A Critical Review of Technology Acceptance Literature

Referred Research Paper

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In the field of Information Systems, many researchers have found that information technology is underutilized in many organizations, causing huge economic loss to their businesses. As a result, many technology acceptance theories and models have been developed or used to study information technology acceptance. These models include: The Theory of Reasoned Action (Fishbein et al., 1975), the Technology Acceptance Model (Davis, 1989) and extended TAM (Venkatesh and Davis, 2000), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), the Motivational Model (Davis, et al, 1992), the Theory of Planned Behavior (Ajzen, 1991), the model combining TAM and the Theory of Planned Behavior (Taylor and Todd, 1995), the Model of PC Utilization (Thompson, et al, 1991), the Innovation Diffusion Theory (Rogers, 1995) and the Social Cognitive Theory (Bandura, 1986). This paper provides a critical review on the technology acceptance literature. The major purpose of this review is to identify the major TA models and to make explicit their major assumptions. Based on this review, this paper illustrates that these models have consistently failed to predict as they purported to in many empirical studies.

The Theory of Reasoned Action

In the view of the Theory of Reasoned Action (TRA) (Figure 1), an individual's behavior intentions determine his or her actual behavior. Behavior intention is in turn determined by the individual's attitude toward this behavior and subjective norms with regard to the performance of this behavior (Fishbein and Ajzen, 1975).
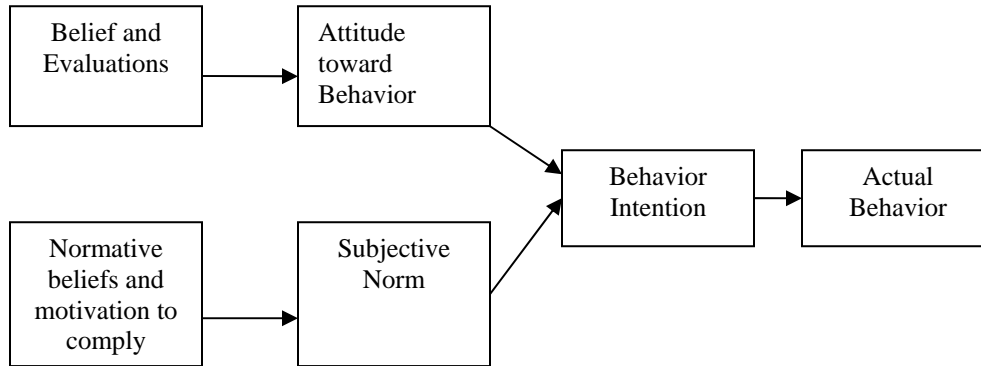

Figure 1. The Theory of Reasoned Action (Fishbein and Ajzen, 1975)

The Theory of Reasoned Action is based on the assumption that individuals are rational decision makers who constantly calculate and evaluate the relevant behavior beliefs in the process of forming their attitude toward the behavior. Fishbein and Ajzen (1975) define attitude as "an individual's positive or negative feelings (evaluative affect) about performing the target behavior" (p. 216). Individuals form attitudes toward a behavior by evaluating their beliefs through an expectancy-value model. For each attitude toward a behavior, individuals multiply the belief strength by the outcome evaluation and then sum the entire set of resulting weights to form the attitude. Subjective norm is another important construct in TRA. Fishbein and Ajzen (1975) define subjective norm as "the person's perception that most people who are important to him think he should or should not perform the behavior in question" (p. 302). Individuals

multiply the normative belief strength by the motivation to comply with that referent, and sum the entire set of resulting weights to determine their behavioral intention.

Technology Acceptance Model and Its Extensions

Based on the Theory of Reasoned Action, Davis (1989) develops the Technology Acceptance Model to find out what factors cause people to accept or reject an information technology (Figure 2). He suggests that perceived usefulness and perceived ease of use are the two most important individual beliefs about using an information technology. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (p.320). The definition of perceived usefulness is based on the expectancy-value model underlying the Theory of Reasoned Action. Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (p.320). These two behavioral beliefs, perceived usefulness and perceived ease of use, then lead to individual behavior intention and actual behavior. Davis finds that perceived usefulness is the strongest predictor of an individual's intention to use an information technology.
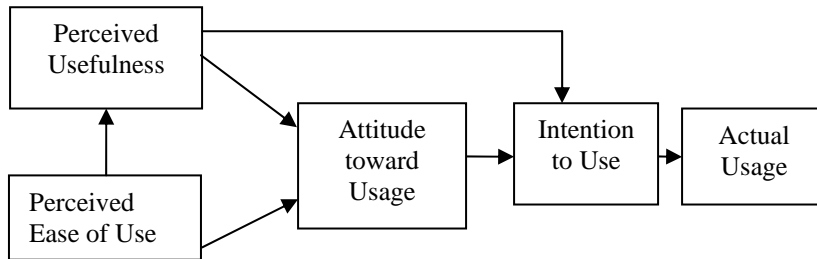
Figure 2. The Technology Acceptance Model (TAM) (Davis, 1989)

In the Information Systems field, researchers have widely used the Technology Acceptance Model to study the adoption of various technologies and TAM has arguably become the most influential theory in the IS field. Researchers have also extended TAM (Wixom and Todd, 2005). For instance, some researchers introduce many other factors to the model, such as subjective norm, perceived behavioral control, and self-efficacy (Hartwick and Barki, 1994; Mathieson et al., 2001; Taylor and Todd, 1995). Other researchers introduce additional belief factors from the diffusion of innovation literature, such as trialability, visibility, or result demonstrability (Agarwal and Prasad, 1997; Karahanna et al., 1999; Plouffe et al., 2001). Some researchers introduce external variables or moderating factors to the two major belief constructs (perceived usefulness and perceived ease of use), such as personality traits and demographic characteristics (Gefen and Straub, 1997; Venkatesh, 2000; Venkatesh and Morris, 2000).

Figure 3 shows the various TAM extensions. We can clearly identify the core positions of the two belief constructs: perceived usefulness and perceived ease of use. Therefore, we can say that the structure and main assumptions of these models remain the same as those of the Technology Acceptance Model (TAM).
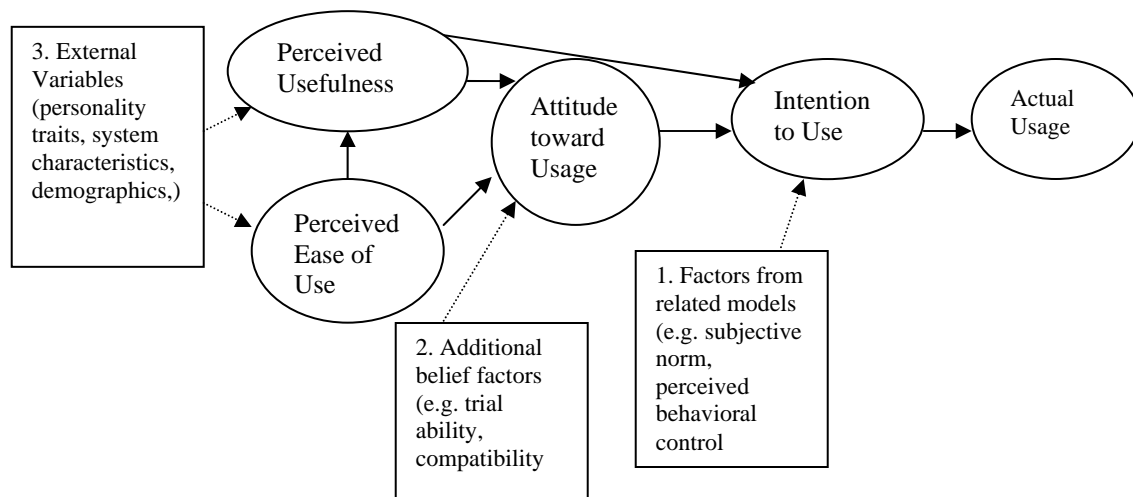
Figure 3. The Extensions to TAM (adapted from Wixom and Todd, 2005)

Next, a widely known extended TA model called TAM2 will be discussed. Venkatesh and Davis (2000) develop TAM2 by adding social influences (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability, and perceived ease of use) to predict the adoption of an information technology (Figure 4).

Venkatesh and Davis (2000) use the construct of subjective norm to capture social influences. Their definition of subjective norm is consistent with that in TRA (Fishbein and Ajzen 1975, p.302). TAM2 suggests that in mandatory contexts, subjective norm has a direct effect on intention through the mechanism of compliance. If an individual perceives that an important social actor has the ability to punish nonbehavior or reward behavior, the social influence of compliance effect will occur (French and Raven, 1959; Kelman, 1958; Warshaw, 1980). In voluntary contexts, social influences can influence intention indirectly through the mechanism of internalization and identification. Internalization refers to the process when an individual incorporates the important referent's belief into his or her own belief structure (Kelman, 1958; Warshaw, 1980). Identification means that an individual can gain a membership in a social group or achieve a higher status within the group by performing a behavior (Blau, 1964; Kelman, 1958; Kiesler and Kiesler, 1969; Pfeffer, 1982).
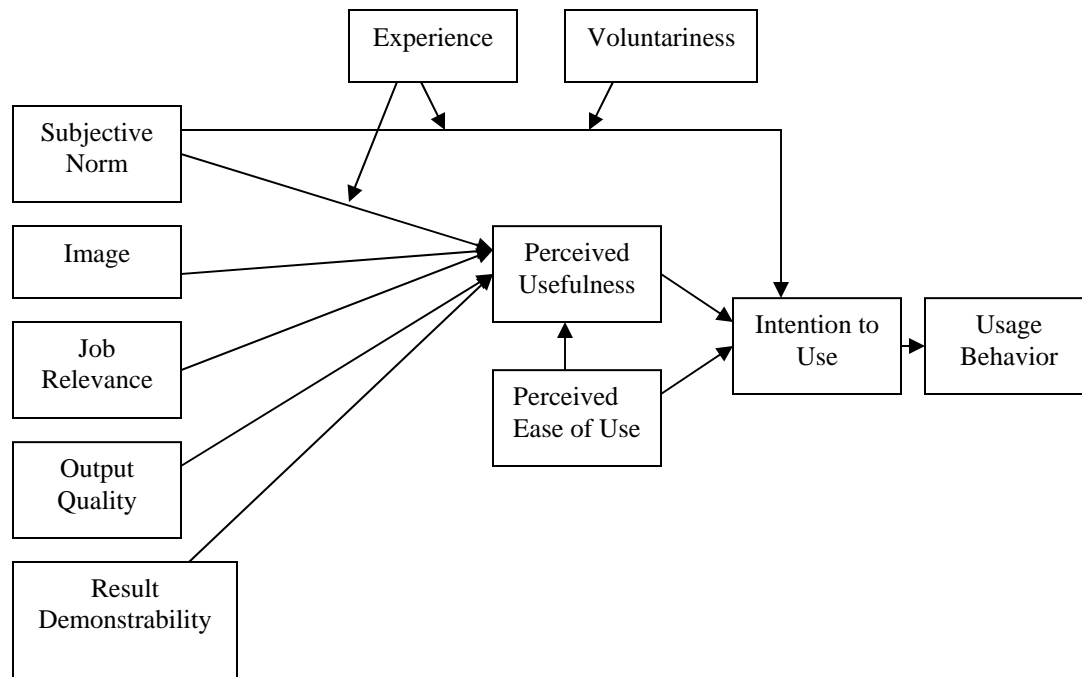
Figure 4. The Extended Technology Acceptance Model (TAM2) (Venkatesh and Davis, 2000)

TAM2 theorizes that there are four cognitive instrumental determinants of perceived usefulness: job relevance, output quality, result demonstrability, and perceived ease of use. TAM2 retains perceived ease of use from TAM as a direct determinant of perceived usefulness. TAM 2 theorizes that "people use a mental representation for assessing the match between important work goals and the consequences of performing the act of using a system as a basis for forming judgments about the use-performance contingency (i.e., perceived usefulness)"(p.191). Based on the theories on the mental matching process, a potential user's judgment of job relevance goes through a compatibility test (Venkatesh and Davis, 2000). Job relevance is defined as "an individual's perception regarding the degree to which the target system is applicable to his or her job" (p.191). TAM2 posits that job relevance has a positive effect on perceived usefulness. Output quality is another determinant of perceived usefulness. Output quality refers to an individual's perception about how well the system performs the tasks. Venkatesh and Davis (2000) suggest that judgments of output quality take the form of a profitability test, "in which, given a choice set containing multiple relevant systems, one would be inclined to choose a system that delivers the highest output quality" (p.192). TAM2 posits that output quality has a positive effect on perceived usefulness. Result demonstrability is the third determinant of perceived usefulness. It is defined as the "tangibility of the results of using the innovation" (Moore and Benbasat, 1991, p.203). TAM2 posits that result demonstrability has a positive effect on perceived usefulness.

The Motivation Model

Davis et al. (1992) apply the motivational theory to study information technology adoption and use. The Motivation Model suggests that individuals' behavior is based on extrinsic and intrinsic motivations. Extrinsic motivation is defined as the perception that users want to perform an activity "because it is perceived to be instrumental in achieving valued outcomes that

are distinct from the activity itself, such as improved job performance, pay, or promotions" (Davis et al., 1992, p. 1112). Perceived usefulness, perceived ease of use, and subjective norm are examples of extrinsic motivation.

Intrinsic motivation relates to perceptions of pleasure and satisfaction from performing the behavior (Vallerand, 1997). Users want to perform an activity "for no apparent reinforcement other than the process of performing the activity per se" (Davis et al., 1992, p. 1112). Computer playfulness and enjoyment are examples of intrinsic motivation (Davis et al., 1992; Venkatesh, 2000).

The Theory of Planned Behavior

The Theory of Reasoned Action (TRA) is used to predict an individual's behavior only in a real voluntary situation, not in a mandatory context. Ajzen (1991) develops the Theory of Planned Behavior (TPB) to extend TRA to consider the mandatory situation (figure 5). He adds a new construct of perceived behavioral control in TPB. Perceived behavioral control is defined as "the perceived ease or difficulty of performing the behavior" (Ajzen 1991, p. 188). In the context of IS research, perceived behavioral control is defined as "perceptions of internal and external constraints on behavior" (Taylor and Todd 1995, p. 149).

The Theory of Planned Behavior (TPB) is similar to TRA in that TPB also assumes that individuals are rational decision makers. Individuals assess perceived behavior control using a method similar to the expectancy-value model. For each in a set of control beliefs, individuals multiply the belief's strength by the perceived power of the control factor. TPB has also been widely applied to understand the individual acceptance and use of different technologies (Harrison et al., 1997; Mathieson 1991; Taylor and Todd 1995b).
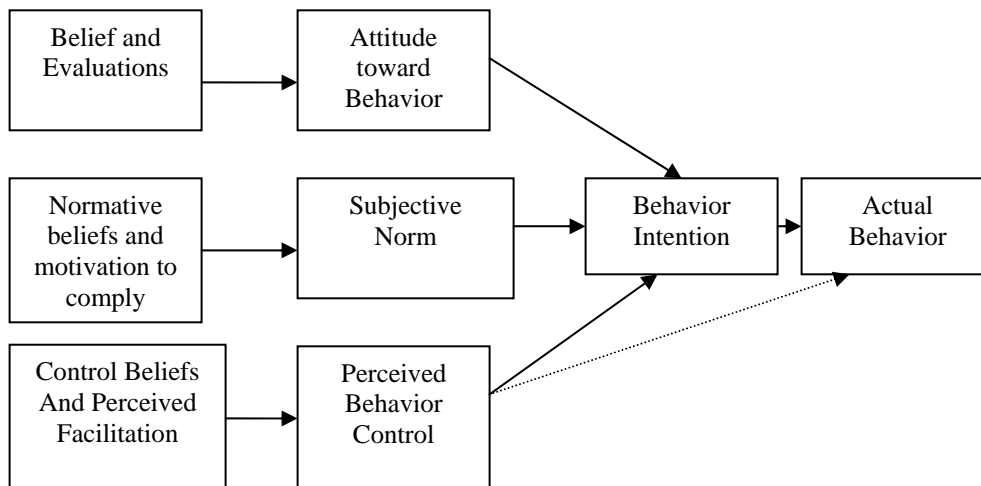
Figure 5. The Theory of Planned Behavior (Ajzen, 1991)
Combined TAM and TPB

Taylor and Todd (1995) develop a hybrid model by combining the predictors of TPB with the constructs of perceived usefulness and ease of use from TAM (Figure 6). This model is also called the Decomposed Theory of Planned behavior because the belief structure is decomposed in the model. The attitude is decomposed to include perceived usefulness, perceived ease of use and compatibility. The normative belief structure includes peer

influence and superior influence. The control belief structure includes self-efficacy, resource facilitating conditions and technology facilitating conditions.
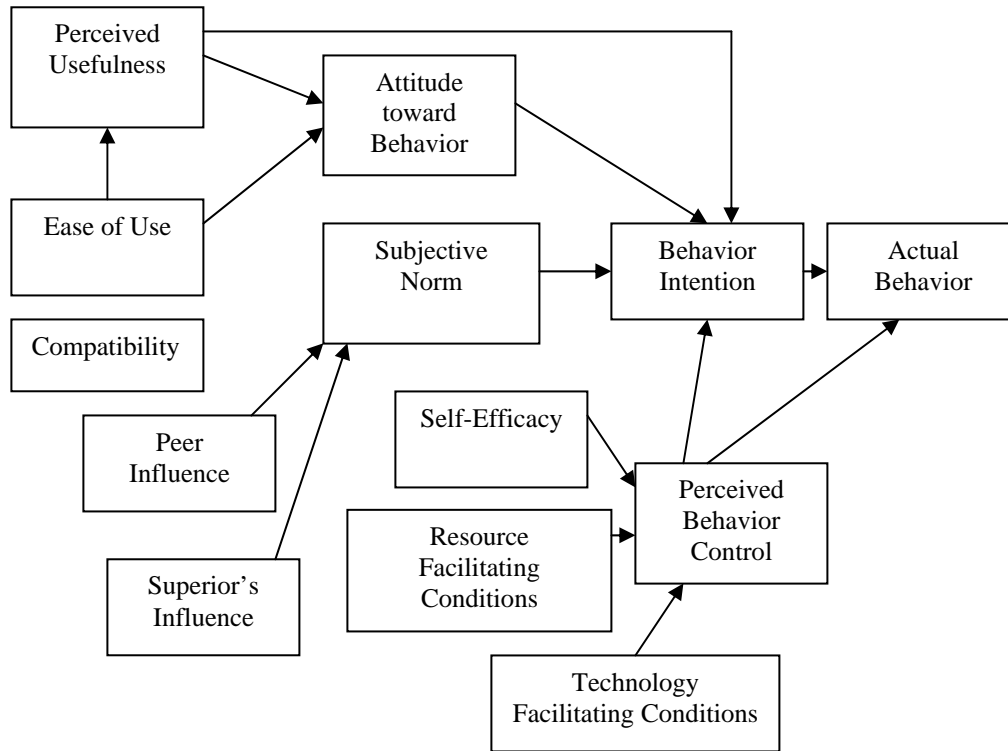

Figure 6. Combined TAM and TPB (Taylor and Todd, 1995)
The Model of PC Utilization

        Triandis' (1977) theory of attitudes and behavior is a competing perspective to TRA and TPB. Triandis (1980) makes a distinction between cognitive and affective components of attitudes. Beliefs belong to the cognitive component of attitudes. "Behavior is determined by what people would like to do (attitudes), what they think they should do (social norms), what they have usually done (habits), and by the expected consequences of their behavior" (Thompson et al., 1991, p.126).

        Thompson et al. (1991) refine Triandis' model to predict PC utilization behavior (Figure 7). The major constructs in the model and their definitions include:

- **Job-fit:** "the extent to which an individual believes that using [a technology] can enhance the performance of his or her job" (p. 129).
- **Complexity:** "the degree to which an innovation is perceived as relatively difficult to understand and use" (p. 128).
- **Long-term consequences**: "Outcomes that have a pay-off in the future" (p. 129).
- **Affect Towards Use:** "feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act" (p. 127).
- **Social Factors:** "individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations" (p. 126).
- **Facilitating Conditions:** "provision of support for users of PCs may be one type of facilitating condition that can influence system utilization" (p. 129).
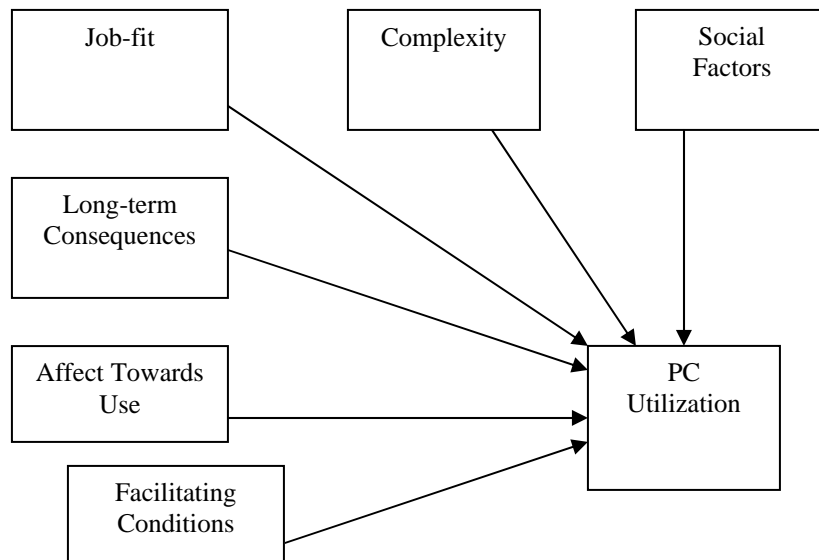
Figure 7. The Model of PC Utilization (Thompson et al., 1991)

The Innovation Diffusion Theory

The Innovation Diffusion Theory (Rogers, 1995) has been used to study a variety of innovations. Rogers identifies five attributes of an innovation that influence the adoption and acceptance behavior: relative advantage, complexity, compatibility, trialability, and observability. In the Information Systems field, Moore and Benbasat (1991) expand this attributes set to study information technology acceptance. The set includes:

- **Relative Advantage**: "the degree to which an innovation is perceived as being better than its precursor" (p. 195).
- **Ease of use**: "the degree to which an innovation is perceived as being difficult to use" (p. 195).
- **Image**: "The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (p. 195).
- **Visibility:** The degree to which one can see others using the system in the organization.
- **Compatibility**: "the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" (p.195).
- **Results Demonstrability:** "the tangibility of the results of using the innovation, including their observability and communicability" (p. 203).
- **Voluntariness of Use:** "the degree to which use of the innovation is perceived as being voluntary, or of free will" (p. 195).

Innovation diffusion research regards individuals' perceptions about these characteristics of an information technology as important factors in influencing an individual's acceptance behavior (Agarwal and Prasad, 1997, 1998; Karahanna et al., 1999; Plouffe et al., 2001).

The Social Cognitive Theory

The Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), and the Innovation Diffusion Theory assume that there are only unidirectional causal relationships among the major variables in their models. In contrast, the Social Cognitive Theory (Bandura, 1986) suggests that environmental factors, personal factors (in the form of cognitive factors, affective factors etc.), and behaviors are determined reciprocally. An individual's cognitive competences influence the behavior of using a technology, and the successful interactions with the technology also influence the cognitive perceptions (Compeau et al., 1999).

The Social Cognitive Theory (SCT) gives prominence to the concept of self-efficacy (Compeau et al., 1999). Self-efficacy is defined as the judgment of one's ability to use a technology to accomplish a particular job or task (Compeau and Higgins, 1995). Outcome expectations, including personal and performance-related ones, are major cognitive factors in influencing users' behavior (Compeau and Higgins 1995). Personal-related outcome expectations are concerned with individuals' esteem and sense of accomplishment. Performance-related outcome expectations are concerned with job-related outcomes. SCT posits that self-efficacy influences both personal and performance-related outcome expectations (Compeau and Higgins 1995). Affect and anxiety are the two affective factors. Affect refers to an individual's liking for a particular behavior (e.g., computer use). Anxiety refers to an individual's anxious or emotional reaction in performing a behavior (e.g., using a computer).
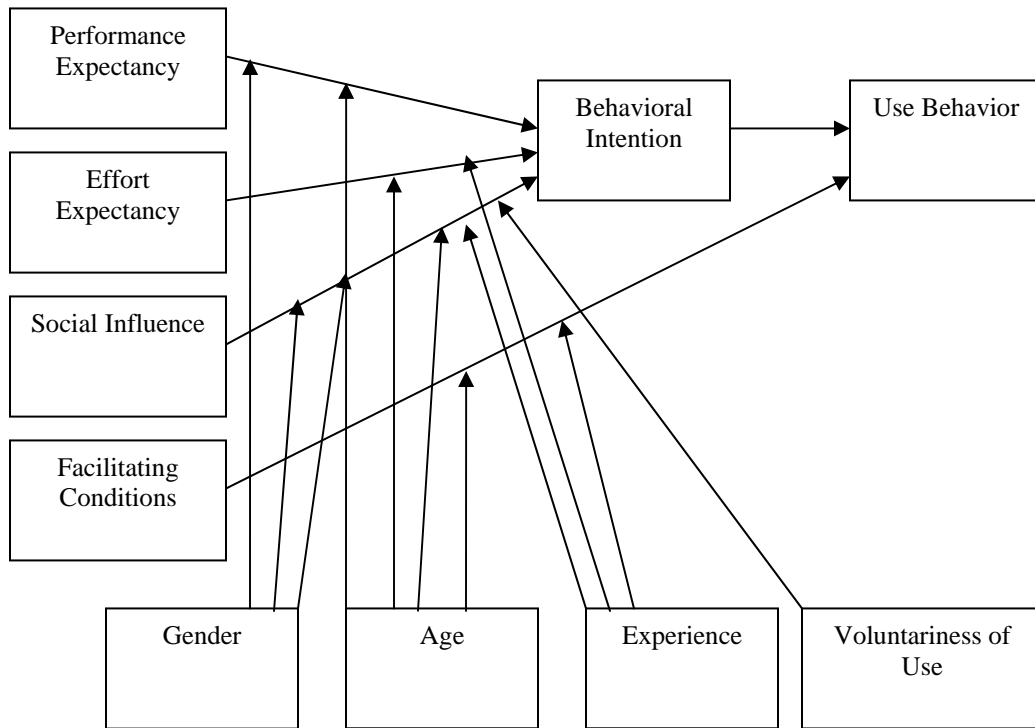
The Unified Theory of Acceptance and Use of Technology (UTAUT)

Based on the most significant constructs from the above eight theories and models, Venkatesh et al. (2003) formulate a new model called the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT suggests that three constructs are the main determinants of intention to use an information technology. The three constructs are performance expectancy, effort expectancy, and social influence. All of them are comprised of the most influential constructs of the eight models or theories discussed above. These three constructs are defined as follows:

- **Performance expectancy** is defined as "the degree to which the user expects that using the system will help him or her attain gains in job performance" (p. 447). This new construct has five root constructs: perceived usefulness (from TAM/TAM2, Combined TAM and TPB), extrinsic motivation (from the Motivational Model), relative advantage (from the Innovation Diffusion Theory), and outcome expectations (from the Social Cognitive Theory).
- **Effort expectancy:** "the degree of ease associated with the use of the system" (p. 450).
- **Social influence:** "the degree to which an individual perceives that important others believe that he or she should use the new system" (p. 451).

Venkatesh et al. (2003) also find that the influence of facilitating conditions on usage is moderated by age and experience of the individual. They define facilitating conditions as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (p. 453).

As a survey instrument incorporating the most influential constructs from the eight technology acceptance theories and models, UTAUT shares other TA models' major assumptions.

Figure 8. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003)

Evidence Inconsistent with Extant TA models

Next, we will discuss the evidence that is not consistent with what the extant TA models and theories predict. Legris et al. (2003) perform a qualitative meta-analysis on TAM. They find that TAM fails to predict in many studies (shown in Table1). In its original version, TAM has the following components: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude (AT), Behavior Intention (BI) and Actual Use (U). Based on these five components, 10 relations are examined by Legris et al. (2003): (1) PEOU-PU; (2) PU-AT; (3) PEOU-AT; (4) PU-BI; (5) PEOU-BI; (6) AT-BI; (7) AT-U; (8) BI-U; (9) PEOU-U; and (10) PU-U.

Table 1 Where TAM Failed to Predict *(Adapted from Legris et al., 2000)*

Author	PEOU-PU	PU-AT	PEOU-AT	PU-BI	PEOU-BI	AT-BI	AT-U	BI-U	PEOU-U	PU-U
Davis et al.(1989) Post Training			No							

Author	PEOU-PU	PU-AT	PEOU-AT	PU-BI	PEOU-BI	AT-BI	AT-U	BI-U	PEOU-U	PU-U
Subramanian(1994) Voice mail Customer dial-up	No No									
Taylor and Todd(1995a)						No				
Keil et al. (1995)									No	
Taylor and Todd (1995b) With experience Without experience					No No					
Jackson et al. (1997)	No	No		No		No				
Bajaj and Nidumolu (1998)	No	Reverse								No
Gefen and Keil(1998)									No	
Lucas and Spitler (1999)				No	No				No	No
Hu et al.(1999a)	No		No							
Szajna (1996) Pre-implementation Pos-implementation									No No	No No

No indicates that the relation is found to be non-significant and reverse indicates that the relation is found to be significant but negative.

We can see from the table 1 that there are inconsistent or even contradictory empirical results for all major relations in TAM.

The following subsection discusses in detail the inconsistent evidence with regard to the major constructs in the extant TA models and theories. These major constructs include perceived usefulness, perceived ease of use, attitude, social influences, and facilitating factors.

Perceived Usefulness

The TA models posit that perceived usefulness is the strongest predictor of an individual's intention to use an information technology (Davis, 1989; Venkatesh and Davis, 2000; Venkatesh et al., 2003). However, Jackson et al. (1997) found no relation between perceived usefulness and attitude. Bajaj and Nidumoulu (1998) even find evidence to the contrary- "[u]sefulness will *negatively* affect the attitude towards using the IS" (emphasized by the original authors) (p. 221).

Jackson et al. (1997) and Lucas and Spitler (1999) find no empirical evidence to support the relation between perceived usefulness and behavior intention. Jackson et al. (1997) report: "[T]he finding of a nonsignificant relationship between perceived usefulness and behavioral intention is surprising" (p. 379).

Szajna (1996), Lucas and Spitler (1999), and Bajaj and Nidumoulu (1998) find no empirical support for the relation between perceived usefulness and actual use. For instance, Lucas and Spitler (1999) report: "The variables that researchers most frequently study in this model are not significant in our research" (p.303).

Perceived Ease of Use

The TA models suggest that perceived ease of use has a significant influence on perceived usefulness, behavior attitude, intention, and actual use (Davis, 1989; Mathieson, 1991; Moore and Benbasat, 1991). On the relation between perceived ease of use and perceived usefulness, Davis (1989) suggests that: "from a causal perspective, the regression results suggest that ease of use may be an antecedent of usefulness, rather than a parallel, direct determinant of usage" (p. 334). In UTAUT, Venkatesh et al. (2003) use the construct of effort expectancy to capture the concepts of perceived ease of use (TAM/TAM2), complexity, and ease of use. Effort expectancy is defined as "the degree of ease associated with the use of the system" (p. 450).

However, many other researchers find no empirical evidence to support the relation between perceived ease of use and perceived usefulness (Chau and Hu, 2001; Bajaj and Nidumolu, 1998; Hu et al., 1999; Jackson et al., 1997; Subramanian, 1994). For instance, Chau and Hu (2001) report that "contrary to the assertion of TAM and the findings reported by some prior research (e.g., Venkatesh, 1999), perceived ease of use was not found to have any significant effects on perceived usefulness or attitude" (p. 712).

Agarwal and Prasad (1997), Keil et al. (1995a), Gefen and Keil (1998), Lucas and Spitler (1999), and Szajna (1996) find no empirical evidence to support the relation between perceived ease of use and actual use. Agarwal and Prasad (1997) report that "ease of use, which has been observed to be a significant predictor of acceptance in a wider variety of research (Davis, 1989; Mathieson, 1991), did not appear as a significant determinant" (p.572). Keil et al. (1995a) conclude that "no amount of ease of use (EOU) will compensate for low usefulness" (p.89).

Davis et al. (1989) find no evidence to support the relation between perceived ease of use and attitude in the post training period. Hu et al. (1999) find no evidence to support the relation between PEOU and attitude either.

Chau (1996), Hu et al. (1999), Lucas and Spitler (1999), Subramanian (1994) find no relation between perceived ease of use and behavior intention. Chau (1996) reports "…there is no significant, direct relationship between perceived ease of use of the technology and intention to use. In other words, whether or not the technology is easy to use influences the user's intention to use only indirectly via the perception of near-term usefulness. This finding concurs with that of the original TAM but contradicts the results obtained in many previous studies (e.g., Lu et al., 1994; Moore and Benbasat, 1991), where ease of use was a significant determinant of intention to use a computer technology"
(p. 197).

Attitude toward Using Technology

Attitude toward using technology refers to an individual's overall affective reaction to using a system (Venkatesh et al., 2003). This construct is closely related with four constructs in the existing models: attitude toward behavior (TRA, TPB/DTPB, C-TAM-TPB), intrinsic motivation (MM), affect toward use (MPCU), and affect (SCT). In some models, such as TRA, TPB/DTPB, and MM, the attitude construct is among the strongest predictors of behavior intention (Davis et al., 1989; Fishbein and Ajzen, 1975; Venkatesh et al., 2003). For instance, Chau and Hu (2002) find that attitude "appeared to be the second most important determinant of a physician's intention for accepting telemedicine technology" (p. 307). However, in other models, such as C-TAM-TPB, MPCU, and SCT, the construct of attitude is not significant. For instance, Taylor and Todd (1995a, b), Thompson et al. (1991), and Jackson et al. (1997) find no empirical support for the relationship between attitude and behavior intention. Jackson et al. (1997) report that "the lack of support for P5, the effect of attitude on behavioral intention, is somewhat puzzling…" (p.379). Venkatesh et al. (2003) suggest that since the effect of attitude has been captured by the performance and effort expectancies and therefore, attitude has no significant effect on users' behavioral intention.

Social Influences

Venkatesh and Davis (2000) use the construct of subjective norm to capture social influences in their model of TAM2. TAM2 suggests that in mandatory contexts, social influences have a direct effect on intention to use. However, researchers find that social influences have inconsistent roles in the empirical studies. Some researchers have reported empirical evidence to suggest that this construct is significant (Hartwick and Barki, 1994; Karahanna and Straub, 1999; Lu et al. (2005); Lucas and Spitler (1999); Taylor and Todd, 1995). For instance, Lucas and Spitler (1999) report that "organizational variables such as social norms and the nature of the job are more important in predicting the use of technology than are users' perceptions of the technology" (p. 304). The study by Lu et al. (2005) finds that social influences from social networks and the sense of image play important roles in shaping individual's perceptions of usefulness and ease of use. In a meta-analysis of the technology acceptance model, Schepers & Wetzels (2007) also find that social norms are important in influencing users' attitude towards use.

However, many other studies report evidence to prove the construct of subjective norms to be non-significant (Chau and Hu, 2001; Davis et al., 1989; Dishaw and Strong, 1999; Mathieson, 1991). Dishaw and Strong (1999) report: "subjective norms are not important in understanding individual choices to use IT" (p. 15). Lewis et al. (2003) find no empirical support for the expected relation either.

Venkatesh et al. (2003) suggest that social influences are "more likely to be salient to older workers, particularly women, and even then during early stages of experience/adoption" (p. 469). However, knowing these contingencies cannot help much in explaining the equivocal results reported in the literature. We need to understand why social influences only work for some people but not for others.

Facilitating Conditions

Many studies have suggested that facilitating conditions affect use, either directly or through behavioral intention (Thompson et al., 1991; Taylor and Todd, 1995). Venkatesh et al.

(2003) define facilitating conditions as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (p. 453).

However, many other empirical studies find the facilitating conditions to be non-significant (Gallivan et al., 2005; Karahanna and Straub, 1999; Mawhinney and Lederer, 1990). For instance, Gallivan et al. (2005) find no evidence to support the relation between facilitating conditions (such as training) and technology usage. Karahanna and Straub (1999) report that "surprisingly, facilitating conditions such as the availability of training and support for the use of information technology had no impact on perceptions of ease of use or usefulness of E-mail"(p. 1999). Igbaria et al. (1997) and Thompson et al. (1991) also find a non-significant relation between usage and the facilitating conditions such as training and technical support.

Venkatesh et al. (2003) suggest that the influence of facilitating conditions on usage is moderated by age and experience of the individual. However knowing these contingencies cannot help much in providing any meaningful guidance to implementation practices.

Conclusion

This paper provided a critical review of the technology acceptance literature. We made explicit these assumptions underlying these TA models and theories. More importantly, we identified a significant body of literature that reports inconsistent results with these models. (Table 2 presents additional evidence to show that the extant technology acceptance models have consistently failed to predict as they purported to). These are the inconsistencies these theories and models cannot easily explain. More research needed to be conducted to find out why these inconsistencies exist.

Table 2. Additional Evidence Showing Where the TA models Fail to Predict

Author	PEOU-PU	PEOU-U	PEOU -BI	AT -BI	Social Influences	Facilitating Conditions
Chau and Hu (2001)	No					
Hu (2001)	No					
Agarwal and Prasad (1997)		No				
Subramanian(1994)			No			
Chau (1996)			No			
Hu et al. (1999)			No			
Venkatesh et al. (2003)				No		
Hartwick and Barki (1994)					Yes	
Karahanna and Straub (1999)					Yes	
Lu et al. (2005)					Yes	
Lucas and Spitler (1999)					Yes	
Taylor and Todd (1995)					Yes	
Schepers & Wetzels					Yes	

Author	PEOU-PU	PEOU-U	PEOU-BI	AT-BI	Social Influences	Facilitating Conditions
(2007)						
Chau and Hu (2001)					No	
Davis et al.(1989)					No	
Dishaw and Strong (1999)					No	
Mathieson (1991)					No	
Gallivan et al. (2005)						No
Igbaria et al. (1997)						No
Mawhinney and Lederer (1990)						No
Karahanna and Straub (1999)						No
Thompson et al. (1991)						No
Taylor and Todd (1995)						Yes

No indicates that the relation was found to be non-significant; **Yes** indicates that the relation was found to be significant.

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