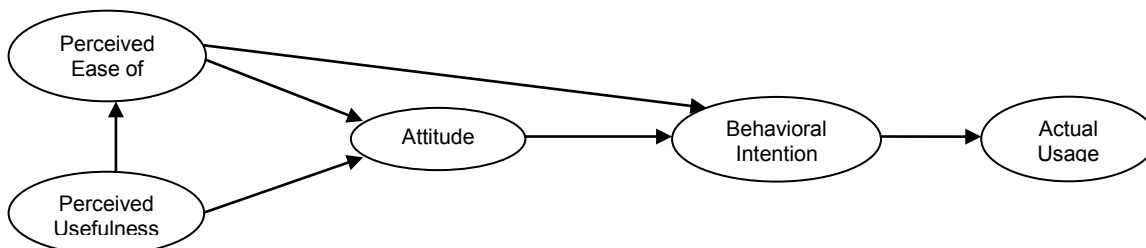
Figure 2: Theory of Planned Behavior (Ajzen, 1991)



*This figure shows the construct of TPB and explains that actual usage influenced by behavioral intention and behavioral intention not only influenced by both attitude and subjective norm, but also influenced by perceived behavioral control, and the antecedent each constructs are attitudinal belief, normative belief, and control belief, respectively.*

**Technology Acceptance Model:** TAM (Davis 1989) shared with the TRA on the general explanation that links attitude to behavioral intention but differ in drafting TAM attitude and behavioral intention. According to TAM, behavioral intention is jointly determined by attitude and perceived usefulness and together with the perceived ease of use explains the attitude. Broadly, the TAM indicates the general determinants of individual acceptance of technology, can therefore be used, and has been applied to explain and predict individual behavior across a broad range of technologies, end user computing and user groups (Davis et al. 1989). Because of its focus on technology, TAM appropriately use to observe the technology acceptance by individual professionals, but may still require theories or other models, because of its general and simple model.

Figure 3: Theory of Acceptance Model (TAM)



*This figure shows the construct of TAM and explains that actual usage influenced by behavioral intention and behavioral intention is jointly influenced by attitude and perceived ease of use, perceived ease of use and perceived usefulness reflect the beliefs about the value and user's friendliness of information system, respectively.*

Some studies indicate that TAM represents a parsimonious model because many researchers have proved it in a different context and diverse technologies, such as in education (Teo et al. 2011, Sheikhshoaei and Oloumi 2011), public service organization (Bouwman and Winjaert 2009), and internet banking (Suh and Han 2002). Some researchers have also integrates TAM with TTF to obtain a more comprehensive explanation of human behavior associated with the use of information systems (Dishaw et al. 2002, Klopping and McKinney 2004, Usoro et al. 2010, Schrier et al. 2010). Although there have been considerable amount of studies to support TAM model, TAM still need to be investigated for its inconsistent pattern; in some studies the relations were statistically significant, while other studies showed

the opposite. Legris et al. (2003) found that perceived usefulness and perceived ease of use are not the only predictors of technology acceptance and lack of many significant factors that influence adoption. TAM provides only limited guidance on technology usage (Lin 2007) and substantially ignores external and situational influences particular to a given circumstance, such as mandatory or non-mandatory (voluntary) usage (Taylor and Todd 1995).

*Decomposed Theory of Planned Behavior:* DTBP is an extension of TPB, was proposed by Taylor and Todd (1995) to overcome some of the limitation of TPB. Taylor and Todd (1995) extended TPB by decomposing the attitudinal belief, normative belief, and control belief into several dimensional constructs to provide higher descriptive power and a more accurate understanding of the antecedents of behavior (Figure 4a). They claimed that DTBP provides some advantages: first, by decomposing belief, the relationship between belief and the antecedents of intention should become clearer and more readily understood. Second, decomposition can provide a stable set of beliefs, which can be applied across a variety of settings, and third, by focusing on specific beliefs, DTPB more managerially relevant. Because of the larger number of factors that may influence adoption and usage, DTPB should provide a more complete understanding of IT usage.

Several researchers have examined the validity of DTPB in understanding behavioral intentions (Taylor and Todd 1995, Hsu and Chiu 2004, Koeder et al. 2011). Hsu and Chiu (2004) studied electronic service continuance using DTPB. They indicated that even though DTPB provides better diagnostic value than original TPB model, it is still more complex because it introduced numbers of factors that may influence usage. Koeder et al. (2011) developed their model to identify the factors that encourage consumer to purchase e-book reader in Japan, with the focus on normative factors. They found that attitude towards connected e-book readers were the most important factor contributing to purchase behavior. Koeder et al. (2011) study differed from Taylor and Todd (1995) and Hsu and Chiu (2004) because they developed new constructs in decomposing attitude with relevance advantage and decomposing subjective norm with normative influences.

### Task-Technology Fit Theory

TTF theory is seen as an important development in information system theory. TTF theory assumed that information technology is more likely to have a positive effect on individual performance and be used if the capabilities of information technology match the task that the user must performed (Goodhue and Thompson 1995), see in Figure 4b. To explain the linkage between information technology utilization and individual performance, they developed a conceptual model of technology-to-performance chain. This conceptual framework was based on two separate research streams: first, the utilization of information technology with its antecedent of attitude and behavior, and second, the “fit focus” evident in research investigating the performance of individual information technology user.

Venkatraman (1989) has discussed the concept of “fit” assessment in strategy research comprehensively with six alternative perspectives and approach of fit. 1) Fit as moderation perspective; effect of fit as a moderating variable of an independent variable (predictor variable) on dependent variable (criterion variable). 2) Fit as mediation perspective; an existence of intervening (indirect) effects between an antecedent variable and its consequent (criterion) variable. 3) Fit as matching perspective; fit is a theoretically defined match between two related variable. 4) Fit as gestalts; gestalts could be defined as the degree of internal coherence among a set of theoretical attributes (fit as on the identification of different group). 5) Fit as profile deviation; the degree of adherence to a specified profile. 6) Fit as co-variation; a pattern of co-variation or internal consistency among a set of theoretically related variables.

The first two perspectives are more commonly used than the remaining four perspectives (McGill and Hobbs 2006, Teo and Men 2008). Goodhue and Thompson (1995) use the concept of fit as moderating variable, as they proposed: “information system (systems, policies, staff of IS, etc) have a positive impact on performance only when there is a correspondence between their functionality and the task requirements of users.” Their study found supportive evidence of TTF as a function of system characteristics and task characteristic, and strong evidence of performance in which TTF and utilization must be included.

Even if TTF has some supporting evidences, some researchers have extended TTF with TAM in varying areas; conceptualization perspective (Dishaw et al. 2002), consumer of e-commerce (Klopping and McKinney 2004), education (Strong et al. 2006), e-Tourism (Usono et al. 2010), hotel industry (Schrier et al. 2010). They done that to obtain a more comprehensive explanation of human behavior associated with the use of information systems. This new model of individual performance is trying to integrate TTF with DTPB, because even though TAM has a robust model, but TAM is a simple model, while DTPB assumed to provide a complete and more understanding of IT usage. To enhance the coherence of the two models, I use the sociology theory of symbolic interactionism.

### Sociology Theory of Symbolic Interactionism

Social theory has a substantial part to play in the development of the discipline of IS, particularly in helping to understand and interact with the societal, organizational and personal contexts without which the technology is meaningless. Blumer has made a substantial contribution to that theory, and his theory of symbolic interactionism has been taken up by a number of IS researchers (Tan et al., 2003).

Blumer (1969) invented the term symbolic interactionism. He sees human action toward social objects as individual terms in describing the object, rather than the characteristics of the object. Blumer divided symbolic interaction into three premises of: a) People behave according to their understanding of objects and events that happen to them; b) An understanding of the individual objects and events rooted in the individual's interactions with others; and c) Understanding more about interpretation than just a mere literal sense that has been standardized.

He defined interpretation in two ways, first is the identification of the actor on an object in a situation that has meaning. The second is the internal communication within the actor's self and decide which objects that have meaning to the situation. Blumer (1969) identified interactions as an interpretation of language and symbolic gestures, and the determination of the understanding or the meaning of the actions performed by others. Humans should be able to understand one another, because social life is a "flow and process" of negotiation. Reasonable for individuals to try to adjust their actions and behaviors with those in which the individual interacts.

Symbolic interactionism theory refers to the character that goes between people. Actor does not merely react to other actions, but he interprets and defines those actions. Human interaction is bridged by the use of symbols to find a meaning. Actor will select, examine, think, organize and transform meaning in relation to the circumstances in which and toward which his actions. Blumer (1969) says that an environment of potential objects does not surround the individual, but he is the one who formed objects. Individuals designing different objects, giving meaning, assessing compliance with the act, and making decisions based on those assessments. Thus, humans are actors who are aware and reflective, which unites the objects known through what is Blumer referred to as self-indication. Self-indication is the ongoing process of communication where individual know something, evaluate it, give it a meaning, and decided to act on that meaning. Human excellence is if he understood where he was going, what is his obstacles, and what would he earn.

Thus, this theory indicates, “the symbolic interactionist approach rests upon the premise that human action takes place always in a situation that confronts the actor and that the actor acts on the basis on defining this situation that confronts him.” Symbolic interactionism may have theoretical strengths on the basis that reality is understood as a social production; interaction is symbolic; humans have the capacity to engage in self-reflexive behavior; interactionism regards society as ongoing process; and social and physical environments set limits on behavior, but do not determine behavior (Tan et al. 2003). In this essence, normally, humans use technologies not for the sake of technologies but for supporting their primary tasks, being job related or entertainment oriented. Thus, there is an interaction between human and his/her task-technology.

Dillon and Morris (1996) pointed out that interaction between human-technology has been addressed by human-computer interaction (HCI) researches. They explained that HCI research has moved from its original concern with hardware ergonomics and screen design to user issues of interest. They also indicated that even if HCI is not equivalent with the concept of acceptance, most HCI researchers assume that the more usable a technology, the greater it chances in proving the acceptable to users. Zang and Li (2004), in their assessment of HCI research in management information system (MIS), casted light upon the research studies that HCI concerned with the ways human interact with information, technologies, and task, especially in business, managerial, organizational, and cultural contexts.

They synthesized a framework indicating a board HCI issues and concerns. They concluded that the interaction of human and technology alone is still incomplete, since nothing happens in a vacuum. The interaction experience is relevant and important only when humans use technologies to support their primary tasks within certain contexts, being organizational, social or societal.

#### **A NEW MODEL: HUMAN-TASK-TECHNOLOGY INTERACTION AND PERFORMANCE**

The new model is an integration of DTPB and TTF. I selected DTPB in this new model because it provides fuller understanding of the determinant of behavioral intentions (Taylor and Todd 1995, Lin 2007). Both researchers compared three theories and model of usage behavior: TAM, TPB, and DTPB. They examined the trade-off between parsimony and understanding associated with decomposition and showed that even if DTPB is more complex than the pure TPB because of its additional construct, by decomposing the belief structure of TPB increases the explanatory power and a better, more precise understanding of the model for behavioral intentions. Particularly they emphasized that the unidimensional belief constructs of DTPB provides better understanding of behavioral antecedents (figure 4a). Thus, I selected DTPB for its capability to understand human behavior and a good predictor for system usage.

Likewise, I chose TTF because of its theoretical assumption that information technology is more likely to have a positive effect on individual performance and be used if the capabilities of information technology match the task that the user must perform (Goodhue and Thompson 1995) as seen in Figure 4b.

Symbolic interaction occurs not only among subjects, but could also occur between subject and object. An example is the interaction between people and objects in the form of information and technology. The rapid developments in information and communication technology have driven the development study of the interaction between people and technology. Eason (1991) model divides human interaction with computers (technology) at three levels.

Level one related to human-computer interaction; expanded by a factor of two levels of users, tasks, and environments that may affect job performance, and level three, IT and between human-computer

interaction impact on social life in the changed of nature of work, the way how the organization operates, and how humans interact with one another.

In HTTIP model, the main components are human. Although there are many ways to understand human beings and their interactions with technology, e.g. in terms of demographics, physical skills and ergonomics, cognitive and effective, but in this model focused on human behavior intentions (cognitive aspects). For that, I use DTPB model because of its comprehensiveness in predicting human behavior.

#### Decomposing Attitudinal Belief

Ajzen (1985) revealed two kinds of differences in attitudes, which are attitude toward object and attitude toward behavior. Attitude toward the behavior is degree in which a person has pleasant or unpleasant evaluation. Ajzen further stated that attitudes are related to the behavior intention has a direct effect on behavior, while attitudes toward object has an indirect relationship. Thus, there are many factors that affect the consumer interest to use and adopt information technology. In HTTIP model, attitude is decomposed to three constructs: perceived ease of use, perceived usefulness, and perceived risk. Perceived ease of use and perceived usefulness originated from TAM model (Davis 1989). Teo, et al. (2011) provided evidence to support TAM as a viable and efficient model to explain the intention to use technology. Fisbein and Ajzen (1975) extended TAM model and proved that the differences in attitudes, perceived usability, perceived risk, and perceived playfulness is an attitude associated with the usage that are categorized as attitudes on behavior.

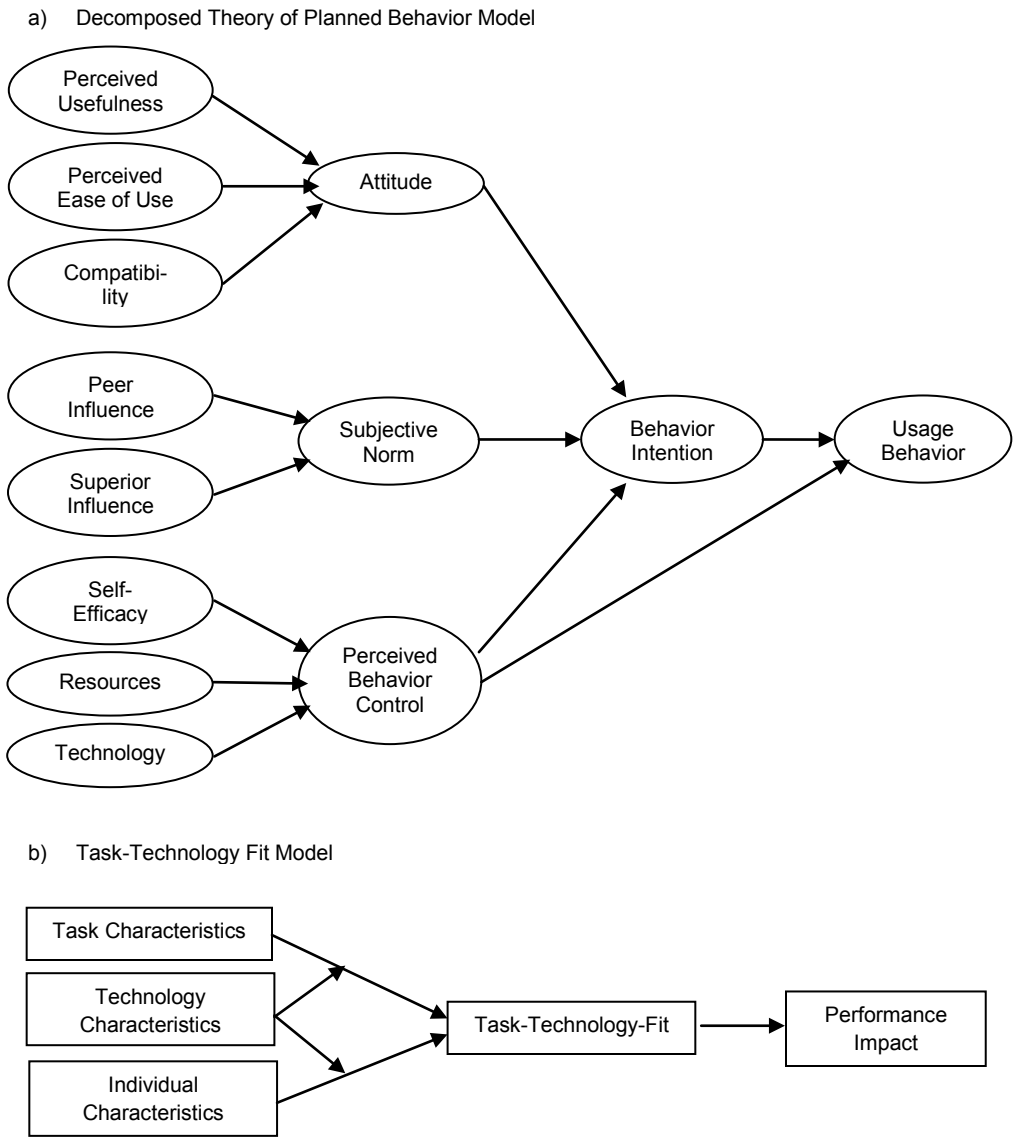
Proposition #1 : Perceived ease of use, perceived usefulness, and perceived risk will have a significant influence on attitude towards technology use.

#### Decomposing Subjective Norm

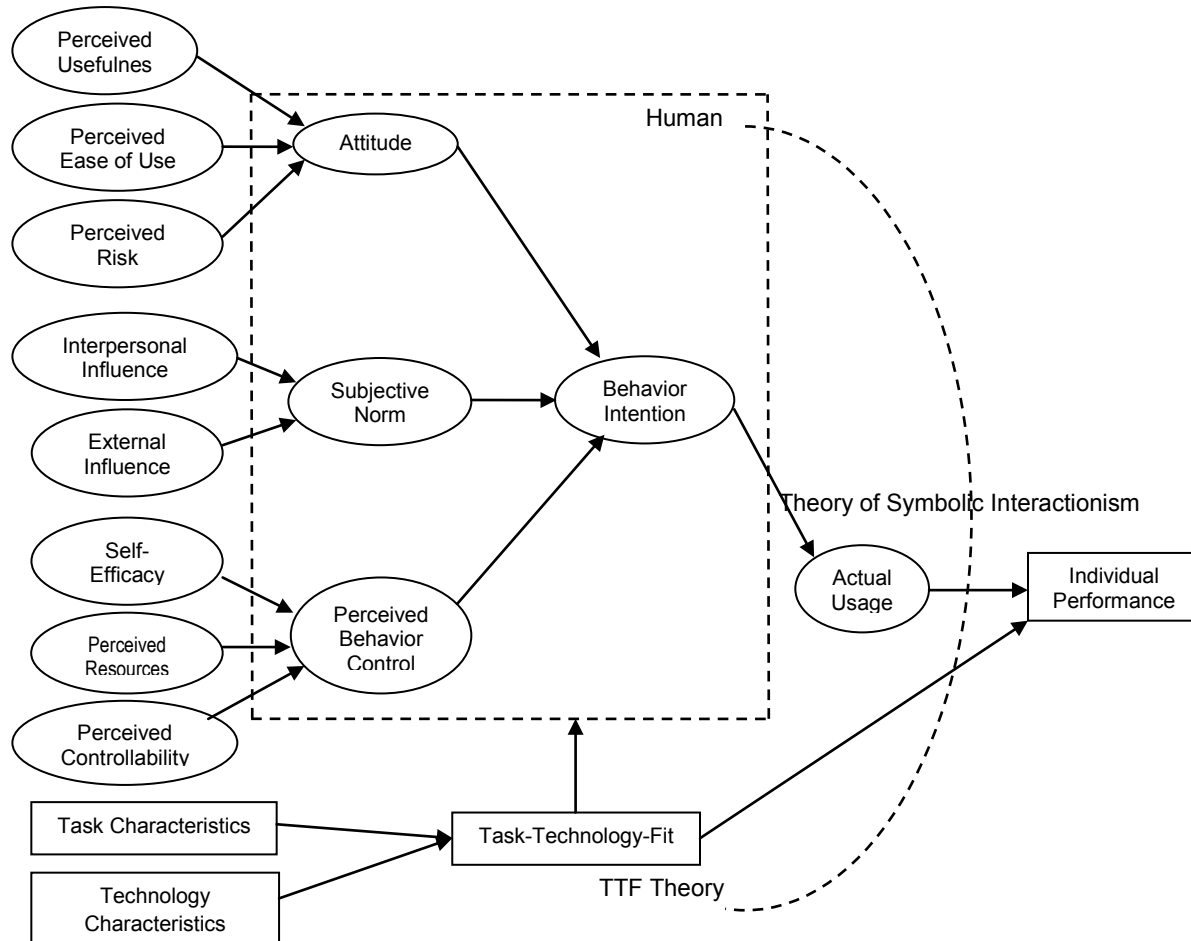
In the TPB, subjective norm is the perceived social pressure to perform or not perform the behavior or belief in a person that someone or something important will approved or not approved if it performs the behavior (Ajzen, 1991). Relative interests of subjective norm in predicting the expected interest varies according to the behavior and situation. Hsu and Chiu (2004) found the influence of subjective norm on behavioral intentions; contrary Tan and Theo (2000) found no significant effect of subjective norms on individual intention to adopt internet banking. Bhattacharjee (2000) stated that subjective norm is an important predictor of interest to use an electronic brokerage service. In his research, Bhattacharjee (2000) showed that subjective norm include two forms of interpersonal influence and external influences. Therefore, in this study, subjective norm decomposed into two components, namely interpersonal influences and external influences.



Figure 4: The Decomposed Theory of Planned Behavior, Task-Technology-Fit Theory, and Human-Task-Technology Interaction and Performance.



c) A New Model: Human-Task-Technology Interaction and Performance



This figure shows the construct of DTPB, TTF, and HTIP. Figure 4a explains that attitude, subjective norm, and perceived behavioral control will influence the behavioral intention towards usage behavior. Attitude, subjective norm, and perceived behavioral control are decomposed into multi-dimensional belief constructs. Figure 4b indicates task, technology, and individual characteristic that effects task-technology fit towards individual performance. Figure 4c, as a new model, integrated DTPB and TTF as a more comprehensive model to explain the relation between human-technology and performance.

Proposition #2 : Interpersonal and external influence will have a significant influence on subjective norm towards technology use.

Decomposing Perceived Behavior Control

Perceived Behavior Control (PBC) tend to be a means as the individual's perception of ease or difficulty in performing the behavior and it assumed there was a reflection of experience such as the availability of resources and opportunities (Ajzen, 1991). In his subsequent study in 2002, Ajzen suggested two-level hierarchical model in which the PBC is the holding of the construct of self-confidence (self-efficacy) and controllability. Several studies applying the TPB to predict the behavior of interest and prove that the self-confidence (self-efficacy) and controllability significantly associated with intentions.

Self-efficacy is the ease or difficulty to perform the behavior, or beliefs of individuals to perform the behavior, whereas controllability is control of the behavior or beliefs about how far do the behavior is a

will of its own behavior (Ajzen, 2002). Associated with self-efficacy, individuals will feel more satisfied with the behavior that they feel able to do so or vice versa (Bandura, 1998).

One component of PBC is a condition that facilitates (facilitating condition) which reflects the availability of the necessary resources to perform a behavior, such as money, time and other resources. Zang and Gutierrez (2007) states that perception resources (perceived resources) have a significant influence on perceived behavioral control (PBC). Thus, in this study PBC was decomposed into three components, namely the self-assurance (self-efficacy), perceived controllability and perceived resources

Proposition #3 : Self-efficacy, perceived resources, and perceived controllability will have significant influence on perceived behavior control toward technology use.

Proposition #4 : Attitudes, subjective norm, and perceived behavior control towards technology use will have significant influence on behavior intention to use technology.

Proposition #5 : Behavior intention to use technology will have a significant influence on actual use of technology.

#### Human-Task-Technology Interaction and Performance

The second component of the HTTIP model is task-technology fit which include task, technology, and a fit between both. Goodhue and Thompson (1995) define tasks as “action carried out that turn inputs into outputs.” Gebauer and Shaw (2002) differentiate three different tasks within the organization, namely operational tasks, management tasks, and information tasks. Meanwhile, technology is the making, usage, knowledge of tools, machines, techniques, systems of method in order to solve a problem or perform a specific function. Includes in technology are hardware, software, applications, data, knowledge, and supporting procedures.

Goodhue and Thompson (1995) indicate that the fit between task characteristics and features of information systems provide a conceptual basis for testing the quality of individual decision-making. System information helps users by providing information that can be used individually to carry out their duties. Therefore, the strong relationship between information technology and individual performance (McGill and Hobbs 2006, Teo and Men 2008) or utilization (Strong et al. 2006) is the fit between information technology that provides information to users and information needed to the task that must be done. This TTF theory proposes that a better fit between technology and task will lead to better performance.

Proposition #6 : Task characteristic and technology characteristic will have a significant influence on task-technology fit towards individual performance

The TTF model, as a fit between task and technology, has been used as moderating variable within TAM model. Usoro et al. (2010) argued “TAM and TTF model are individually effective in their explanation of the different factors affecting user acceptance and utilization of IT systems and the impact of their adoption on individual performance from two different perspectives. TAM focuses on user attitude while TTF focuses on the correspondence between the user’s task and the functionalities of the system.” Thus, integration of both TAM and TTF will be more effective than the individual models in its explanation and prediction of the adoption and utilization process for an IT system by the user (Klopping and McKinney, 2004). In this new model, I integrated DTPB with TTF, since DTPB is more comprehensive than TAM in predicting human behavior of information technology usage. Theory of symbolic interactionism indicates that reality is understood as a social production; interaction is symbolic; humans have the capacity to

engage in self-reflexive behavior; interactionism regards society as ongoing process; and social and physical environments set limits on behavior, but do not determine behavior. In this essence, normally, humans use technologies to support their primary tasks with purpose in enhancing his/her performance.

Proposition #7 : The integration of DTPB and TTF predicts the actual use of information technology and individual performance.

Proposition #1 – #7 are derived particularly from the new model of HTTPIP and from the results evidenced from the previous researches. These propositions have to be tested to provide and prove the parsimonious theoretical HTTPIP model in assessing individual performance on information technology adoption.

## CONCLUSION

The aim of this paper is to propose a new model in assessing individual performance on information technology adoption. The theoretical significance of this paper is that it draws from the literature on TAM, TRA, TPB, DTPB, TTF, and the theory of symbolic interactionism in developing comprehensive and parsimonious theoretical model to investigate the antecedents of behavior intention to use information technology. It is also a preliminary attempt to provide a comprehensive model in determining individual performance within information technology adoption. The integrative approach using the theory of symbolic interactionism in combining DTPB that proved to have more explanatory power than other behavioral theory and TTF for its theoretical assumption that information technology is more likely to have a positive effect on individual performance if it gives a more complete view of this intention.

This integrated new model, called HTTPIP model, and its propositions could be used statistically in future research to confirm the predictors of human behavior intention in accepting information technology and assessing individual performance. The model and propositions can be examined in different settings such as in a workplace or student setting. Taylor and Todd (1995) suggested that since performance measurement and effort expended by students are perceived to be related, the actual strength of linkages to behavior might be stronger in the student setting than in the workplace. A multi-phased and mixed-method approach comprising both qualitative and quantitative methods could be used to verify this new model and propositions (Muthusamy et al., 2010). A qualitative method would strengthen and clarify the antecedents of human behavior with real life perspectives; while quantitative method such as structural equation modeling (SEM) or partial least square (PLS) approach could test the propositions derived from the new model. To test the validity of the model and propositions future research can employ short-term or longitudinal survey research or experimental research design. Goodhue and Thompson (1995) mentioned that it is important to go beyond perceived performance by constructing a laboratory environment in which the model and propositions can be tested with objective measures of performance.

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